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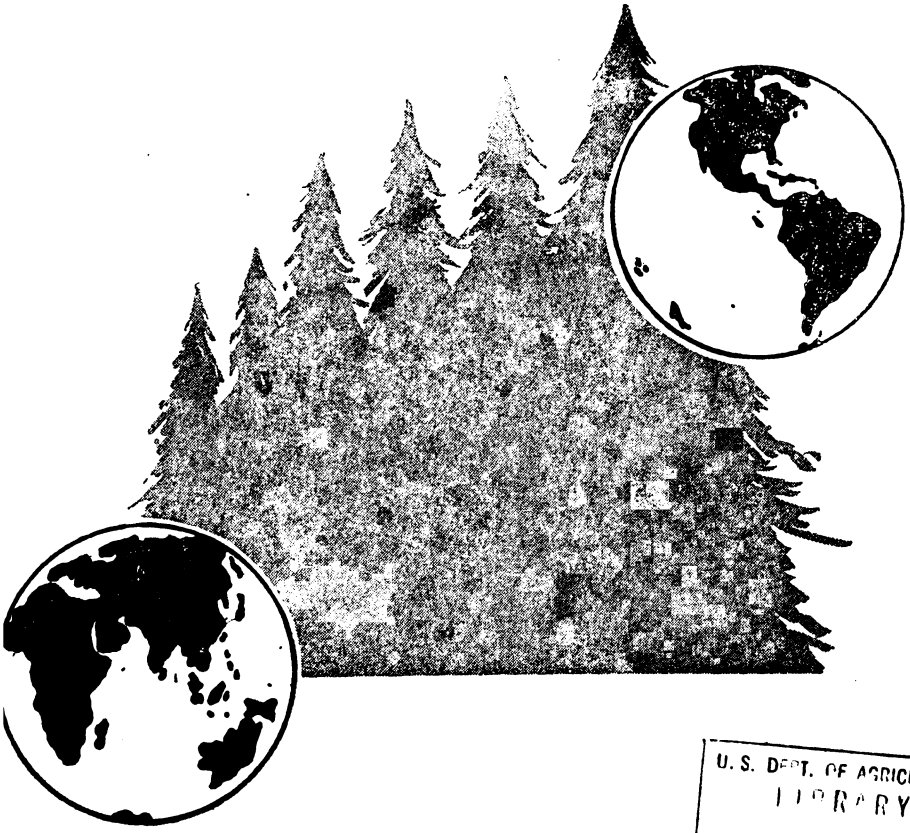
# Foreign Diseases of Forest Trees of the World



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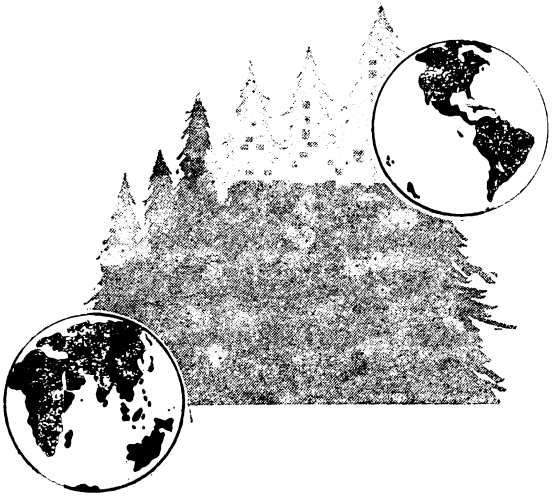
# Foreign Diseases of Forest Trees of the World

*An Annotated List*



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Forest Service

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## ACKNOWLEDGMENTS

Two publications have been indispensable to the author in preparing this handbook. John A. Stevenson's "Foreign Plant Diseases" (U.S. Dept. Agr. unnumbered publication, 198 pp., 1926) has served as a reliable guide. Information on the occurrence of tree diseases in the United States has been obtained from the "Index of Plant Diseases in the United States" by Freeman Weiss and Muriel J. O'Brien (U.S. Dept. Agr. Plant Dis. Survey Spec. Pub. 1, Parts I–V, 1263 pp., 1950–53).

The author wishes to express his appreciation to Dean George A. Garratt for providing free access to the library of the School of Forestry, Yale University.

The Latin names and authorities for the trees were verified by Elbert L. Little, Jr., who also checked the common names and, where possible, supplied additional ones. His invaluable assistance is gratefully acknowledged.

To Bertha Mohr special thanks are due for her assistance, enabling the author to complete a task so arduous that no one else has attempted it.

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# CONTENTS

| | Page |
|---|---|
| Introduction | 1 |
| The diseases | 2 |
| Viruses | 3 |
| Bacteria | 7 |
| Fungi | 13 |
| Host index of the diseases | 279 |
| Foreign diseases potentially most dangerous to North American forests | 357 |

# Foreign Diseases of Forest Trees of the World

## INTRODUCTION

Diseases of forest trees may be defined briefly as abnormal physiology caused by four types of factors, singly or in combination: (1) Nonliving, usually referred to as nonparasitic or site factor; (2) animals, including insects and nematodes; (3) plants; and (4) viruses. This handbook deals only with diseases due to plants and viruses.

Although diseases caused by nonliving factors are not included, it must be clearly understood that low vigor of trees, not only resulting from unsuitable site but also induced by defoliation, can be disastrous because they increase susceptibility to severe attacks by semipathogens. This is particularly true of planted and exotic trees. Diseases of slight importance on naturally regenerated trees in their native range often are serious to trees planted on unsuitable sites and may be destructive to exotics. Conversely, obligate parasites tend to attack the most vigorous host trees and leave subnormal ones unscathed. Thus, subnormal vigor may decrease danger from obligate pathogens, but it may increase danger from semiparasites. Growth vigor of exotics is desirable, but no guarantee that an exotic will not be attacked if planted extensively.

The pests that cause tree diseases do not confine their activities within political boundaries. Many diseases have been introduced into North America[1] from abroad, for example, white pine blister rust, larch canker, and *Ceratocystis* (*Ceratostomella*) elm disease from Europe; and the chestnut bark disease from China. These introductions into North America and similar ones into many other countries make it essential to have readily available more information on forest tree diseases of all countries.

To this end a survey was made of published reports on the infectious forest tree diseases of the world. The causal agents included are viruses, bacteria, and fungi. Algae and lichens are not included because they cause relatively few and unimportant diseases. The mistletoes are not included as they are considered in detail, with over 2,100 references to the world literature on them, in Technical Bulletin 1242 by Lake S. Gill and Frank G. Hawksworth, entitled "The Mistletoes; A Literature Review."

Robert Hartig, who is rightly called "the father of forest pathology," began his investigations about 1870, and except for a few earlier publications that have been reviewed, this survey covers the period from 1870 to about 1955.

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[1] The term "North America" as used in this publication includes the areas of Alaska, Canada, and the United States.

The publications examined include numerous forestry and arboricultural journals, abstracting journals, reports by forestry organizations, pathological and mycological papers, and some comprehensive annotated lists of fungi of foreign countries.

The results of this survey are being published in three parts, of which two have already been issued, namely, "Diseases of North American Forest Trees Planted Abroad," U.S. Dept. Agr., Agr. Handb. 100, 144 pp., 1956; and "Diseases of Foreign Forest Trees Growing in the United States," U.S. Dept. Agr., Agr. Handb. 139, 118 pp., 1958.

This third and final handbook in the series lists the infectious foreign forest tree diseases of the world, with indication of the damage caused and the potential danger to other regions outside the known range of each pathogen.

The distribution given is the reported distribution of the pathogen on all hosts, and includes saprophytic as well as parasitic occurrences. Where known, the occurrence of foreign diseases of forest trees in North America is given, to show the entire reported range of such pathogens.

The term "forest trees" is used for trees growing in planted or naturally reproduced forest stands. Shrubs and woody vines are not usually included. A tree that exists in extensive wild stands within its native range and is grown in planted stands outside its native range, but not in fruit orchards in the common meaning of that term, is considered a forest tree.

The references accumulated in this entire survey, although incomplete, number well over 3,000. These are strongly directed toward the forestry viewpoint. They are available for reference on index cards filed at the Forest Disease Laboratory, Northeastern Forest Experiment Station, New Haven, Conn.

## THE DISEASES

This publication lists the parasitic (pathogenic) diseases of forest trees in foreign countries.[2] These diseases are separated into three groups according to the type of causal agent:

Viruses, listed by common names.
Bacteria, listed by Latin names.
Fungi, listed by Latin names.

The scientific name of each pathogen includes the author of the name, followed by (x), (xx), or (xxx) indicating the class of parasitism of that pathogen. It is believed important to point out this character as foretelling possible action of the pathogens when they arrive in a region not previously infected. Accordingly, three classes of parasitism have been set up.

The first (x) class includes semipathogens that normally live saprophytically but cause disease occasionally under suboptimum conditions for the host tree, or under conditions especially favoring increase in the vigor of the pathogen.

The second (xx) class includes wound parasites that can attack trees only through wounds that expose inner living tissues to easy attack.

[2] The term "foreign countries" includes all land areas not in Alaska, Canada, and continental United States.

Nearly all decays of living trees and a considerable number of other tree diseases are of this type. Many wound pathogens can live saprophytically for years. Published reports of wound parasitism are but a small sample of all occurrences, as infection of wounds is very erratic and easily overlooked in early stages of decay. Numerous instances are given in the text where only one or two hosts are listed as being parasitized; these are merely isolated published cases out of hundreds that have escaped mention in print.

Class three (xxx) pathogens are obligate parasites, able to attack healthy, uninjured trees. In fact, many obligate parasites, such as the white pine blister rust fungus, attack the most vigorous and thrifty trees, whereas suppressed individuals escape.

Each disease is annotated with the available data on life history, severity, and general distribution of the pathogen.

By far the greater number of tree diseases are caused by fungi. Fungi are living organisms and exhibit individuality. Moreover, of late years many fungus species have been found to have numerous races, often varying in pathogenicity. Parasites that are widely and generally distributed in one region may have especially aggressive races not yet present in other regions. Intensive investigation has shown that black stem rust of wheat has hundreds of races varying in pathogenicity and host specificity, *and is constantly developing new races.*

Somewhat similar action is to be expected of some tree-inhabiting fungi, such as *Armillaria mellea*, with its worldwide range and numerous recognized varieties, indicating ability to vary distinctly. Although this fungus is common in nearly all forests, its introduction from another region on nursery trees or wood, or in soil from overseas, might materially increase the root-rot problem for some of the tree species in other continents. The same fact is undoubtedly true, although probably to a lesser extent, for other forest pathogens.

A common name for a disease is given, wherever known. Synonyms of Latin tree and fungus names are omitted, the name given being that believed to be technically correct according to the International Code of Botanical Nomenclature and generally accepted or most commonly used.

Agriculture Handbook No. 100, issued in 1956, listed records of diseases of North American forest trees growing in other countries; but a number of such records not included in that publication have been found. They are listed here without individual comment on their native range.

## *Viruses*

Virus diseases have been known the world over for many years, but their causes have become known only during the past few decades. Virus diseases of economic crops have received the most study. Some forest tree viruses are well known and there are, undoubtedly, many undiscovered viruses in forests of the world that will be found when more intensive studies can be made.

The mosaic diseases are generally distributed and have characteristic symptoms easily detected so that they appear more numerous than other types of virus diseases. The mosaic virus diseases have as symptoms the following leaf abnormalities, singly or in combination: yellow mottling; vein etching, ring spot, leaf curling, reduction in size,

and abnormal form. Severe attacks may cause leaves, branches, and even entire trees to die.

**Virus, Little-leaf** (xxx) **little-leaf**

A disease of roses, linden, and elm with various leaf deformations, as little-leaf and cupped-leaf. Little-leaf appears to occur primarily on roses and to spread to linden and elm in the neighborhood of the infected roses. Known in Czechoslovakia.

*Tilia americana:* Czechoslovakia.
*T. cordata:* Czechoslovakia.
*T. platyphyllos:* Czechoslovakia.
*Ulmus* sp.: Czechoslovakia.

**Virus, Mosaic** (xxx) **mosaic**

Causes mosaic of *Acacia* in Mauritius.

*Acacia concinna:* Mauritius.

**Virus, Mosaic** (xxx) **mosaic**

Causes mosaic of *Albizia* in Mauritius.

*Albizia lebbek:* Mauritius.

**Virus, Mosaic** (xxx) **mosaic**

Causes mosaic of *Allamanda* in Mauritius.

*Allamanda cathartica:* Mauritius.

**Virus, Mosaic** (xxx) **birch mosaic**

Mosaic of birch is reported from Czechoslovakia.

*Betula* sp.: Czechoslovakia.

**Virus, Mosaic** (xxx) **mosaic**

Causes mosaic of *Bougainvillea* in Mauritius.

*Bougainvillea spectabilis:* Mauritius.

**Virus, Mosaic** (xxx) **mosaic**

Causes mosaic of *Broussonetia* in China.

*Broussonetia papyrifera:* China (Hwangtung).

**Virus, Mosaic** (xxx) **mosaic**

Causes mosaic of *Coffea* with leaves dwarfed and distorted. Entire plants sometimes are stunted. Reported in Uganda.

*Coffee arabica:* Uganda.
*C. canephora* var. *robusta:* Uganda.

**Virus, Mosaic** (xxx) **conifer mosaic**

Spruce and pine needles become mottled yellowish, especially where *Chermes* develop abundantly. This is believed to be a virus disease and is reported in Czechoslovakia.

*Picea abies:* Czechoslovakia.
*Pinus mugo* var. *pumilio:* Czechoslovakia.

**Virus, Mosaic** (xxx) **mosaic**

Causes mosaic of *Cordia* with leaf necrosis. Reported in Mauritius.

*Cordia macrostachya:* Mauritius.

**Virus, Mosaic** (xxx) **mosaic**

Causes an orange leaf spot and reduction in size of the leaflets even to the primary veins of *Elaeis*. It spreads by contact. It is known in French Equatorial Africa.

*Elaeis guineensis:* French Equatorial Africa.

**Virus, Mosaic** (xxx) **mosaic**

Causes mosaic of fig on sucker leaves in one locality and malformation in another. Distributed in Bulgaria, Italy, China, and New Zealand.

*Ficus* sp.: Bulgaria, Italy.
*F. carica:* China, Italy, New Zealand.
*F. carica* var. *sylvestris:* Italy.

**Virus, Mosaic** (xxx) **mosaic**

Causes mosaic mottling, puckering, reduction in size of leaf blades, stunting of the entire tree sometimes resulting; and finally death of mulberry trees. Distributed in China, Japan, and Puerto Rico.

*Morus* sp.: China, Japan.
*M. alba:* Puerto Rico.

**Virus, Mosaic** (xxx) **mosaic**

Causes yellow mottling of leaves of *Pithecellobium* in El Salvador.

*Pithecellobium dulce:* El Salvador.

**Virus, Leaf-curl mosaic** (xxx) **sandalwood mosaic**

Causes, in early stages, interveinal mosaic mottling in full-grown leaves with marked drooping of leaves and twigs. Later, leaves are curled, crinkled, mottled, dwarfed in length, thickened, brittle, and fall prematurely. Twigs soon die and lateral shoots are proliferated.

*Santalum album:* India.

**Virus, Mosaic** (xxx) **mosaic**

Linden mosaic is reported in Czechoslovakia.

*Tilia cordata:* Czechoslovakia.

**Virus, Mosaic** (xxx) **mosaic**

Elm mosaic is known in Bulgaria and Czechoslovakia.

*Ulmus* sp.: Bulgaria, Czechoslovakia.

**Virus, Red mottle** (xxx) **cacao red mottle**

Causes reddening along the main leaf veins; small cleared areas along the veins forming discontinuous yellow patches, occasional crinkling or a leaf-tip necrosis, and red mottling in young pods of some clones. Known in Trinidad.

*Theobroma cacao:* Trinidad.

**Virus, Rosette** (xxx) **rosette**

Occurs on *Chrysophyllum* and a number of other plants. It is not seedborne. Close planting reduces infection. Known in Gambia, Africa.

*Chrysophyllum cainito:* Gambia.

**Virus, Rosette (xxx)** **Pistache rosette**

Causes rosette on wild *Pistacia* trees over a large area. Tree vigor is subnormal. Twigs, leaves, and inflorescences are abnormal and fruiting is much reduced. The disease is transmitted through seeds by budding and by the insect *Liothrips pistaciae*. Distributed east of the Caspian Sea in Turkmenistan, Uzbekistan, and Tadzhikistan.

*Pistacia vera:* Turkmenistan, Tadzhikistan, Uzbekistan.

**Virus, Sandal spike (xxx)** **sandalwood spike**

Occurs chiefly on *Santalum* but spikelike disease occurs on numerous other trees, especially *Ziziphus oenoplia*. Sandal, being a parasite on many other trees, is much more resistant to spike on some of its hosts, and conversely much more susceptible on some other hosts. Symptoms of spike disease are abnormally stiff, straight shoots with short internodes and stiff, erect leaves. New leaves become progressively smaller, narrower, and more pointed, growing in tufts at the ends of bare branches. Infected trees die within 2 to 3 years. Distributed in southern India.

*Santalum album:* India.

*Ziziphus oenoplia:* India.

**Virus, Swollen shoot (xxx)** **cacao swollen shoot**

There are two or more strains of cacao swollen shoot virus, which are not clearly differentiated. A number of native African trees probably were original hosts. Typical swollen shoot causes the following symptoms: in young leaves mosaic mottling usually as a veinal network, dwarfing of leaves or leaf shedding; pods mottled, short internodes, smooth, elongate swellings in branch tips, tapering gradually to constrictions; dieback of branches and trunk; root swellings. Typical swollen shoot occurs in the Gold Coast. The disease complex occurs in the Gold Coast, Ivory Coast, Nigeria, and French West Africa; Peru and Ecuador.

*Adansonia digitata:* Gold Coast, Nigeria, Ivory Coast.

*Bombax buonopozense:* Gold Coast.

*Ceiba pentandra:* Gold Coast, Nigeria, Ivory Coast.

*Cola chlamydantha:* French West Africa, Ivory Coast, Gold Coast.

*C. cordifolia:* Gold Coast, Nigeria.

*C. togoensis:* French West Africa.

*Pachira oleagina:* French West Africa.

*Sterculia rhinopetala:* Ivory Coast, Gold Coast.

*S. tragacantha:* Ivory Coast, Gold Coast.

*Theobroma bicolor:* Gold Coast, Ivory Coast.

*T. cacao:* Ecuador, Peru, French West Africa, Gold Coast, Ivory Coast, Nigeria.

*T. grandiflora:* French West Africa.

**Virus, Mosaic (xxx)** **variegation**

Causes yellow variegations of maple leaves in Bulgaria, Czechoslovakia, England, France, Germany, and Japan.

*Acer negundo:* Bulgaria, Czechoslovakia.

*A. pseudoplatanus:* Czechoslovakia.

**Virus, Mosaic** (xxx) **variegation**

Causes mottled variegation of *Aesculus* leaves in Czechoslovakia.
*Aesculus hippocastanum:* Czechoslovakia.

**Virus, Mosaic** (xxx) **variegation**

Causes infectious chlorosis of ash. Transmitted by grafting. Distributed in England, Germany, and Bulgaria.
*Fraxinus* sp.: Bulgaria, England.

**Virus, Witches'-broom** (xxx) **witches'-broom**

Apparent virus-caused brooming and death of *Casuarina* was noted in Central America. Mottling of foliage was very characteristic. Many diseased trees had an unbalanced appearance from the dying lateral branches. Distributed in Mexico, Costa Rica, and Canal Zone.
*Casuarina equisetifolia:* Costa Rica, Canal Zone, Mexico.

**Virus, Witches'-broom** (xxx) **witches'-broom**

A witches'-broom disease of honeylocust with mottling and deformation of foliage was reported in Bulgaria.
*Gleditsia triacanthos:* Bulgaria.

**Virus, Witches'-broom** (xxx) **witches'-broom**

Causes witches'-broom of *Paulownia* in Japan. Transmitted by grafts.
*Paulownia tomentosa:* Japan.

## *Bacteria*

**Agrobacterium tumefaciens** (E. F. Sm. & Towns.) Conn. (xx) **crown gall**

Causes tumors or galls on roots or stems, often larger than the part bearing them. They are convoluted and roughly spherical. The disease progresses slowly, stunting the plant, and finally killing it. Many plants are attacked, ranging from herbs to shrubs, vines, and trees. The disease is practically universal in distribution, occurring on all the continents and many islands.

*Eucalyptus* sp.: Russia, Transcaucasia.
*E. citriodora:* Brazil.
*E. robusta:* Brazil.
*Flindersia brayleyana:* Australia.
*Juglans regia:* Italy.
*Morus* sp.: Russia, Transcaucasia.
*Populus* sp.: France.
*P. alba:* Italy.
*P. koreana:* France.
*P. simonii:* France.
*P. szechuanica:* France.
*Shorea javanica:* Java.
*Theobroma cacao:* Gold Coast.

**Bacillus cacticidus** Johnston & Hitchcock (xx) **rot**

Causes rot and death of *Opuntia* in Florida. Cultures were made and taken to Australia. There the pathogen was set loose on their wild *Opuntia*, which had taken over thousands of acres of grazing land. The results were excellent. The pathogen is known only in Florida and Australia.

*Opuntia ficus-indica:* Australia.
*O. tomentella:* Australia.

**Bacillus harai** Hori & Miyake (xx) **willow blight**

Attacks basket willows by entering insect wounds, and causes girdling of stems and twig dieback. Reported in Japan.

*Salix purpurea:* Japan.

**Bacillus populi** Brizi (xxx) **poplar branch galls**

Said to cause galls or tubercles on branches of Populus. Reported in Italy and France.

*Populus alba:* Italy.
*P. nigra:* Italy.
*P. tremula:* Italy.

**Bacillus vuilemini** Trev. (xx) **pine gall**

Isolated from galls on *Pinus*. Reported in Belgium and Spain.

*Pinus halepensis:* Belgium, Spain.

**Corynebacterium hypertrophicans** (Stahel) Burk. (xxx) **bacterial fasciation**

Causes witches'-brooms. In early stages the twigs are 1 to 2 times normal thickness. Pale young leaves are curled, fully grown leaves often are perforated, and the terminal bud dies prematurely. *Eugenia latifolia* in Surinam is the only known reported host.

*Eugenia latifolia:* Surinam.

**Erwinia amylovora** (Burr.) Winsl. et al. (xxx) **fire blight**

Causes wilt and blight of all parts of pear, apple, and other related trees, particularly of the Pomoideae, in North America. Distributed in the United States, Canada, Transcaucasia, New Zealand, Australia, and Turkestan. Reported uncertainly from Mexico, Bermuda, Europe, and Asia.

*Crataegus oxyacantha:* New Zealand.

**Erwinia mangiferae** (Doidge) Bergey et al. (xxx) **mango black spot**

Causes small spots on leaves, petioles, stems, and fruits of *Mangifera*. Known in South Africa, Mozambique, Tanganyika, and Mauritius.

*Mangifera indica:* Mauritius, Mozambique, South Africa, Tanganyika.

**Erwinia salicis** (Day) Chester (xxx) **willow watermark disease**

Causes general wilting, withering, and browning of leaves and tips of new shoots on one or more branches of Salix. A thin, sticky, trans-

parent liquid exudes from insect wounds, covering the surface with a shiny varnishlike layer. The disease progresses until the tree dies. Vessels are plugged with masses of bacteria and starch disappears. Known only in England.

*Salix alba:* England.
*S. alba* var. *calva:* England.
*S. rubens:* England.

**Micrococcus populi** Del. (xx) **poplar canker**

Isolated from natural cankers on *Populus.* Repeated tests gave no infections with pure cultures, but inoculations with the liquid from cankers produced similar cankers. Known in France, Italy, Belgium, and Great Britain.

*Populus alba:* France.
*P. angulata:* France.
*P. balsamifera:* France, Great Britain.
*P.* ×*berolinensis:* Great Britain.
*P.* ×*canadensis:* Great Britain, France, Italy.
*P.* ×*canadensis* var. *eugenii:* Great Britain.
*P.* ×*canadensis* f. *gelrica:* Great Britain.
*P.* ×*canadensis* var. *marilandica:* Great Britain.
*P.* ×*canadensis* var. *regenerata:* Great Britain.
*P.* ×*canadensis* var. *serotina:* Great Britain.
*P. canescens:* France.
*P. deltoides:* Belgium, Great Britain.
*P.* ×*generosa:* Great Britain.
*P. nigra:* France.
*P. nigra* var. *elegans:* Great Britain.
*P. nigra* var. *italica:* France, Great Britain.
*P.* ×*robusta:* Great Britain.
*P. tremula:* France.
*P. trichocarpa:* Great Britain.

**Pseudomonas aleuritidis** (McCull. & Demaree) Stapp (xx) **tung leaf spot**

Causes brown angular leaf spots on *Aleurites.* Distributed in Georgia, Louisiana, Russia, and Indochina.

*Aleurites fordii:* Russia.
*A. montana:* Indochina.

**Pseudomonas castaneae** (E. Kawamura) Savul. (xx) **chestnut bacterial spot**

Causes leaf spots and brown, cracked lesions on the veins, petioles, and shoots, and destroys the buds. Leaves attacked when young are distorted. Known in Japan.

*Castanea* sp.: Japan.

**Pseudomonas dysoxyli** Hutch. (xxx) **leaf spot**

Causes sharply defined greasy leaf spots up to 10 mm. across on *Dysoxylum.* These spots develop into hard grayish to black, dry, corky areas, which finally drop out. Oval lesions up to 50 x 6 mm. occur on smaller branches and petioles. Over 99 percent of older trees were affected. Tests proved pathogenicity of the bacterium,

and that it is normally transmitted by contact of diseased and healthy leaves, and in water drops. Known in New Zealand.

*Dysoxylum spectabile:* New Zealand.

**Pseudomonas lignicola** Westerd. & Buis. (xx) **wood discoloration**

Causes dark, continuous streaks in the wood of *Ulmus*. Infects old and young branches. Inoculations discolored wood of several other genera. Distributed in Netherlands, England, and possibly Sweden and Denmark.

*Ulmus* sp.: England, Netherlands.

*Zelkova* sp.: Netherlands.

**Pseudomonas mangiferae-indicae** Patel, Moniz, & Kulkarni (xxx) **leaf spot**

Causes small, angular, water-soaked spots up to 4 mm. across, light yellow to deep brown with clear halos on leaves of Anacardaceae. Spots also occur on petioles, fruits, and tender stems. Known only in India.

*Anacardium occidentale:* India.

*Mangifera indica:* India.

**Pseudomonas mori** (G. Boyer & F. Lambert) F. L. Stevens (xxx) **mulberry bacterial spot**

Causes numerous water-soaked spots on leaves of *Morus*, which enlarge, coalesce, and turn black or brown with a yellow outer zone. Dark, sunken spots form on midribs and veins. Translucent stripes form on young shoots and many die. The dead leaves and shoots resemble fire blight of apple. Small cankers coalesce and girdle young twigs, causing stunting of the trees. Distributed in Canada, United States, Brazil, France, England, Italy, Germany, Romania, Bulgaria, Hungary, Russia, Japan, Korea, Tasmania, South Africa, Tanganyika, and Australia.

*Morus* sp.: Australia, Brazil, France, Germany, Hungary, Italy, Japan, Korea, Romania, Tasmania.

*M. alba:* Bulgaria, Great Britain, Italy, Russia (Tashkent).

*M. australis:* Russia (Tashkent).

*M. indica:* Tanganyika.

*M. kagayamae:* Russia (Tashkent).

*M. nigra:* Bulgaria, Union of South Africa.

**Pseudomonas rimaefaciens** Koning (xx) **poplar canker**

[=*P. syringae* Van Hall f. *populea* Sabet & Dowson]

Causes local swellings on pale-colored bark of *Populus*. A slimy exudate oozes from lenticels or cracks forming a slimy layer in dry weather. Young branches are killed. On older branches irregular callus forms. Small red stripes develop in the wood. Distributed in England, Belgium, Netherlands, France, and probably Italy.

*Populus* sp.: France, England, Netherlands.

*P.* ×*canadensis:* Netherlands.

*P.* ×*canadensis* f. *erecta:* Belgium.

*P.* ×*canadensis* f. *gelrica:* Belgium.

*P.* ×*canadensis* var. *marilandica:* Belgium.

*P.* ×*canadensis* var. *serotina:* Belgium.

*P. robusta:* Belgium.

**Pseudomonas saliciperda** Lindeijer (xxx) **willow wilt**

In the spring all the leaves of a single branch suddenly wilt, buds curl upward, dry leaves fall, and the branch withers completely. The disease gradually spreads through the entire tree. A clear fluid exudes throughout the season. Wood is first wet, then brown, and vessels are full of bacteria and brown gum. Insect dissemination is indicated. A number of *Salix* spp. are attacked. Known in the Netherlands.

*Salix alba:* Netherlands.
*S. amygdalina:* Netherlands.
*S. purpurea:* Netherlands.
*S. viminalis:* Netherlands.

**Pseudomonas savastanoi** (E. F. Smith) F. L. Stevens (xx) **olive knot**

Causes irregular, spongy, rather hard knotty growths on roots, trunks, branches, or leaves of a number of broad-leaved trees. The olive is especially susceptible and probably serves to carry the pathogen to wild forest trees in the neighborhood. The knots reach considerable size in a few months. Distal parts of infected shoots often die. The disease persists from year to year in a tree. Bacteria ooze to the surface of the galls in wet weather and are washed down to the lower parts of the infected tree. Distributed in the Mediterranean basin, Czechoslovakia, California, Mexico, and Argentina.

*Fraxinus* sp.: Czechoslovakia.
*F. angustifolia:* Portugal.
*F. excelsior:* Netherlands.

**Pseudomonas savastanoi** var. **fraxini** (N. A. Brown) Dows. (xx) **ash canker**

Causes roughened, somewhat swollen cankers on branches and trunks of *Fraxinus*. Resembles the olive knot disease but is more calluslike with less tubercular swelling. Distributed in Austria, Yugoslavia, Germany, France, Italy, Portugal, and England.

*Fraxinus* sp.: Germany.
*F. americana:* Austria, Yugoslavia, France, Italy, England.
*F. angustifolia:* Portugal.
*F. excelsior:* Austria, England, France, Germany, Italy, Portugal, Yugoslavia.

**Pseudomonas solanacearum** (E. F. Sm.) E. F. Sm. (xxx) **vascular wilt**

Causes vascular disease of many economically important plants, ranging from herbs to large timber trees. Symptoms are dwarfing, sudden wilting, shriveling of foliage, and brown stain of the vascular bundles. Plants of the family Solanaceae are most susceptible. Plants of 17 families are known hosts. This disease is practically universal in distribution especially in warmer regions where tobacco is grown. It occurs in North and South America, Europe, Africa, Asia, Australia, New Zealand, East and West Indies, Hawaii, and the Philippines.

*Aleurites* sp.: Sumatra.
*Casuarina equisetifolia:* Mauritius.
*Tectona grandis:* Sumatra.

**Pseudomonas tectonae** Roldan & Andres (xx) **teak seedling wilt**

Causes acute wilting of *Tectona* seedlings in clear, hot, sunny weather. Toward evening the wilt eases but becomes more pronounced each succeeding day until the plants collapse and die. The bacteria are found in the xylem vessels of the roots and in the stem in advanced cases. Pathogenicity was proved by inoculations and re-isolation. In one area an entire planting project was threatened with disruption. Known in the Philippines.

*Tectona grandis:* Philippines.

**Xanthomonas acernea** (Ogawa) Burk. (xx) **maple leaf spot**

Causes maple leaf spot followed by wilt and defoliation. *Acer*, *Aesculus*, and *Koelreuteria* are attacked. Known in Japan.

*Acer aidzuensis:* Japan.
*A. buergerianum:* Japan.
*A. capillipes:* Japan.
*A. crataegifolium:* Japan.
*A. diabolicum:* Japan.
*A. insulare:* Japan.
*A. mono:* Japan.
*A. negundo:* Japan.
*A. nipponicum:* Japan.
*A. palmatum:* Japan.
*A. rufinerve:* Japan.
*A. shirasawanum:* Japan.
*A. sieboldianum:* Japan.
*Aesculus turbinata:* Japan.
*Koelreuteria paniculata:* Japan.

**Xanthomonas erythrinae** Patel, Kulkarni & Dhande (xx) **leaf spot**

Causes small, water-soaked leaf spots 0.5 to 1 mm. in diameter, later turning brown with a halo, raised in the center on the lower leaf surface. Veins are infected and sometimes raised on the upper leaf surface. Known only in India.

*Erythrina indica:* India.

**Xanthomonas juglandis** (Pierce) Dows. (xxx) **bacterial spot**

Causes spot of leaves, green shoots, and nuts of *Juglans*. Much damage is done to the nut crop. Distributed in the Pacific Coast States and British Columbia and is general in Eastern United States; reported from Mexico, the West Indies, Chile, Iran, South Africa, New Zealand, Tasmania, Australia, Russia, Italy, Romania, Switzerland, Netherlands, France, Poland, and Great Britain.

*Juglans* sp: New Zealand, Poland.
*J. nigra:* Italy.
*J. regia:* England, Iran, Italy.

**Xanthomonas lawsoniae** Patel, Bhatt & Kulkarni (xxx) **leaf spot**

Causes small, round, water-soaked spots at the margins of *Lawsonia* leaves in India.

*Lawsonia inermis:* India.

**Xanthomonas melhusi** Patel, Kulkarni, & Dhande (xxx) **teak leaf spot**

Causes small, angular, water-soaked leaf spots on *Tectona* in India.
*Tectona grandis:* India.

**Xanthomonas vasculorum** (Cobb) Dows. (xx) **palm bud rot**

In susceptible hosts palm bud rot is a vascular disease characterized by dwarfing of plants, white striping of the leaves, dying of the tops, decay of terminal buds, reddening of the vascular bundles, formation of yellow slime or gum in the bundles of stems and leaves. Reported in Brazil, Colombia, Madeira, Mauritius, Reunion Islands, Fiji Islands, New Guinea, Australia, Antigua, Barbados, Dominica, Guadaloupe, Mexico, Puerto Rico, St. Kitts, and St. Lucia.
*Areca cathecu:* Mauritius.
*Cocos nucifera:* Mauritius.
*Dictyosperma album:* Mauritius.
*Roystonea regia:* Mauritius.

## *Fungi*

In the general account of diseases the entire distribution, both as saprophytes and as parasites, is given. In the fewer instances of specific hosts, only those are given where *parasitism* was stated.

**Acanthostigma parasiticum** (Hartig) Sacc. (xx) **blight**

Causes dying of needles of *Abies*, *Picea*, and *Tsuga*. The dead leaves are held on the twig by mycelial threads, which coat the surface. Some needles dangle loosely by the threads. Neighboring branches become diseased and this condition progresses until entire trees die in severe attacks. A 100-year-old stand of *A. alba* was badly damaged on the island of Bornholm. Development of the fungus is favored by quiet moist air in thickets and dense stands. The fungus is reported in Nova Scotia, Denmark, Germany, Great Britain, Switzerland, and Japan.
*Abies alba:* Denmark, Germany, Great Britain, Switzerland.
*A. nordmanniana:* Denmark.
*Picea sp.:* Japan.
*P. abies:* Germany.

**Acervulopsora ichnocarpi** (Barcl.) Thirum. (xxx) **rust**

Forms golden rust pustules on the lower surface of *Ichnocarpus* leaves. Known in India and Pakistan.
*Ichnocarpus frutescens:* India (Mysore), Pakistan.

**Achrotelium lucumae** (Arth. & J. R. Johnston) Cumm. (xxx) **rust**

Rust on leaves of *Pouteria* in Cuba and Florida.
*Pouteria campechiana:* Cuba.

586625—61——2

**Aciculosporium take** Miyake (xxx) **bamboo witches'-broom**

Associated with witches'-brooms on *Phyllostachys* in Japan (and China?).
*Phyllostachys bambusoides:* Japan.
*P. nigra:* Japan.
*P. nigra* var. *henonis:* Japan.

**Actinonema fagicola** Allesch. (x) **leaf spot**

On small rounded leaf spots on *Fagus* causing early leaf fall and swelling of buds. Known in Germany.
*Fagus sylvatica:* Germany.

**Actinopelte dryina** (Sacc.) Hoehn. (xx) **leaf spot**

Associated with leaf spots of numerous broad-leaved trees, varying in color with the hosts, and up to 10 mm. in size. Widely distributed in the United States, and known in Italy and Romania.
*Quercus cerris:* Romania.
*Q. petraea:* Romania.
*Q. robur:* Italy.

**Actinopelte japonica** Sieb. & Zucc. (xx) **leaf spot**

On leaves of *Castanea* in Japan and reported in New Jersey.
*Castanea crenata:* Japan.

**Actinothecium callicola** Speg. (xx) **leaf spot**

On small, rounded, light-brown leaf spots on *Eugenia.* Known only in Brazil.
*Eugenia* sp.: Brazil (Ypiranga).

**Actinothecium guaraniticum** Speg. (xx) **leaf spot**

On living leaves of *Aspidosperma* in Argentina.
*Aspidosperma guaraniticum:* Argentina.

**Actinothyrium drimydis** Speg. (xx) **leaf spot**

On round, pale-brown spots on living leaves of *Drimys* in Chile.
*Drimys winteri:* Chile (Valdivia).

**Actinothyrium hopeae** Graff (x) **leaf spot**

On spots of *Hopea* living leaves in the Philippines.
*Hopea pierrei:* Philippines.

**Aecidium abscedens** Arth. (xxx) **rust**

Forms yellow rust pustules on leaves of *Randia* in Costa Rica, Dominican Republic, and Puerto Rico.
*Randia aculeata:* Costa Rica, Dominican Republic, Puerto Rico.

**Aecidium adenariae** Mayor (xxx) **rust**

Forms rust pustules on leaves of *Adenaria* and *Combretum.* Distributed in Colombia and Venezuela.
*Adenaria floribunda:* Colombia.
*A. floribunda* var. *purpurata:* Colombia.
*Combretum secundum:* Venezuela.

**Aecidium alchorneae** Sacc. (xxx) **rust**

Causes rust pustules on leaves of *Alchornea* in the Philippines.
*Alchornea rugosa:* Philippines.

**Aecidium alibertiae** Arth. (xxx) **rust**

Forms deep-seated rust pustules on the lower leaf surface of *Alibertia* with cinnamon dusty spores within. Known in Trinidad.
*Alibertia* sp.: Trinidad.

**Aecidium amazonense** P. Henn. (xxx) **rust**

Forms rust pustules with light smoky-colored spores on leaves of *Guatteria* in Peru.
*Guatteria* sp.: Peru.

**Aecidium anningense** Tai (xxx) **rust**

Forms rust pustules on leaves of *Sophora.* Known in China.
*Sophora davidii:* China.

**Aecidium baileyanum** Syd. (xxx) **rust**

Forms rust pustules on leaves of *Canthium.* Known in Queensland, Australia.
*Canthium coprosmoides:* Australia (Queensland).

**Aecidium balansae** Cornu (xxx) **rust**

Forms rust pustules on leaves of *Agathis.* Distributed in Straits Settlements and New Caledonia.
*Agathis alba:* Malaya (Straits Settlements) and New Caledonia.

**Aecidium bicolor** Sacc. (xxx) **rust**

Forms rust pustules on *Maba* leaves. Distributed in the Union of South Africa and India.
*Maba natalensis:* Union of South Africa (Natal, Durban).

**Aecidium brasiliense** Diet. (xxx) **rust**

Forms rust pustules on large, yellow, round leaf spots on *Cordia.* Distributed in Brazil, Trinidad, India, and Pakistan.
*Cordia* sp.: Brazil, Pakistan, Trinidad.
*C. cylindrostachya:* Trinidad.
*C. discolor:* Brazil.
*C. ecalyculata:* Brazil.
*C. obscura:* Brazil.
*C. rothii:* India.

**Aecidium breyniae** Syd. (xxx) **rust**

Causes rust of leaves of *Breynia.* Known in India and New Guinea.
*Breynia* sp.: Malaya (New Guinea).
*B. rhamnoides:* India.

**Aecidium brideliae-micranthae** Cumm. (xxx) **rust**

Forms short cupulate rust pustules 0.2 mm. across, densely aggregated, on blackish-brown leaf spots 15 mm. in diameter on the lower leaf surface of *Bridelia* in Sierra Leone.
*Bridelia micrantha:* Sierra Leone.

**Aecidium byrsonimatis** P. Henn. (xxx) **rust**

Causes hypertrophy of infected leaves and stems of *Byrsonima.* The rust pustules are large, white, and contain dusty, golden-brown spores. Distributed in Mexico, Guatemala, Nicaragua, Venezuela, Trinidad, and Brazil.

*Byrsonima* sp.: Brazil, Venezuela.
*B. crassifolia:* Guatemala, Venezuela.
*B. verbascifolia:* Trinidad.

**Aecidium cerrense** P. Henn. (xxx) **rust**

Forms cupulate brown rust pustules, containing dark, dusty spores, on leaves of *Protium.* Reported in Peru.

*Protium* sp.: Peru.

**Aecidium cinnamomi** Rac. (xxx) **rust**

Forms rust pustules containing orange spores on leaves and stems of *Cinnamomum.* Known only in Java.

*Cinnamomum iners:* Java.
*C. zeylanicum:* Java.

**Aecidium clerodendri** P. Henn. (xxx) **rust**

Forms yellow rust pustules on leaves of *Clerodendrum.* Distributed in Japan, India, Formosa, China, and Philippines.

*Clerodendrum* sp:. India.
*C. cyrtophyllum:* Formosa.
*C. fragrans:* Formosa.
*C. paniculatum:* China, Formosa, Japan.

**Aecidium cordiae** P. Henn. (xxx) **rust**

Forms cupulate rust pustules on leaves of *Cordia.* Distributed in the Dominican Republic, Trinidad, Venezuela, Brazil, and India.

*Cordia curassavica:* Brazil, Venezuela.
*C. cylindrostachya:* Trinidad.
*C. globosa:* Venezuela.
*C. urticaefolia:* Brazil.

**Aecidium coutareae** Kern & Thurston (xxx) **rust**

Forms rust pustules on leaves of *Coutarea* in Venezuela.

*Coutarea hexandra:* Venezuela.

**Aecidium crataevae** Syd. (xxx) **rust**

Forms rust pustules with yellow spores on large, rounded, sunken, yellow-brown leaf spots on *Crataeva.*

*Crataeva religiosa:* India, Pakistan.

**Aecidium elaeocarpi** Rac. (xxx) **rust**

Forms yellowish-brown rust pustules on leaves of *Elaeocarpus* in New Guinea.

*Elaeocarpus* sp.: New Guinea.

**Aecidium elaeocarpicola** Cumm. (xxx) **rust**

Forms rust pustules on leaves of *Elaeocarpus* in New Guinea.

*Elaeocarpus* sp.: New Guinea.

**Aecidium esculentum** Barcl. (xxx) **rust**

Forms rust pustules on swollen and distorted fruiting twigs of *Acacia eburnea* in India and Pakistan. It is very plentiful in some districts and is eaten by the natives.

*Acacia eburnea:* India, Pakistan.

**Aecidium farameae** Arth. (xxx) **rust**

Forms rust pustules on stems and leaves of *Faramea* in Cuba. Known only in the type locality.

*Faramea occidentalis:* Cuba.

**Aecidium fatsiae** Syd. (xxx) **rust**

Forms rust pustules on leaves of *Tetrapanax* in Formosa.

*Tetrapanax papyriferus:* Formosa.

**Aecidium flavidum** Berk. & Br. (xxx) **rust**

Forms rust pustules on leaves of *Pavetta.* Distributed in India, Philippines, and New Guinea.

*Pavetta indica:* New Guinea, Philippines.

**Aecidium fraxini-bungeanae** Diet. (xxx) **rust**

Forms rust pustules on the leaves of *Fraxinus* and *Chionanthus* in China.

*Fraxinus chinensis:* China.

*F. chinensis* var. *rhynchophylla:* China.

**Aecidium hamamelidis** Diet. (xxx) **rust**

Forms rust pustules on leaves of *Hamamelis* in Japan and of *Corylopsis* in China.

*Corylopsis platypetala:* China.

*C. veitchiana:* China.

*Hamamelis japonica:* Japan.

**Aecidium hansfordii** Cumm. (xxx) **rust**

Forms cupulate rust pustules on leaves of *Canthium* in Uganda.

*Canthium vulgaris:* Uganda.

**Aecidium huallagense** P. Henn. (xxx) **rust**

Forms rust pustules on leaves of *Guatteria* in Peru.

*Guatteria alutacea:* Peru.

**Aecidium immersum** P. Henn. (xxx) **rust**

Forms rust pustules on reddish galls on young twigs of *Acacia.* Known only in Eritrea.

*Acacia abyssinica:* Eritrea.

**Aecidium incomparabile** Syd. (xxx) **rust**

Causes galls with rust pustules on leaves of *Canthium.* Known in the Gold Coast and Congo.

*Canthium* sp.: Gold Coast.

*C. arnoldiana:* Congo.

**Aecidium jacarandae** P. Henn. (xxx) **rust**

Forms rust pustules on leaves of *Jacaranda* in Brazil.
*Jacaranda* sp.: Brazil.

**Aecidium lindavianum** Syd. (xxx) **rust**

Forms rust pustules on leaves of *Cordia* in Peru and Brazil.
*Cordia alba:* Brazil.
*C. nodosa:* Peru.

**Aecidium lipskianum** Jacz. (xxx) **rust**

Forms rust pustules on leaves and pods of *Cercis* in Russia.
*Cercis siliquastrum:* Russia (Turkistan).

**Aecidium machili** P. Henn. (xxx) **rust**

Causes rust on leaves of *Machilus* in China, Formosa, and Japan.
*Machilus* sp.: China, Formosa.
*M. bournei:* China.
*M. longipaniculata:* Formosa.
*M. thunbergii:* Japan.
*Phoebe formosana:* Formosa.

**Aecidium maprouneae** P. Henn. (xxx) **rust**

Forms rust pustules on irregular fuscous spots on leaves of *Maprounea* in Peru and Brazil.
*Maprounea* sp.: Peru.

**Aecidium meliosmae-myrianthae** P. Henn. & Shir. (xxx) **rust**

Forms cupulate rust pustules with brownish dusty spores on leaves of *Meliosma.* Distributed in Japan, China, and India.
*Meliosma myriantha:* China.
*M. oldhamii:* China.
*M. parviflora:* China.

**Aecidium meliosmae-pungentis** P. Henn. (xxx) **rust**

Rust of *Meliosma* deforming leaf blades and petioles in Japan and China.
*Meliosma cuneifolia:* China.

**Aecidium memecyli** Thirum. (xxx) **rust**

Causes systemic infection of young shoots of *Memecylon* resulting in formation of witches'-brooms with abundant powdery rust pustules on the infected stems. Known only in India.
*Memecylon umbellatum:* India.

**Aecidium mori** Barcl. (xxx) **rust**

Causes yellow rust on leaves of *Morus* and *Broussonetia* in the Philippines, Japan, Formosa, Java, India, Pakistan, and China.
*Broussonetia kazinoki:* China.
*Morus* sp.: Japan, India.
*M. alba:* China, India, Japan, Pakistan.
*M. australis:* China, Formosa, Japan.
*M. indica:* India, Pakistan.
*M. serrata:* India, Pakistan.

**Aecidium morobeanum** Cumm. (xxx) **rust**

Forms rust pustules on leaves of *Cordia* in New Guinea.
*Cordia dichotoma:* New Guinea.

**Aecidium mulleri** Thurston (xxx) **rust**

Forms rust pustules on leaves of *Nectandra* in Brazil.
*Nectandra amara:* Brazil.

**Aecidium nectandrae** Jacks. & Holw. (xxx) **rust**

Forms rust pustules on leaves of *Nectandra* in Brazil.
*Nectandra oppositifolia:* Brazil.

**Aecidium ochraceum** Speg. (xxx) **rust**

Causes indefinite, pale, ochraceous leaf spots on *Tabernaemontana* in Paraguay and Brazil.
*Tabernaemontana amygdalifolia:* Brazil.

**Aecidium oleariae** McAlp. (xxx) **rust**

Forms orange rust pustules crowded on stems and leaves of *Olearia* in Australia.
*Olearia axillaris:* Australia.

**Aecidium osmanthi** Syd. & Butl. (xxx) **rust**

Causes rust on leaves of *Osmanthus* in China and India.
*Osmanthus fragrans:* China.

**Aecidium patulum** Syd. (xxx) **rust**

Causes rust of leaves, petioles, and fruits of *Crataegus* in India.
*Crataegus intricata:* India.

**Aecidium pisoniae** Arth. & J. R. Johnston (xxx) **rust**

Causes leaf rust of *Pisonia* in Cuba.
*Pisonia aculeata:* Cuba.

**Aecidium plectroniae** Cke. (xxx) **rust**

Causes leaf rust on *Canthium* in Natal and Queensland.
*Canthium coprosmoides:* Australia (Queensland).

**Aecidium ponderosum** H. & P. Syd. (xxx) **rust**

Forms rust pustules on irregular, large, hard, woody tumors several centimeters long on branches of closely related broad-leaved trees of India.
*Cryptolepis buchananii:* India.

**Aecidium puttemansianum** P. Henn. (xxx) **rust**

Forms rust pustules on stems and petioles of *Jacaranda;* spores dark yellow. Known only in Brazil.
*Jacaranda* sp.: Brazil.

**Aecidium randiae** P. Henn. (xxx) **rust**

Forms yellow rust pustules on dull brown, swollen leaf spots in Brazil.
*Randia* sp.: Brazil.

**Aecidium rickii** Syd. (xxx) **rust**

Forms rust pustules on leaves of *Zanthoxylum* in Brazil.
*Zanthoxylum* sp.: Brazil.

**Aecidium sageretiae** P. Henn. (xxx) **rust**

Forms rust pustules on leaves of *Sageretia* in China.
*Sageretia pycnophylla:* China.

**Aecidium schweinfurthii** P. Henn. (xxx) **rust**

Forms large woody galls on branches and fruits of *Acacia* in Abyssinia.
*Acacia seyal:* Abyssinia.

**Aecidium simplicius** Arth. & J. R. Johnston (xxx) **rust**

Forms rust pustules on leaves of *Tabebuia* in Cuba.
*Tabebuia rosea:* Cuba.

**Aecidium spissum** H. & P. Syd. (xxx) **rust**

Forms rust pustules on leaves of *Zanthoxylum* in India.
*Zanthoxylum* sp.: India.

**Aecidium stranvaesiae** Syd. (xxx) **rust**

Forms rust pustules on leaves of *Stranvaesia* in India.
*Stranvaesia nussia:* India.

**Aecidium terminaliae** T. S. & K. Ramak. (xxx) **rust**

Forms rust sori on *Terminalia* leaves in India.
*Terminalia bellerica:* India.

**Aecidium vinnulum** Jacks. & Holw. (xxx) **rust**

Forms rust sori on leaves of *Byrsonima* in Brazil.
*Byrsonima intermedia:* Brazil.

**Aecidium xanthoxylinum** Speg. (xxx) **rust**

Forms rust sori on leaves of Rutaceae in South America. Distributed in Brazil and Venezuela.
*Zanthoxylum* sp.: Brazil, Venezuela.
*Z. rhoifolia:* Venezuela.

**Aecidium zanthoxyli-schinifolii** Diet. (xxx) **rust**

Forms rust pustules on leaves and petioles of *Zanthoxylum* in China and Japan.
*Zanthoxylum alatum:* China.
*Z. piperitum:* Japan.
*Z. simulans:* China.

**Aldona stella-nigra** Rac. (xx) **leaf spot**

Causes leaf spot of *Pterocarpus* in the Philippines, Sumatra, and Java. Spots rounded, yellowish brown, 0.5 to 4 cm. across.
*Pterocarpus indicus:* Philippines.

**Aleurodiscus amorphus** (Fr.) Rab. (x) **conifer pink disc canker**

Usually is saprophytic on dead suppressed lower branches of fir trees, but occasionally causes cankers on living branches and crowded small trees. Such occurrence appears to be more common at higher elevations or far north toward northern tree limit. It appears as small fingernail-sized, flat, red discs on dead branches and surfaces of cankers. Common as a saprophyte. Distributed generally in North America where true firs grow. Occurs on other conifers also. Known in northern and mountainous Europe. Reported in Siberia.

*Abies alba:* Germany.

**Alternaria tenuis** Nees (x) **blight**

Causes leaf spot and blight of numerous hardwoods and of young pine cones in North America, Mauritius, India, China, Tripoli, Tanganyika, Europe, and Argentina. Forms small, brown fungus wefts on the leaf spots.

*Cupressus* sp.: Tripoli.
*C. duclouxiana:* Argentina.
*Pinus pinea:* Argentina, Italy.

**Alveolaria cordiae** Lagerh. (xxx) **rust**

Causes rust of leaves of *Cordia* in Central America and northern South America.

*Cordia cylindrostachya:* Bolivia.
*C. ferruginea:* Colombia, Costa Rica.
*C. laxiflora:* Colombia.
*C. riparia:* Guatemala.
*C. tarmensis:* Peru.

**Amazonia peregrina** Syd. (x) **powdery mildew**

Forms surface mildew crusts on leaves of *Maesa* in the Philippines.

*Maesa denticulata:* Philippines.
*M. elmeri:* Philippines.
*M. laxa:* Philippines.

**Amphichaeta grevilleae** Loos (xx) **leaf blotch**

Causes leaf spots of *Grevillea* seedlings varying in size to blotches almost covering the entire leaf. Plants were entirely defoliated. A new disease known only in India and Ceylon.

*Grevillea robusta:* India, Ceylon.

**Angatia eugeniae** Syd. (x) **black scab**

Forms black stromata on leaves of *Eugenia* in the Philippines.

*Eugenia perpallida:* Philippines.

**Angiopsora hansfordii** (Cumm.) Thirum. & Kern (xxx) **rust**

Forms rust pustules on leaves of *Alchornea* in Uganda.

*Alchornea cordifolia:* Uganda.

**Angiopsora melaena** (Syd.) Thirum. & Kern (xxx) **rust**

Forms rust crusts on leaves of *Randia* in Venezuela.

*Randia armata:* Venezuela.

**Angiopsora venezuelana** (Syd.) Thirum. & Kern (xxx) **rust**

Forms fungus crusts on leaves of *Sickingia* in Venezuela.
*Sickingia erythroxylon:* Venezuela.

**Anthomycetella canarii** Syd. (xxx) **rust**

Forms rust pustules on leaves of *Canarium* in the Philippines.
*Canarium villosum:* Philippines.

**Aposphaeria pulviscula** Sacc. (xx) **willow blight**

Causes bark cankers resulting in dying of *Salix* twig tips. Inoculations in wounds succeeded. Distributed in Norway, Netherlands, France, and Italy.
*Salix alba* var. *vitellina:* Netherlands.

**Aristadiplodia pini** Shirai (xx) **damping-off**

Said to cause damping-off of pine seedlings; also roughens bark of branches and forms pustules which break through the dead bark. Known only in Japan.
*Pinus densiflora:* Japan.

**Armillaria mellea** (Fr.) Quel. (xx) **shoestring root rot**

The "honey mushroom" causes this disease of conifers and some broad-leaved species. The fungus lives saprophytically in the soil of forest stands so generally that one is apt to overestimate the damage it causes and overlook investigation of the primary factors weakening the trees and inducing attacks by the fungus. Thick, white, mycelial felty sheets form between bark layers and also between the dead bark and underlying wood. Black, smooth "shoestrings" between the bark and wood are definite indicators of this fungus. Foliage of diseased trees may be thin and paler than normal. Conifers often have exuded pitch at the soil surface, sometimes caked with dirt; and the plaques are straight with parallel hyphae.

Distribution is practically worldwide. Shipment of tree seedlings or infected lumber to other regions should be carefully regulated to prevent carriage of new strains of the fungus to new regions with possible disastrous results.

*Abies alba:* Czechoslovakia, Denmark, Germany, (Bavaria, Saxony), Great Britain, Italy, Norway, Russia, Yugoslavia.
*A. pindrow:* India.
*A. pinsapo:* Spain.
*A. sibirica:* Siberia.
*Acacia decurrens:* East Indies, Tanganyika.
*A. decurrens* var. *dealbata:* Tanganyika.
*A. decurrens* var. *mollis:* Nyasaland.
*A. melanoxylon:* Kenya.
*A. podalyriaefolia:* Tanganyika.
*A. pycnantha:* South Australia.
*Acer* sp.: Russia.
*A. platanoides:* Germany.
*A. pseudoplatanus:* Denmark, Ireland.
*Acrocarpus fraxinifolius:* Tanganyika.
*Aesculus hippocastanum:* Netherlands.
*A. pavia:* Denmark.

*Albizia gummifera:* Tanganyika.
*A. moluccana:* Tanganyika.
*Alchornea cordifolia:* Gold Coast.
*Aleurites fordii:* Nyasaland.
*A. montana:* Nyasaland.
*Alnus* sp.: Great Britain, Norway.
*A. glutinosa:* Denmark.
*A. incana:* Denmark.
*Araucaria angustifolia:* Nyasaland, Union of South Africa.
*A. araucana:* Great Britain.
*A. cunninghamii:* Kenya.
*Bauhinia* sp.: Tanganyika, Uganda.
*Betula* sp.: Estonia, France, Norway.
*B. pubescens:* Denmark, Norway.
*Blighia sapida*: Gold Coast.
*Bougainvillea spectabilis:* Tanganyika.
*Callitris* sp.: Nyasaland.
*Calodendrum* sp.: Tanganyika.
*Carpinus betulus:* Denmark.
*Castanea* sp.: Japan.
*C. sativa:* France, Great Britain.
*Casuarina equisetifolia:* Mauritius.
*Cedrela odorata:* Tanganyika, Union of South Africa.
*Cedrus deodara:* Germany, Great Britain, India, Scotland.
*Ceiba pentandra:* Africa (Gold Coast).
*Chamaecyparis obtusa:* Germany.
*Chlorophora excelsa:* Gold Coast, Tanganyika.
*Cinchona officinalis:* Gold Coast, Java, Peru.
*C. pubescens:* Java.
*Cocos nucifera:* Gold Coast.
*Coffea arabica:* Congo, Kenya, Tanganyika, Peru, Uganda.
*C. canephora* var. *robusta:* Congo, West Africa.
*Cola acuminata:* Gold Coast.
*Combretum* sp.: Gold Coast.
*Crataegus oxyacantha:* Denmark.
*Cryptomeria japonica:* Germany, Great Britain.
*Cupressus lusitanica:* Tanganyika.
*C. macrocarpa:* Kenya.
*Delonix regia:* Nyasaland, Union of South Africa.
*Elaeis guineensis:* Congo, Gold Coast.
*Erythrina* sp.: Uganda.
*E. lithosperma:* Tanganyika.
*Erythroxylon coca:* Peru.
*Eucalyptus* sp.: New South Wales.
*E. citriodora:* Tanganyika.
*E. globulus*: Tanganyika.
*E. paniculata:* Union of South Africa.
*Eugenia gerrardii:* Union of South Africa.
*Fagus orientalis:* Russia (Caucasus).
*F. sylvatica:* Belgium, Denmark, Great Britain, Norway, Scotland.
*Ficus* sp.: Uganda.
*F. asperifolia:* Gold Coast.
*F. carica:* France, North Africa.

*Fraxinus* sp.: Belgium, Czechoslovakia, Hungary, Scotland.
*F. excelsior:* Denmark, Great Britain, Ireland.
*Funtumia africana:* Gold Coast.
*Grevillea robusta:* Kenya, Tanganyika, Union of South Africa.
*Hevea* sp.: Congo, Uganda.
*H. brasiliensis:* Belgian Congo, French Equatorial Africa, Uganda.
*Hydnacarpus* sp.: Uganda.
*Jacaranda* sp.: Tanganyika.
*Juglans* sp.: Czechoslovakia.
*J. regia:* France, Italy.
*Juniperus* sp.: Germany.
*J. communis:* Denmark.
*J. procera:* Union of South Africa.
*J. silicicola:* Mauritius.
*Khaya* sp.: Gold Coast.
*Laburnum* sp.: Great Britain.
*L. anagyroides:* Denmark.
*Larix* sp.: France.
*L. decidua:* Denmark, Germany, Great Britain, Norway.
*L. leptolepis:* Belgium, Germany, Great Britain, Russia.
*L. sibirica:* Sweden.
*Mangifera indica:* Gold Coast, Nyasaland.
*Melia dubia:* Union of South Africa.
*Morus* sp.: France, Japan.
*Nothofagus menziesii:* New Zealand.
*Parinarium mobola:* Union of South Africa.
*Paulownia tomentosa:* Denmark.
*Persea americana:* Gold Coast.
*Picea abies:* Austria, Belgium, Denmark, Finland (southern), France, Germany, Great Britain, Norway, Sweden, Russia.
*P. glauca:* Denmark.
*P. mariana:* Denmark.
*P. omorika:* Belgium.
*P. smithiana:* India.
*Pinus caribaea:* Mauritius, Nyasaland, Union of South Africa.
*P. cembra:* Germany.
*P. densiflora:* Japan.
*P. griffithii:* Germany, India.
*P. halepensis:* Scotland.
*P. khasya:* Nyasaland.
*P. mugo:* Denmark, Germany.
*P. mugo* var. *rostrata:* Norway.
*P. muricata:* New Zealand.
*P. nigra:* Denmark, France, Germany, New Zealand.
*P. nigra* var. *poiretiana:* Belgium, Denmark, Great Britain.
*P. patula:* Nyasaland, Union of South Africa.
*P. pinaster:* Denmark, France, Germany.
*P. radiata:* Kenya.
*P. roxburghii:* Nyasaland, Union of South Africa.
*P. sylvestris:* Belgium, Czechoslovakia, Denmark, England, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Poland, Russia (Kiev, Chernigov), Scotland, Sweden, Switzerland.

*P. tabulaeformis:* Mauritius.
*Pittosporum* sp.: Gold Coast.
*Populus* sp.: Great Britain, Netherlands.
*P.* ×*canadensis:* Denmark, Netherlands.
*P.* ×*canadensis* f. *gelrica:* Netherlands.
*P.* ×*canadensis* var. *serotina:* Netherlands.
*P.* ×*canescens:* Denmark.
*P. deltoides:* Italy.
*P. tremula:* Denmark, Norway, Russia, Yugoslavia.
*Quercus* sp.: Czechoslovakia, France, Germany, Great Britain, Hungary, Japan, Netherlands, Yugoslavia.
*Q. mongolica:* Siberia (Amur region).
*Q. petraea:* France, Germany, Great Britain, Italy, Yugoslavia.
*Q. robur:* France, Denmark, Germany, Great Britain, Italy, Yugoslavia.
*Q. suber:* France, Morocco.
*Robinia pseudoacacia:* Denmark, France.
*Salix* sp.: Scotland.
*S. alba:* Denmark.
*S. alba* var. *calva:* Great Britain.
*S. babylonica:* Australia (New South Wales), Tanganyika.
*S. caprea:* Denmark.
*Sorbus aucuparia:* Denmark.
*Spathodea campanulata:* Gold Coast.
*Syncarpia glomerulifera:* Union of South Africa.
*Tectona grandis:* East Indies.
*Terminalia* sp.: Gold Coast.
*T. arjuna:* Mauritius.
*Theobroma cacao:* Congo, Gold Coast, Mexico, Uganda, West Africa.
*Thuja koraiensis:* England.
*Toona ciliata:* Nyasaland, Tanganyika, Union of South Africa.
*Ulmus* sp.: Czechoslovakia, Great Britain, Hungary, Ireland.
*Widdringtonia whytei:* Kenya, Nyasaland, Tanganyika.

**Armillaria mucida** (Fr.) Quel. (xx) **trunk rot**

A white, central-stemmed, glabrous agaric, which most often grows on beech trees with large open wounds. Apparently trunk rot is truly parasitic in some instances. Distributed in Europe and Australia. Rare in North America.

*Fagus sylvatica:* Belgium, Denmark, Germany, Great Britain.

**Ascochyta aesculi** Kab. & Bub. (x) **leaf spot**

Causes leaf spots on *Aesculus*, irregular, large, yellow, later turning brown often with yellow margins. Causes defoliation. Known only in Bohemia.

*Aesculus hippocastanum:* Czechoslovakia (Bohemia, Turnau).

**Ascochyta ailanthi** Boud. & Fautr. (x) **leaf spot**

Causes ashen spots on leaves of *Ailanthus* in France.

*Ailanthus altissima:* France (Côte-d'Or).

**Ascochyta grandimaculans** Kab. & Bub. (x) **leaf spot**

Forms pustules bursting the epidermis on large, dark yellow, irregular leaf spots with reddish-purple margins on *Aesculus* in Bohemia.

*Aesculus hippocastanum:* Czechoslovakia (Bohemia, Turnau).

**Ascochyta heveae** Petch (xxx) **leaf spot**

Forms erumpent pustules and causes marginal white or brownish white leaf spots with narrow red-brown margins on *Hevea.* Distributed in India, Ceylon, French Equatorial Africa, Congo, and Gold Coast.

*Hevea brasiliensis:* Ceylon, Congo, French Equatorial Africa, Gold Coast, India.

**Ascochyta heveana** Saccas (xxx) **leaf spot**

Causes leaf spots on *Hevea* with concentric brownish zones, corresponding to the distribution of the fungus pustules. Known in French Equatorial Africa.

*Hevea brasiliensis:* French Equatorial Africa.

**Ascochyta infortunata** Ramak. (x) **leaf spot**

On leaves of *Clerodendrum* in India.

*Clerodendrum infortunatum:* India.

**Ascochyta juglandis** Boltsh. (xxx) **leaf spot**

Forms erumpent pustules on grey-brown leaf spots, the centers of which fall out. Distributed generally in Europe on *Juglans regia* and in North America on *J. regia* and *J. cinerea.*

*Juglans regia:* Bulgaria, Great Britain, Italy.

**Ascochyta mabiana** Sacc. (x) **leaf spot**

Forms erumpent pustules on dull brown spots with darker margins on *Maba* in Eritrea.

*Maba abyssinica:* Eritrea.

**Ascochyta mangiferae** Batista (xxx) **leaf spot**

Associated with minute spots on the basal part of mango leaves. The spots merge later into large discolored areas and cause defoliation. Known in Brazil.

*Mangifera indica:* Brazil.

**Ascochyta metulispora** Berk. & Br. (x) **leaf spot**

Forms erumpent pustules on round brown leaf spots on *Fraxinus* in Scotland.

*Fraxinus excelsior:* Great Britain, Scotland.

**Ascochyta morifolia** Saw. (x) **leaf spot**

Forms conidial pustules on leaf spots on *Morus* in Formosa.

*Morus alba:* Formosa.

**Ascochyta myrticola** Maire & Sacc. (x) **leaf spot**

Forms erumpent pustules on reddish leaf spots with dark purple margins on *Myrtus* in Corsica and Italy.

*Myrtus communis:* Corsica, Italy.

**Ascochyta pallida** Kab. & Bub. (x) **leaf spot**

On brown spots on leaves of *Acer* in Bohemia.

*Acer platanoides:* Czechoslovakia (Bohemia, Turnau).

**Ascochyta paulowniae** Sacc. & Brun. (xxx) **leaf spot**

Forms erumpent pustules and causes a leaf spot of *Paulownia* in France and Czechoslovakia. Also reported in North America in Wisconsin and District of Columbia.

*Paulownia tomentosa:* Czechoslovakia.

**Ascochyta phellodendri** Kab. & Bub. (xxx) **leaf spot**

Forms erumpent pustules on leaf spots; brown, often obscurely zoned and confluent, covering the entire leaf. Known in Bohemia.

*Phellodendron amurense:* Czechoslovakia (Bohemia, Turnau).

**Ascochyta piniperda** Lindau (xxx) **conifer leaf spot**

Forms erumpent pustules and causes damping-off of spruce and other coniferous seedlings. Also infects leaves and twigs of conifers. Reported in Maine and North Carolina and is widely distributed in Europe.

*Larix decidua:* Czechoslovakia.
*Picea* sp.: Belgium, Germany.
*P. abies:* Belgium, Czechoslovakia, Germany, Norway, Poland, Scotland, Sweden.
*P. sitchensis:* Poland, Scotland.
*Pseudotsuga menziesii:* Germany.

**Ascochyta populorum** (Sacc. & Roum.) Vogl. (x) **leaf spot**

On leaf spots of *Populus* in Italy.

*Populus* × *canadensis:* Italy.

**Ascochyta prosopidicola** Speg. (x) **leaf spot**

Associated with large leaf spots on *Prosopis* in Argentina.

*Prosopis* sp.: Argentina (Jujuy).

**Ascochyta quercus** Sacc. & Speg. (x) **leaf spot**

Erumpent pustules form on leaf spots on *Qercus* in Italy.

*Quercus ilex:* Italy.

**Ascochyta tiliae** Kab. & Bub. (x) **leaf spot**

Forms erumpent pustules on yellow-gray to ashen leaf spots with purple-brown margins on *Tilia* in Czechoslovakia, Germany, and British Isles.

*Tilia dasystyla:* Czechoslovakia (Bohemia, Turnau).
*T. platyphyllos:* Great Britain.

**Ascochyta translucens** Kab. & Bub. (x) **willow leaf spot**

Forms erumpent pustules on confluent, broad, gray spots on leaves of *Salix* in Bohemia.
*Salix caprea:* Czechoslovakia (Bohemia, Turnau).

**Ascochyta tremulae** Thuem. (x) **leaf spot**

Forms erumpent pustules on small grayish leaf spots with dull brown margins on *Populus* in Austria.
*Populus tremula:* Austria.

**Asterina alchorneae** Syd. (xxx) **black mildew**

Forms black mildew on leaves of *Alchornea* in Africa. Known in the Gold Coast.
*Alchornea cordifolia:* Gold Coast.

**Asterina antioquensis** Toro (xxx) **black mildew**

Forms black mildew on leaves of *Miconia* in South America. Distributed in Colombia.
*Miconia ciliata:* Colombia.
*M. milleflora:* Colombia.

**Asterina assimilis** Syd. (xxx) **black mildew**

Forms black mildew on leaves of *Eugenia* in Amboina.
*Eugenia caryophyllata:* Moluccas (Amboina).

**Asterina balii** Syd. (xxx) **black mildew**

Forms black mildew on leaves of *Alangium* in India.
*Alangium salviifolium:* India.

**Asterina breyniaecola** Trott. (xxx) **black mildew**

Forms black mildew spots on the upper side of leaves of *Breynia* in the Philippines.
*Breynia acuminata:* Philippines.

**Asterina carbonacea** Cke. (xxx) **black mildew**

Forms black mildew spots on leaves of broad-leaved trees in warm regions. Distributed in India and Puerto Rico.
*Anacardium* sp.: Puerto Rico.
*Miconia prasina:* Puerto Rico.

**Asterina chrysophylli** P. Henn. (xxx) **black mildew**

Forms black mildew on leaves of broad-leaved species in tropical regions. Known in Brazil and Puerto Rico.
*Chrysophyllum oliviforme:* Puerto Rico.
*Miconia prasina:* Puerto Rico.

**Asterina colliculosa** Speg. (xxx) **black mildew**

Forms black fungus areas on leaves of *Eugenia.* Known in Brazil and the Philippines.
*Eugenia cumini:* Philippines.

**Asterina colubrinae** Ell. & Kelsey (xxx) **black mildew**

Forms black mildew on leaves of *Colubrina* in St. Croix Island, Virgin Islands.
*Colubrina reclinata:* Virgin Islands (St. Croix).

**Asterina congesta** Cke. (xxx) **black mildew**

Forms black mildew on leaves on *Santalum* in India.
*Santalum album:* India.

**Asterina crebra** Syd. (xxx) **black mildew**

Forms small, black mildew spots, which grow larger until nearly the entire leaf surface is covered. On *Opilia* in India.
*Opilia amentacea:* India.

**Asterina densa** Syd. (xxx) **black mildew**

Forms dense mycelial brown mats on leaves of *Pittosporum* in the Philippines.
*Pittosporum pentandrum:* Philippines.

**Asterina diaphorella** Syd. (xxx) **black mildew**

Forms black mildew on leaves of *Sideroxylon.* Distributed in the Philippines and Moluccas.
*Sideroxylon* sp.: Moluccas (Amboina).
*S. ferrugineum:* Philippines.

**Asterina dilabens** Syd. (xxx) **black mildew**

Forms black mildew on leaves of broad-leaved trees in Puerto Rico.
*Rhytidophyllum auriculatum:* Puerto Rico.
*Tetrazygia elaeagnoides:* Puerto Rico.

**Asterina diplocarpa** Cke. (xxx) **black mildew**

Forms black mildew on leaves of several broad-leaved trees. Distributed in the West Indies, Venezuela, and Peru.
*Clusia gundlachii:* Puerto Rico.

**Asterina elaeocarpi** Syd. (xxx) **black mildew**

Forms black mildew on leaves of *Elaeocarpus* in the Philippines.
*Elaeocarpus argenteus:* Philippines.
*E. pendulus:* Philippines.

**Asterina escharoides** Syd. (xxx) **black mildew**

Forms black mildew on leaves of broad-leaved trees in the Philippines.
*Heterostemma angustilobum:* Philippines.
*Pittosporum clementis:* Philippines.
*P. ramiflorum:* Philippines.

**Asterina fawcettii** Ryan (xxx) **black mildew**

Forms black mildew on leaves of *Eugenia* on Mona Island, Puerto Rico.
*Eugenia myrtoides:* Puerto Rico (Mona Island).

586625—61——3

**Asterina inaequalis** Mont. (xxx) **black mildew**

Forms black fungus pustules on leaves of broad-leaved trees in French Guiana and Puerto Rico.

*Hirtella triandra:* Puerto Rico.

**Asterina indica** Syd. (xxx) **black mildew**

Forms dark fungus pustules on leaves of *Symplocos* in India.

*Symplocos* sp.: India (Darjeeling).

**Asterina lawsoniae** P. Henn. & Nyman (xxx) **black mildew**

Forms black fungus crusts on leaves of *Lawsonia.* Distributed in India, Gold Coast, and Philippines.

*Lawsonia inermis:* India, Gold Coast, Philippines.

**Asterina laxiuscula** Syd. (xxx) **black mildew**

Forms fungus pustules on leaves of *Sideroxylon* in the Philippines.

*Sideroxylon angustifolium:* Philippines.

*S. apoensis:* Philippines.

*S. ferrugineum:* Philippines.

**Asterina lobata** Syd. (xxx) **black mildew**

Forms brown fungus pustules on black spots on leaves of *Picrasma* and *Eugenia.* Known in the Philippines.

*Eugenia* sp.: Philippines

*Picrasma philippinensis:* Philippines.

**Asterina lophopetali** Rehm (xxx) **black mildew**

Forms black discoidal spots on the leaves of *Lophopetalum.* Reported from the Philippines.

*Lophopetalum toxicum:* Philippines.

**Asterina mandaquiensis** P. Henn. (xxx) **black mildew**

Forms black discoidal crusts on the upper leaf surface of *Eugenia* in Venezuela and Brazil.

*Eugenia* sp.: Venezuela.

**Asterina mate** Speg. (xxx) **black mildew**

Forms thin fungus discs on leaves of *Ilex* in Argentina.

*Ilex paraguariensis:* Argentina.

**Asterina melastomatis** (Lév.) Mont. (xxx) **black mildew**

Forms black mildew on leaves in Colombia and Dominican Republic.

*Heterotrichum umbellatum:* Dominican Republic.

*Miconia* sp.: Colombia.

**Asterina miconiae** Th. (xxx) **black mildew**

Forms black mildew pustules on leaves of *Miconia.* Known in Brazil and Colombia.

*Miconia* sp.: Brazil.

**Asterina mysorensis** Hansf. & Thirum. (xxx) **black mildew**

Forms black mildew fungus pustules on *Ficus* leaves. Known only in India.

*Ficus* sp.: India.

**Asterina nothopegiae** Ryan (xxx) **black mildew**

Forms black mildew fungus pustules on leaves in India.
*Nothopegia colebrookiana:* India.

**Asterina pasaniae** Henn. (xxx) **black mildew**

Forms black fungus crusts on leaves of *Castanopsis*. Known in Japan.
*Castanopsis cuspidata:* Japan.

**Asterina pleuriporus** Ryan (xxx) **black mildew**

Forms black mildew fungus pustules on leaves of *Shorea* in India.
*Shorea talura:* India.

**Asterina porriginosa** Syd. (xxx) **black mildew**

Forms black fungus mats on the upper side of leaves of *Ilex* in the Philippines.
*Ilex cymosa:* Philippines.

**Asterina prosopidis** (Ell. & Ev.) Farlow (xxx) **black mildew**

Forms black mildew fungus pustules on leaves of *Prosopis* in Mexico.
*Prosopis juliflora:* Mexico.

**Asterina pycnanthi** Hansf. (xxx) **black mildew**

Forms thin, smooth, black fungus patches on leaves of *Pycnanthus* in Uganda.
*Pycnanthus kombo:* Uganda.

**Asterina spathulata** (Ryan) Seaver & Toro (xxx) **black mildew**

Forms dark fungus pustules on leaves of *Miconia* in Puerto Rico.
*Miconia racemosa:* Puerto Rico.
*M. thomasiana:* Puerto Rico.

**Asterina tenuissima** (Petch) Th. (xxx) **black mildew**

Forms fungus pustules on green shoots and fruits of *Hevea*. Known in Ceylon, India, and Malaya.
*Hevea brasiliensis:* Ceylon, India, Malaya.

**Asterina uribei** Toro (xxx) **black mildew**

Forms fungus pustules on dark colored leaf spots of *Miconia*. Known in Colombia and Venezuela.
*Miconia ciliata:* Venezuela.
*M. toroi:* Colombia.

**Asterina vagans** Speg. (xxx) **black mildew**

Forms fungus pustules on leaves. Known in Brazil, Colombia, and Puerto Rico.
*Cordia ferruginea:* Colombia.

**Asterinella cylindrotheca** Th. (xxx) **black mildew**

Forms black fungus pustules on leaves of *Eugenia*. Known in Brazil and Puerto Rico.
*Eugenia* sp.: Puerto Rico.

**Asterinella dipterocarpi** Syd. (xxx) **black mildew**

Forms black fungus pustules on leaves of *Dipterocarpus* in the Philippines.

*Dipterocarpus vernicifluus:* Philippines.

**Asterinella dysoxyli** Syd. (xxx) **black mildew**

Forms black mildew on leaves of *Dysoxylum* in the Philippines.

*Dysoxylum cumingianum:* Philippines.

**Asterinella hiugensis** Hino & Hidaka (xxx) **black mildew**

Forms black mildew on bamboo stems in Japan.

*Phyllostachys bambusoides:* Japan.

**Asterinella luzonensis** Syd. (xxx) **black mildew**

Forms black mildew on leaves of *Shorea* in the Philippines.

*Shorea polysperma:* Philippines.

**Asterinella puiggarii** (Speg.) Th. (xxx) **black mildew**

Forms black mildew on leaves of *Eugenia* in Chile.

*Eugenia apiculata:* Chile.

**Asterodothis solaris** (Kalchb. & Cke.) Th. (xxx) **sooty mold**

Forms a sooty fungus coating on seedling leaves of *Olea* in South Africa.

*Olea laurifolia:* Union of South Africa.

**Asteroma aceris** Rob. & Desm. (xxx) **maple black spot**

Forms black spots with slender, flexuous, reddish-brown fibrils radiating in all directions on *Acer* leaves. Reported in England and France.

*Acer campestre:* Great Britain.

**Asteroma betulae** Rob. & Desm. (xxx) **birch black spot**

Forms black leaf spot on *Betula* leaves. Distributed in France, Belgium, Netherlands, Germany, and England.

*Betula* sp.: Great Britain.

**Asteroma salicis** Rob. & Desm. (xxx) **willow black spot**

Forms dark spots with radiating black fibrils immersed in *Salix* leaves. Distributed in England, Belgium, Denmark, Germany, Austria, and Italy.

*Salix fragilis:* Great Britain.

**Asteroma tiliae** Lib. (xxx) **black spot**

Forms black spots on linden leaves. Distributed in United States and in Russia.

*Tilia cordata:* Russia (Kazan).

**Asteroma ulmi** Klotzsch (xxx) **elm leaf spot**

Causes a brown leaf spot of *Ulmus* in Europe. Reported in Wisconsin, Great Britain, and Japan.

*Ulmus carpinifolia:* Japan.
*U. glabra:* Great Britain.
*U. procera:* Great Britain.

**Asterostomella dispar** Speg. (xxx) **black mildew**

Forms black mildew pustules on living leaves of *Styrax*. Reported in Brazil and Argentina.

*Styrax leprosa:* Argentina.

**Auerswaldia copelandi** Syd. (xxx) **tar spot**

Forms tar spots on leaves of *Caryota* in the Philippines.

*Caryota* sp.: Philippines (Mindanao).

**Auerswaldia dalbergiae** P. Henn. (xxx) **tar spot**

Causes tar spot on yellowish leaf spots of *Dalbergia* in Tanganyika.

*Dalbergia lactea:* Tanganyika (Kilimanjaro).

**Auricularia auricularis** (S. F. Gray) Martin (xx) **earlike jelly fungus**

In wet weather forms soft, brownish outgrowths on dead, dying, and injured woody-stemmed plants. They somewhat resemble human ears in shape and size. When dry they shrink and become tough and leathery. The fungus is a saprophyte but can enter wounds on living trees and become pathogenic. It occurs on numerous broad-leaved species and conifers and is known to be widely distributed in the Temperate Zones. Distributed in North America, West Indies, South America, Europe, Philippines, Siberia, India, Japan, Africa, Australia, Guam, and Formosa.

*Morus nigra:* Mauritius.

**Auricularia mesenterica** Fr. (xx) ———

Resembles *Auricularia auricularis* in general appearance and size. Normally a saprophyte, but under certain conditions may be a serious pathogen. The cork oak, when the corky bark is stripped off, is open to infection of the exposed tissues, and this fungus is one among a number of injurious fungi, of like habits, which cannot gain entry to uninjured trees. The fungus is distributed widely from Florida to Argentina, Europe, Indonesia, and Australia.

*Quercus suber:* Morocco.

**Auricularia polytricha** (Mont.) Sacc. (xx) ———

Similar to *Auricularia auricularis* in size and general appearance; also in becoming pathogenic to injured trees with wounds so large that they cannot heal completely in a short time. The fungus is known from New Mexico and Florida to Argentina, and in Africa, Asia, Australia, and the Pacific Islands.

*Parkia javanica:* Philippines.

**Bagcheea castanea** Müller & Menon (xxx) **chestnut leaf spot**

On gray, necrotic spots with brown margins on *Castanea*. It forms circular stromata about 500 microns across on the upper leaf surface. Known only in India.

*Castanea* sp.: India.

**Bagnisiopsis amadelpha** (Syd.) Petr. (xxx) **leaf spot**

Forms black fungus pustules on yellow to brown leaf spots on *Miconia*, *Clidemia*, and *Tibouchina*. Distributed in Costa Rica, Colombia, and Venezuela.

*Miconia caudata:* Colombia.
*M. furfuracea:* Costa Rica.
*M. granulosa:* Colombia.

**Bagnisiopsis leandrae** (Syd.) Miller & Burton (xxx) **leaf spot**

Forms black fungus pustules on the upper leaf surface of trees in Brazil.

*Leandra cordifolia:* Brazil.
*Miconia* sp.: Brazil.

**Bagnisiopsis miconicola** Orejuela (xxx) **tar spot**

Forms black fungus pustules, verrucose with setalike processes causing small, dark spots on leaves of *Miconia* in Colombia.

*Miconia squamulosa:* Colombia.

**Bagnisiopsis peribebuyensis** (Speg.) Th. & Syd. (xxx) **tar spot**

Forms black fungus stromata variable in form, smooth to scabrous, on living leaves of *Miconia* and other Melastomaceae. Distributed in Colombia, Brazil, Paraguay, Venezuela, Panama, Guatemala, Costa Rica, Dominican Republic, and Puerto Rico.

*Miconia ambigua:* Venezuela.
*M. argentea:* Costa Rica, Guatemala.
*M. beurlingii:* Costa Rica.
*M. candolleana:* Brazil.
*M. laevigata:* Puerto Rico.
*M. macrophylla:* Venezuela.
*M. prasina:* Dominican Republic, Puerto Rico, Venezuela.
*M. versicolor:* Colombia.
*Tetrazygia elaeagnoides:* Puerto Rico.

**Bagnisiopsis tijucensis** Th. & Syd. (xxx) **tar spot**

Forms black fungus pustules on leaves of *Blakea*, *Miconia*, and *Tibouchina*. Distributed in Dominican Republic, Colombia, Venezuela, and Brazil.

*Blakea* sp.: Venezuela.
*Miconia* sp.: Dominican Republic.
*M. flammea:* Brazil.
*M. lepidota:* Brazil.
*M. macrophylla:* Colombia.
*M. minutiflora:* Venezuela.
*M. ulmarioides:* Venezuela.

**Bagnisiopsis toledoi** Chardon (xxx) **tar spot**

Forms black spore pustules with prominent black setalike processes on *Heterotrichum* and *Miconia*. Distributed in Puerto Rico and Venezuela.

*Heterotrichum cymosum:* Puerto Rico.
*Miconia grandifolia:* Venezuela.
*M. laevigata:* Puerto Rico.
*M. macrophylla:* Venezuela.
*M. prasina:* Venezuela.

**Bondarzewia perniciosa** Singer (xx) **trunk rot**

Forms deep yellow pilei, concentrically depressed, tomentose, up to 16 cm. across, in compound, multipileate masses, up to 1 meter across. Texture tough, light yellow to white; on trunks of living trees of *Nothofagus*. Is termed very damaging to the most valuable timber resource of Patagonia.

*Nothofagus dombeyi:* Argentina.

**Botryoconis pallida** H. & P. Syd. (xxx) **powdery gall**

Forms whitish powdery galls on fruits of *Ocotea* in Brazil.

*Ocotea pulchella:* Brazil.

**Botryodiplodia penzigii** Petr. & Syd. (xx) **poplar canker**

Associated with stem cankers of *Populus* in Belgium, France, and Netherlands.

*Populus* sp.: Belgium, Netherlands.

**Botryosphaeria dothidea** (Fr.) Ces. & de N. (xx) **anthracnose**

Conidial pustules form on anthracnose lesions on cones of *Araucaria* in New Caledonia.

*Araucaria rulei:* New Caledonia.

**Botryosphaeria ribis** (Fr.) Gross. & Dug. (xxx) **canker**

Causes cankers on twigs and branches of many broad-leaved and coniferous trees resulting in dieback of distal parts. Causes slight damage. Distributed in the United States, Argentina, Hawaii, Portugal, Italy, South Africa, Senegal, Mauritius, and Nyasaland.

*Aleurites montana:* Nyasaland.
*Araucaria araucana:* Mauritius.
*A. cunninghamii:* Mauritius.
*Calophyllum tacamahaca:* Mauritius.
*Grevillea robusta:* Nyasaland.
*Leucadendron argenteum:* Union of South Africa.
*Salix caprea:* Argentina.

**Botryosphaeria ribis** var. **chromogena** Shear, Stevens & Wilcox (xxx) **dieback**

Similar to *Botryosphaeria ribis*, but distinctly more pathogenic and damaging. Distribution is general in the United States; reported from Cuba and Hawaii.

*Aleurites moluccana:* Hawaii.
*Eucalyptus* sp.: Hawaii.
*Leucaena glauca:* Hawaii.
*Mangifera indica:* Hawaii.
*Pipturus albidus:* Hawaii.
*Schinus molle:* Hawaii.

**Botryosphaeria tamaricis** (Cke.) Th. & Syd. (xx) **tamarisk dieback**

Causes dieback of branches of *Tamarix* trees and seedlings 2 years old. Proved a wound parasite. Distributed in South Carolina, Argentina, and India.

*Tamarix gallica:* Argentina, India.

**Botrytis cinerea** Fr. (xx) **graymold blight**

Causes blight and decay of young seedlings of conifers and broad-leaved trees, over practically the entire world where green plants grow. It is greatly favored by high air moisture. Commonly it exists as a saprophyte but occasionally becomes pathogenic and can inflict considerable damage. It forms a characteristic dense gray mold on blighted plant parts in moist situations. Abundant conidia are easily windborne for unknown distances. An older tree may be attacked wherever injuries furnish ready entry to inner tissues.

*Abies alba:* Czechoslovakia, Austria.
*Aesculus hippocastanum:* Germany.
*Chamaecyparis obtusa:* Japan.
*Coffea arabica:* Tanganyika.
*Cotoneaster frigida:* Great Britain.
*Cryptomeria japonica:* Japan.
*Eucalyptus alba:* Argentina.
*E. botryoides:* Argentina.
*E. camaldulensis:* Argentina.
*E. citriodora:* Argentina.
*E. globulus:* Kenya.
*E. tereticornis:* Argentina.
*Larix leptolepis:* Japan.
*Metasequoia glyptostroboides:* Sweden.
*Morus alba:* Russia (Tashkent.)
*Picea* sp.: Germany, Poland.
*P. abies:* Belgium. Denmark.
*Pinus densiflora:* Japan.
*P. sylvestris:* Czechoslovakia.
*Sophora flavescens:* China.

**Brunchorstia pini** Allesch. (x) **dieback**

Associated with dieback of pines. Attacks are induced by drought. Old stands are heavily attacked, and the disease spreads to younger stands. Known in Austria and Turkey.

*Pinus halepensis:* Turkey (Thrace).
*P. nigra:* Turkey.
*P. sylvestris:* Austria.

**Bubakia cingens** (Syd.) Mund. (xxx) **rust**

Forms rust pustules on leaves of *Bridelia* in India and Pakistan.

*Bridelia tomentosa:* India, Pakistan.

**Bubakia ehretiae** (Hirat.) S. Ito (xxx) **rust**

Forms rust pustules on leaves and fruits of *Ehretia* in China, India, and New Guinea.

*Ehretia* sp.: New Guinea.
*E. acuminata:* India.

**Bubakia erythroxylonis** Cumm. (xxx) **rust**

Forms rust pustules on leaves of *Erythroxylon*. Distributed in Bolivia, Brazil, Peru, and Venezuela in South America; also in the West Indies in Cuba, Puerto Rico, and Granada.

*Erythroxylon* sp.: Venezuela, Virgin Islands (St. Croix).
*E. areolatum:* Puerto Rico, Mona Island, St. Croix.

*E. brevipes:* Puerto Rico, Mona Island, St. Croix.
*E. coca:* Bolivia, Peru.
*E. havanense:* Cuba, Granada.
*E. ovalifolium:* Brazil.
*E. pelleterianum:* Brazil.

**Caeoma clerodendri** Rac. (xxx) **rust**

Forms yellow rust pustules on the lower leaf surface of *Clerodendrum* in Java.
*Clerodendrum fragrans:* Java.

**Caeoma deformans** (Berk. & Br.) Tub. (xxx) **rust**

Forms witches'-brooms on branches and young shoots of *Thuja* and *Thujopsis*. Each twig of the deformed shoots terminates in a hemispherical saucer-shaped caeoma disc discovered with epidermis. Later, the epidermis bursts and exposes dusty yellow fungus spores. Known in Japan only.
*Thuja standishii:* Japan.
*Thujopsis dolobrata:* Japan.

**Caeoma sanctae-crucis** Espinosa (xxx) **rust**

Forms rust pustules on leaves of *Araucaria* in Chile.
*Araucaria araucana:* Chile.

**Caliciopsis nigra** (Schrad. ex. Fr.) Fitzp. (xx) **juniper gall**

Associated with galls on branches of *Juniperus*, forming black fruiting bodies on stromata in crevices in the bark of the galls. Distributed in the United States, Europe, and East Africa.
*Juniperus communis:* Switzerland.
*J. phoenicea:* Yugoslavia.
*J. procera:* Kenya.
*J. sabina:* France.

**Caliciopsis pinea** Pk. (xxx) **pine canker**

Forms small, rounded, flat cushions beneath the surface of young bark of pines and occasionally other conifers. Slender, long-necked perithecia develop on the cushions mentioned above. Distributed in the United States and Germany.
*Abies* sp.: Germany.
*Pinus mugo* var. *pumilio:* Germany.

**Caliciopsis tiliae** Arn. (xx) **linden canker**

Forms fungus stromata in crevices in the bark of *Tilia* from which protrude clusters of short tubular beaks resembling black spines. Known only in France.
*Tilia cordata:* France.

**Calonectria pyrochroa** Desm. (xx) **twig blight**

Forms reddish-yellow, globular perithecia. Associated with twig blight of *Platanus*. Known in France and Germany.
*Platanus* sp.: France, Germany.
*P. occidentalis:* Germany.

**Calonectria rigidiuscula** (Berk. & Br.) Sacc. (xx) **dieback**

Forms globular bright-colored perithecia. A wound parasite of numerous broad-leaved trees of the tropics. Distributed in southern United States, Philippines, Madagascar, Ivory Coast, and West Africa.

*Bombax buonopozense:* West Africa.
*Ceiba pentandra:* West Africa.
*Celtis zenkeri:* West Africa.
*Cola acuminata:* West Africa.
*C. cordifolia:* West Africa.
*C. togoensis:* West Africa.
*Desplatzia lutea:* West Africa.
*Erythrina altissima:* West Africa.
*Hevea brasiliensis:* French Equatorial Africa.
*Khaya grandifoliola:* West Africa.
*Newbouldia laevis:* West Africa.
*Picralima nitida:* West Africa.
*Spathodea campanulata:* West Africa.
*Sterculia rhinopetala:* West Africa.
*S. tragacantha:* West Africa.
*Theobroma cacao:* Madagascar, West Africa, Ivory Coast.
*Triplochiton scleroxylon:* West Africa.

**Calostilbe striispora** (Ell. & Ev.) Seaver (xx) **bark rot**

Causes bark rot of numerous broad-leaved trees in American tropics. A wound parasite, sometimes inflicting heavy damage. Distributed in Nicaragua, West Indies, Trinidad, and Venezuela; also reported in Belgian Congo.

*Cecropia peltata:* Trinidad.
*Enterolobium cyclocarpum:* Venezuela.
*Erythrina glauca:* Trinidad, Venezuela.
*E. mitis:* Trinidad.
*E. poeppigiana:* Trinidad, Venezuela.
*E. velutina:* Trinidad.
*Hevea brasiliensis:* Trinidad.
*Theobroma cacao:* Jamaica, Trinidad, Venezuela.

**Camptomeris albizziae** (Petch) Mason (x) ———

Conidiophores emerging through stomata. Considered pathogenic to leaves of *Albizia* in Ceylon, Gold Coast, Sierra Leone, and Uganda.

*Albizia coriaria:* Uganda.
*A. ferruginea:* Gold Coast, Sierra Leone.
*A. grandibracteata:* Uganda.
*A. lebbek:* Ceylon.

**Camptomeris albizziicola** (Thirum. & Naras.) Bessey (x) **leaf spot**

Forms brownish fungus pustules on small reddish spots on living leaves of *Albizia* in India.

*Albizia lebbek:* India.

**Camptomeris calliandrae** Syd. (x) **leaf cast**

Conidia borne on large hypostromae emerging from stomata. Associated with falling of leaves of *Calliandra* in Costa Rica.
*Calliandra similis:* Costa Rica.

**Camptomeris leucaenae** (F. L. Stevens & Dalbey) Syd. (x)

Forms dark brown fungus pustules on leaves of *Leucaena.* Distributed in Puerto Rico, Dominican Republic, and Venezuela.
*Leucaena glauca:* Puerto Rico, Venezuela.

**Camptomeris martynii** Bessey (x)

Forms brownish fungus pustules on living leaves of *Acacia* in Jamaica.
*Acacia villosa:* Jamaica.

**Camptomeris verruculosa** (Syd.) Bessey (x) **leaf spot**

Forms pale yellow-brown fungus pustules on discolored spots on living leaves of *Acacia* in Union of South Africa.
*Acacia decurrens:* Union of South Africa.

**Capsotrichum cladosporioides** Sacc. (x) **leaf spot**

Associated with large, rounded leaf spots with dark-olive edges on *Trichilia* in Eritrea.
*Trichilia emetica:* Eritrea.

**Catacauma acaciae** Th. & Syd. (xxx) **tar spot**

Forms small, shiny, black spots on the upper leaf surface. Known in India.
*Acacia leucophloea:* India (Madras).

**Catacauma elaeocarpi** T. S. & K. Ramak. (xxx) **tar spot**

Forms tar spots on living leaves of *Elaeocarpus* in India.
*Elaeocarpus munroi:* India.
*E. oblongus:* India.

**Catacauma eugeniicola** Chardon (xxx) **tar spot**

Forms black crustlike fungus masses 3 to 5 mm. across on leaves of *Eugenia* in Venezuela.
*Eugenia* sp.: Venezuela.

**Catacauma hammari** (P. Henn.) Th. & Syd. (xxx) **tar spot**

Forms tar spots on leaves of *Machaerium* in Brazil.
*Machaerium* sp.: Brazil.

**Catacauma huberi** (P. Henn.) Th. & Syd. (xxx) **tar spot**

Forms black crusts on leaves of *Hevea*, defoliating seedlings. Distributed in Brazil, Peru, and Venezuela.
*Hevea benthamiana:* Venezuela.
*H. brasiliensis:* Brazil, Peru.

*H. confusa:* Brazil.
*H. discolor:* Brazil.
*H. guianensis:* Peru.
*H. lutea:* Peru.

**Catacauma ingae** Chardon (xxx) **tar spot**

Forms tar spots on the lower surface of leaves of *Inga* in Colombia.
*Inga edulis:* Colombia.

**Catacauma mucosum** (Speg.) Th. & Syd. (xxx) **tar spot**

Forms tar spots on leaves of *Arecastrum* in Brazil.
*Arecastrum romanzoffianum:* Brazil.

**Catacauma ocoteae** F. L. Stevens. (xxx) **tar spot**

Forms tar spots on leaves of *Ocotea* in Puerto Rico.
*Ocotea leucoxylon:* Puerto Rico.

**Catacauma rhopalinum** (Mont.) Th. & Syd. (xxx) **tar spot**

Forms black, shiny, raised rugose spots on the upper leaf surface of *Roupala.* Distributed in Colombia, Venezuela, Peru, French Guiana, and Brazil.
*Roupala montana:* Colombia.

**Catacauma robinsonii** Syd. (xxx) **tar spot**

Forms tar spot on leaves of *Ficus* in Amboina.
*Ficus* sp.: Moluccas (Amboina).

**Catacauma torrendiella** Batista (xxx) **tar spot**

Causes necrosis of leaves, rachides, peduncles, and fruits of *Cocos* in Brazil. The affected leaves are covered with wartlike crusts up to 1,300 microns across, originating as small, black, carbonaceous swellings that expand and coalesce while the surrounding area becomes yellowish. Many leaves die and hang on the stem. Known in Brazil.
*Cocos nucifera:* Brazil.

**Catacauma venezuelensis** (Syd) Chardon (xxx) **black spot**

Forms black stromata 2 mm. in diameter on the upper side of leaves of *Machaerium.* Distributed in Venezuela, Costa Rica, Trinidad, and Brazil.
*Machaerium acutifolium:* Brazil.
*M. humboldtianum:* Venezuela.
*M. moritzianum:* Venezuela.
*M. robiniaefolium:* Venezuela.

**Catacaumella miconiae** (P. Henn.) Th. & Syd. (xxx) **black spot**

Forms shiny black leaf spots on *Miconia.* Distributed in Brazil and Venezuela.
*Miconia* sp.: Brazil.
*M. rubiginosa:* Venezuela.

**Catenulopsora flacourtiae** Mund. & Thirum. (xxx) **Flacourtia rust**

Forms rust pustules on leaves of *Flacourtia* spp. in India.
*Flacourtia indica:* India.
*F. sepiaria:* India.

**Catenulopsora grewiae** Thirum. & Mund. (xxx) **rust**

Forms rust pustules on leaves of *Grewia* in India.
*Grewia betulaefolia:* India.

**Cenangium ferruginosum** Fr. (xx) **pine dieback**

Formerly confused with *Cenangium abietis* (Fr.) Rehm. Associated with dieback of pine twigs. The fungus follows insect injury by leaf mining at the base of needles, enabling spread into the bark of the twigs and dieback of the distal end. Distributed generally as a saprophyte in North America and Europe. Occasionally it becomes epidemic as a parasite and may do much damage, especially on exotics. It may attack firs and spruces, but chiefly attacks pines.
*Abies alba:* Germany, Switzerland.
*Picea glauca:* Switzerland.
*Pinus mugo:* Germany, Norway.
*P. mugo* var. *rostrata:* Norway.
*P. nigra:* Czechoslovakia, Germany, Norway.
*P. nigra:* var. *poiretiana:* Great Britain.
*P. sylvestris:* Germany, Great Britain, Norway, Poland, Sweden.
*P. thunbergii:* Japan.

**Cenangium kazachstanicum** Schwarzm. (x) **pine dieback**

Associated with severe dieback of *Pinus sylvestris;* in 1938 to 1942 it caused heavy mortality in Kazachstan, U.S.S.R.
*Pinus sylvestris:* Russia (Kazachstan).

**Centrospora acerina** (Hartig) Newhall (xxx) **maple seedling blight**

Causes death and blackening of spots on stems, cotyledons, and first leaves of young maple seedlings in Europe and North America. The fungus can live saprophytically on humus in the soil.
*Acer* sp.: Japan.
*A. opalus:* Europe.
*A. platanoides:* Czechoslovakia, Germany, Poland.
*A. pseudoplatanus:* France, Germany.

**Cephalosporium deformans** Crandall (xxx) **wilt**

Initial infection occurs on young leaves of *Lonchocarpus* before they reach full size. A tiny chlorotic spot between veins about 1 to 2 mm. across develops a lavender halo and becomes necrotic, and spore pustules form on the lower side of the leaf. If infection occurs on the midrib, the lesion rapidly elongates. When older leaves are infected the entire leaf does not die at once. Known in Peru.
*Lonchocarpus utilis:* Peru.

**Ceratocystis coerulescens** (Münch) Bakshi (xx) **sap stain**

Forms globular perithecia with long tubular necks. Causes blue stain of sapwood in living coniferous trees with wounds, such as "blazes" and tapped faces for gum extraction, which expose living wood for an indefinite length of time. It grows rapidly and fruits freely on the surface of infected wood. Distributed in temperate North America in freshly sawn lumber of coniferous and broad-leaved trees wherever high air moisture is common. Also in Europe from Scotland to Sweden and Russia, southward to Italy and Spain.

*Picea* sp.: Russia.
*P. abies:* Sweden.
*Pinus* sp.: Russia.
*P. sylvestris:* Sweden.

**Ceratocystis fimbriata** Ell. & Halst. (xx) **canker**

See *Ceratocystis coerulescens* for general characters of fruits. Causes severe necrosis of trunks and branches of numerous important broad-leaved trees in tropical and subtropical regions. Distributed in the United States, Mexico, Central America, West Indies, South America, Malaya, and Java.

*Cinchona officinalis:* Guatemala.
*C. pubescens:* Guatemala.
*Coffea arabica:* Colombia, Guatemala, Venezuela.
*C. arabica* var. *bourbon:* Guatemala.
*Hevea brasiliensis:* Brazil, Costa Rica, Java, Malaya, Mexico.
*Pimenta dioica:* Jamaica.
*Theobroma cacao:* Venezuela.

**Ceratocystis ips** (Rumb.) C. Moreau (xx) ———

Associated with bark beetles in dying of plantation trees of *Pinus.* Distributed in North America, Germany, Poland, Sweden, and Japan.

*Pinus densiflora:* Japan.
*P. sylvestris:* Poland.
*P. thunbergii:* Japan.

**Ceratocystis minor** (Hedgc.) Hunt (xx) **blue stain**

Associated with bark beetles in living pine trees and newly felled logs and lumber. Kills trees by cutting off the water supply to the crown of the tree. Widely distributed in the United States, Europe, and Japan.

*Pinus desiflora:* Japan.
*P. strobus:* Germany.
*P. sylvestris:* Scotland.
*P. thunbergii:* Japan.

**Ceratocystis paradoxa** (Dade) Moreau (xx) **blight, rot**

Causes blight of leaves and inflorescences, bleeding stem, and bud rot of palms; also blight of *Carica*, *Mangifera*, and *Theobroma.* Distributed widely in subtropical and tropical regions of North America, Europe, Asia, Africa, Philippines, Andamans, East Indies, West Indies, New Hebrides, and New Guinea.

*Areca cathecu:* Ceylon, India.
*Borassus flabellifer:* India.

*Cocos nucifera:* Andaman Islands, Ceylon, Fiji Islands, Gold Coast, Guadeloupe, India, Ivory Coast, Jamaica, Mauritius, New Guinea, New Hebrides, Philippines, Puerto Rico, St. Lucia (West Indies).
*Coffea abeokutae:* Ivory Coast.
*C. canephora:* Ivory Coast.
*C. liberica:* Ivory Coast.
*Elaeis guineensis:* Gold Coast, Congo, Ivory Coast, Sierra Leone.
*Mangifera indica:* India.
*Phoenix canariensis:* France, Italy.
*P. dactylifera:* India.
*Roystonea regia:* Mauritius.
*Theobroma cacao:* Gold Coast, Jamaica.

**Ceratocystis piceae** (Münch) Bakshi (xx) **blue stain**

Causes blue stain of living sapwood in many conifers and some hardwoods. Does not stain wood deeply. Distributed in the United States, Europe, and Japan.

*Abies* sp.: England, Finland, Germany, Japan, Norway, Poland, Russia, Spain, Sweden.
*Acer mono:* Japan.
*Betula pendula:* Japan.
*Chamaecyparis obtusa:* Japan.
*Larix leptolepis:* Scotland.
*Magnolia obovata:* Japan.
*Picea* sp.: England, Finland, Germany, Norway, Poland, Russia, Spain, Sweden.
*Picea abies:* Scotland.
*P. glehnii:* Japan.
*P. jezoensis:* Japan.
*Pinus densiflora:* Japan.
*P. parviflora:* Japan.
*P. sylvestris:* Sweden.
*P. thunbergii:* Japan.
*Quercus spicata:* Japan.
*Thuja occidentalis:* Japan.

**Ceratocystis pilifera** (Fr.) C. Moreau (xx) **blue stain**

Formerly known as *Ceratostomella pilifera* (Fr.) Winter. Perithecia with one whorl of ostiolar hyphae. A very widely spread blue-stain fungus in coniferous timber, especially pine, in North America. It is associated with bark beetles attacking overmature stands of living trees, and restricting the passage of water from the roots to the crown. Heavy damage may result locally. Distributed widely in North America, Europe, South Africa, and Australia.

*Pinus sylvestris:* Sweden.

**Ceratocystis tetropii** (Mathiesen) Hunt (xx) **wood stain**

Associated with bark beetles in half-dead spruce trees in Sweden. It does not cause dark discoloration in the wood around the insect tunnels.

*Picea abies:* Sweden.

**Ceratocystis ulmi** (Buis.) Moreau (xx) **elm wilt**

Formerly *Ceratostomella ulmi* Buis. Causes sudden wilting and yellowing of leaves on single branches or several scattered ones. Shedding of the leaves results in staghead and death of the entire tree in severe cases. Sapwood of infected branches shows brown discolorations in the last one or more annual rings. Other elm diseases have similar symptoms, and careful culturing of the fungus is necessary to distinguish them. Elm bark beetles feed on small twigs and carry spores with them. The injuries are entry points for infection by the fungus into the cambium and conducting vessels of the sapwood.

Distributed in Eastern United States and the Provinces of New Brunswick, Ontario, and Quebec in Canada. It has spread over Europe eastward into Russia. The American and European elms are attacked, and resistance of some Asiatic elms has led to the supposition that the disease is Asiatic in origin and came to Europe in World War I. Selection of resistant trees and crossbreeding resistant foreign elms with American elm appear to promise indirect means of control.

*Ulmus* spp.: Czechoslovakia, France, Germany, Great Britain, Italy, Netherlands, Norway, Sweden, Switzerland, Yugoslavia.
*U. "Buisman":* Italy.
*U. carpinifolia:* Netherlands, Poland, Romania, Russia.
*U. carpinifolia* var. *italica:* Netherlands.
*U. carpinifolia* f. *propendens:* Europe.
*U. carpinifolia* f. *sarniensis:* Netherlands.
*U. carpinifolia* f. *wredei:* Netherlands.
*U. glabra:* Germany, Italy, Netherlands, Poland, Romania.
*U.* × *hollandica:* Czechoslovakia.
*U.* × *hollandica* var. *belgica:* Netherlands.
*U.* × *hollandica* var. *vegeta:* Netherlands.
*U. laciniata* var. *nikkoensis:* Italy.
*U. laevis:* Czechoslovakia, Italy, Netherlands.
*U. procera:* Czechoslovakia.
*U. pumila:* Belgium, Italy.

**Cercoseptoria esfandiarii** Petr. (x) **leaf spot**

Causes leaf spots of *Alnus*, irregularly shaped, widely scattered, blackened above, below light brown to ochraceous. Known only in Iran.

*Alnus subcordata:* Iran (Ziarat forest).

**Cercospora acaciae-confusae** Sawada (xxx) **leaf spot**

Causes leaf spots, 0.5 to 2 mm. across, round, brown with gray centers, and raised margins on *Acacia*. Known only in Formosa.

*Acacia confusa:* Formosa.

**Cercospora acericola** Woron. (xxx) **maple leaf spot**

Causes leaf spots 2 to 3 mm. across, gray to white with a distinct dark border. Sometimes involves the entire leaf. Known in Russia and Italy.

*Acer campestre:* Russia.

**Cercospora ailanthi** P. Syd. (xxx) **leaf spot**

On rounded spots 0.5 to 6 mm. across, with grayish centers and dark brown margins on *Ailanthus*. Known only in Rixdorf, Germany.

*Ailanthus altissima:* Germany.

**Cercospora alhagi** Barbarini (xxx) **blight**

Forms small groups of minute black pustules on leaves, twigs, and spines of *Alhagi* without definite spots. Known only in Astrakhan.

*Alhagi pseudalhagi:* Russia (Astrakhan).

**Cercospora allophyli** Saw. (xxx) **leaf spot**

Forms indistinct spots on the upper surface of the infected leaves. On the lower surface it shows as moldlike, effuse, olivaceous to black patches, 0.5 to 6 mm. across. Distributed in Formosa and Uganda.

*Allophylus* sp.: Uganda.

*A. timorensis:* Formosa.

**Cercospora ariae** Fckl. (xxx) **leaf spot**

Causes leaf spots of *Sorbus* up to half of leaf area, dark reddish brown on upper surface, and dingy brown below. Distributed in central western Europe.

*Sorbus aria:* Germany.

*S. aucuparia:* Germany.

**Cercospora artocarpi** H. & P. Syd. (xxx) **leaf spot**

On irregular spots on leaves of *Artocarpus* between veins extending from margin to midrib, 10 to 20 mm., yellowish to dark brown. Known only in the Philippines.

*Artocarpus altilis:* Philippines.

*A. blancoi:* Philippines.

**Cercospora atrides** Syd. (xxx) **leaf mold**

Causes no leaf spots. Forms moldlike effuse, dark, olivaceous, minute patches on the lower leaf surface of *Bridelia*. Distributed in China and Formosa.

*Bridelia monoica:* China.

**Cercospora barringtoniae** Syd. (xxx) **leaf spot**

Causes round leaf spots 3 to 6 mm. in diameter, brown with no distinct margin. Known only in the Philippines.

*Barringtonia acutangula:* Philippines.

*B. luzoniensis:* Philippines.

**Cercospora bauhiniae** H. & P. Syd. (xxx) **leaf spot**

On leaf spots of foliage of *Bauhinia* and related trees; spots are 2 to 9 mm. across, grayish brown to pale brown with a dark brown line margin. Distributed in the Philippines, Transvaal, Venezuela, Colombia, Gold Coast, and Ethiopia.

*Bauhinia malabarica:* Philippines.

*B. reticulata:* Gold Coast.

*Pithecellobium ligustrinum:* Venezuela.

586625—61——4

**Cercospora bischofiae** Yamamoto (xxx) **leaf spot**

Causes leaf spots 2 to 10 mm. across, reddish brown to purplish brown, mostly on lower leaf surface. Known only in Formosa.
*Bischofia javanica:* Formosa.

**Cercospora bombacina** T. S. & K. Ramak. (xxx) **leaf spot**

On leaf spots of *Bombax* in India.
*Bombax malabaricum:* India.

**Cercospora broussonetiae** Chupp & Linder (xxx) **leaf mold**

Causes no spot on upper leaf surfaces. Forms moldlike, effuse, dark olivaceous fruiting layers on the lower leaf surface. Known only in China.
*Broussonetia* sp.: China.

**Cercospora bunchosiae** Chupp & Muller (xxx) **leaf spot**

Causes spots on leaves, rounded, 2 to 8 mm. across, mostly with three zones, the center gray, then dark brown, and finally burnt sienna, fading into the healthy-colored leaf tissue. Known only in Venezuela.
*Bunchosia glandulifera:* Venezuela.

**Cercospora byrsonimatis** Maubl. (xxx) **leaf spot**

Causes large, irregular discolorations, on the upper leaf surface; lesions below coalesce into large brown to gray areas 0.5 to 2 mm. across. Distributed in Brazil, Venezuela, and Colombia.
*Byrsonima* sp.: Brazil.

**Cercospora caffra** H. & P. Syd. (xxx) **leaf spot**

Causes rounded leaf spots, 1 to 4 mm. long, reddish brown to almost black, immarginate, difficult to distinguish on a brown dried leaf. Distribution, several localities in Transvaal.
*Sclerocarya caffra:* Transvaal.

**Cercospora careyae** T. S. & K. Ramak. (xxx) **leaf spot**

On isolated, irregular, brown leaf spots. Known only in India.
*Careya arborea:* India.

**Cercospora caryae** Chupp & Doidge (xxx) **leaf spot**

Causes numerous leaf spots, minute, 0.5 to 2 mm. in diameter, white to almost black. Affected leaves finally turn brown. Known only in the Transvaal.
*Carya illinoensis:* Union of South Africa (Transvaal).

**Cercospora casearíae** F. L. Stevens (xxx) **leaf spot**

Causes leaf spots, ashen white, with a wide purplish border, rounded, 2 to 4 mm. across. Distributed in Puerto Rico, Dominican Republic, and Trinidad. Also reported in India.
*Casearia guianensis:* Dominican Republic, Puerto Rico.
*C. tomentosa:* India.

**Cercospora castaneae** Muller & Chupp (xxx) **leaf spot**

Causes reddish-brown leaf spots 2 to 10 mm. across. Known only in Brazil.

*Castanea sativa:* Brazil.

**Cercospora castilloae** Saw. (xxx) **leaf spot**

Causes marginal leaf spots, 0.5 to 12 mm. across, dull brown to almost gray, fading into the normal leaf color. Known only in Formosa.

*Castilla elastica:* Formosa.

**Cercospora catappae** P. Henn. (xxx) **leaf spot**

Causes spots on leaves of *Terminalia*, 1.5 to 4 mm. across, with centers pale brown to dingy gray, and margins wine colored to black. Distributed in East Africa, India, Formosa, and Guam.

*Terminalia catappa:* East Africa, India.

**Cercospora ceibae** Chupp & Viégas (xxx) **leaf spot**

Associated with leaf spots 2 to 5 mm. across, dingy gray, with a narrow dark red to purple border. Known only in Brazil.

*Ceiba pentandra:* Brazil.

**Cercospora chionea** Ell. & Ev. (xxx) **leaf spot**

Causes leaf spots, yellowish tan to dark reddish brown, 5 to 15 mm. across. Distributed sparsely in North America from Kansas, Missouri, Oklahoma, Illinois, and Indiana, eastward to New York. Also reported in China and Japan.

*Cercis chinensis:* China.

**Cercospora chloroxyli** Ramak. & Reddy (xxx) **leaf spot**

Causes irregularly shaped, straw-colored to pale brown leaf spots, with minute fruiting clusters often in concentric rings. Known only in India.

*Chloroxylon swietenia:* India.

**Cercospora chrysobalani** Ell. & Ev. (xxx) **leaf spot**

Causes leaf spots 1 to 6 mm. across, reddish brown, sometimes with lighter brown centers, and raised line border. Distributed in Dominican Republic and the Gold Coast; also in the Gulf States of North America.

*Chrysobalanus icaco:* Gold Coast.

**Cercospora ciferii** Chupp (xxx) **leaf mold**

Forms moldlike, dark, effuse fruiting patches on the lower leaf surface. Known in Puerto Rico and Dominican Republic.

*Casearia guianensis:* Puerto Rico.

**Cercospora cinchonae** Ell. & Ev. (xxx) **leaf spot**

Causes leaf spots on both leaf surfaces, round, 2 to 4 mm. across, very dark reddish brown, sometimes with slightly raised margins. Reported in Louisiana. Distributed in Uganda and Belgian Congo.

*Cinchona officinalis:* Congo.

**Cercospora clerodendri** Miyake (xxx) **leaf spot**

On leaf spots, often vein-bound, 2 to 5 mm. long, dark reddish brown, occasionally with grayish center. Distributed in China, Japan, Formosa, and the Transvaal.

*Clerodendrum trichotomum:* China (Honan).

**Cercospora coffeicola** Berk. & Cke. (xxx) **coffee leaf spot**

Causes leaf spots on *Coffea* on the upper leaf surface; round, 3 to 10 mm. across, tan with gray or white centers and reddish brown to almost black margins. Distributed in Jamaica, Puerto Rico, Dominican Republic, Mexico, Guatemala, Trinidad, Colombia, Venezuela, Peru, Brazil, Java, South Africa, New Caledonia, China, Japan, Philippines, Uganda, and Sierra Leone. Probably is everywhere that coffee is grown extensively.

*Coffea arabica:* China (Yunnan), Colombia, Costa Rica, Dominican Republic, Egyptian Sudan, El Salvador, Formosa, Guatemala, India, Ivory Coast, Jamaica, Java, Kenya, Madagascar, Mexico, New Caledonia, Peru, Philippines, Puerto Rico, Tanganyika, Uganda, Venezuela.

*C. bukohensis:* Philippines.

*C. canephora:* Congo.

*C. canephora* var. *robusta:* Egyptian Sudan.

*C. excelsa:* Philippines.

*C. stenophylla:* German East Africa, Sierra Leone.

**Cercospora colubrinae** Chupp & Viégas (xxx) **leaf spot**

Causes irregular leaf spots 2 to 6 mm. long, dark reddish brown, centers grayish brown when old. Known only in Brazil.

*Colubrina rufa:* Brazil.

**Cercospora conocarpi** Chupp & Muller (xxx) **leaf spot**

Causes leaf spots 2 to 6 mm. across, or coalescing into large areas, brown. Known only in Mona Island and Venezuela.

*Conocarpus erectus:* Venezuela.

**Cercospora couratariae** Chupp (xxx) **leaf spot**

Causes leaf spots 3 to 7 mm. across, pale to dark reddish brown, with narrow yellowish-brown margins. Known only in Brazil.

*Cariniana estrellensis:* Brazil.

**Cercospora crataegi** Sacc. & Massal. (xxx) **leaf spot**

Causes leaf spots 0.5 to 2 mm. across, enlarging later to 2.7 mm., with dark brown or black centers and yellow halos. Distributed in Texas and southern Europe.

*Crataegus oxyacantha:* Italy.

**Cercospora cryptomeriae** Shirai (xxx) **seedling blight**

Causes necrotic reddish spots at the base of leaves of *Cryptomeria* seedlings and moves up until the entire leaf is killed. Severe attacks may kill the whole plant. It is said to have caused some Japanese nurserymen to stop growing this conifer. Distributed in Japan and Formosa.

*Cryptomeria japonica:* Formosa, Japan.

**Cercospora cupaniae** Syd. (xxx) **leaf spot**

Causes leaf spots 4 mm. across to almost whole length of leaf margin, pale brown with slightly darker wide margin. Known only in Costa Rica.

*Cupania guatemalensis:* Costa Rica.

**Cercospora cybistacis** P. Henn. (xxx) **leaf spot**

Causes circular leaf spots, 3 to 7 mm. in diameter, grayish brown to nearly black. Known only in Brazil.

*Cybistax antisyphilitica:* Brazil.

**Cercospora didymochetonis** Wakef. (xxx) **leaf spot**

Forms moldlike, effuse, olivaceous, sparse fruiting patches 0.5 to 2 mm. across, on the lower leaf surface. Known only in Fiji.

*Dysoxylum richii:* Fiji Islands.

**Cercospora dilleniae** Petch (xxx) **leaf blotch**

Causes large, irregular, gray to tan leaf blotches, 7 to 30 mm. across, sometimes with two distinct zones. Known only in Ceylon.

*Dillenia retusa:* Ceylon.

**Cercospora dolichandrones** Chupp (xxx) **leaf spot**

Causes rounded leaf spots, 3 to 10 mm. across, yellowish green, becoming gray to tawny gray. Known only in Uganda.

*Dolichandrone platycalyx:* Uganda.

**Cercospora ehretiae** Togashi & Katsuki (xxx) **leaf spot**

Causes leaf spots, 5 to 15 mm. across, fuscous brown, sometimes coalescing and covering much of the leaf surface. Known only in Japan.

*Ehretia thyrsiflora:* Japan.

**Cercospora elaedis** Stey. (xxx) **leaf spot**

Causes circular leaf spots, dark brown, margin distinct, surrounded by an orange zone. Known only in Belgian Congo.

*Elaeis guineensis:* Belgian Congo.

**Cercospora elasticae** Zimm. (xxx) **leaf blotch**

Causes leaf spots, grayish brown, 2 to 4 mm. across to large blotches. Reported in Java and Venezuela.

*Ficus carica:* Venezuela.

*F. elastica:* Java.

**Cercospora epicoccoides** Cke. & Mass. (xxx) **leaf spot**

Causes indistinct dark reddish, irregular areas on the upper leaf surface. Known only in Victoria, Australia.

*Eucalyptus globulus:* Australia.

**Cercospora eucalypti** Cke. & Mass. (xxx) **leaf spot**

Causes leaf spots 2 to 8 mm. across, pale brown to almost gray, occasionally with a wide purple border. Distributed in Australia, Formosa, Peru, Brazil, Argentina, Belgian Congo, and India.

*Eucalyptus* sp.: Australia, Peru.
*E. camaldulensis:* Argentina.
*E. ficifolia:* India.
*E. globulus:* Formosa, Brazil, Argentina.

**Cercospora eugeniae** (Rangel) Chupp (xxx) **leaf spot**

Causes leaf spots usually 0.5 to 4 mm. across, rarely much larger, white with a purple border, or uniformly brown. Distributed in Bermuda, Brazil, and Formosa.

*Eugenia javanica:* Formosa.
*E. uniflora:* Brazil.

**Cercospora exosporioides** Bub. (xxx) **larch leaf spot**

Causes reddish-brown spots on the needles. In severe cases the entire needle dies and falls prematurely. Known only in Moravia.

*Larix decidua:* Czechoslovakia (Moravia).

**Cercospora fagarae** Yamamoto (xxx) **leaf spot**

Causes irregular leaf spots 0.5 to 8 mm. across, dark reddish brown. Known only in Formosa.

*Zanthoxylum ailanthoides:* Formosa.

**Cercospora forsteriana** Chupp & Viégas (xxx) **leaf spot**

Causes angular spots, vein limited, 0.5 to 4 mm. long. Known only in Brazil.

*Juglans regia:* Brazil.

**Cercospora fukuokaensis** Chupp (xxx) **leaf spot**

Causes leaf spots, reddish brown to grayish brown, 1 to 3 mm. across, often confluent along the leaf margin. Known only in Japan.

*Styrax japonica:* Japan.

**Cercospora fusca** (Heald & Wolf) Rand (xxx) **pecan leaf spot**

Causes brown leaf spot, 5 to 15 mm. across. Distributed in North America north to South Carolina and Oklahoma and westward to New Mexico. Also reported in Venezuela.

*Carya illinoensis:* Venezuela.

**Cercospora geraisensis** Chupp (xxx) **leaf spot**

Causes spots on leaves, 4 to 30 mm. long, pale brown to gray center, with purple to dark brown border. Known only in Brazil.

*Terminalia catappa:* Brazil.

**Cercospora glandulosa** Ell. & Kell. (xxx) **leaf spot**

Causes leaf spots 1 to 6 mm. across, grayish brown to dingy gray or almost black. Distributed in southern United States north to Nebraska, in South America and China.

*Ailanthus altissima:* China, South America.

**Cercospora glauca** Syd. (xxx) **leaf spot**

Causes irregular leaf spots, 3 to 10 mm. across, dark brown with pale centers. Known only in China.

*Albizia kalkora:* China.

**Cercospora guazumae** Syd. (xxx) **leaf spot**

Causes leaf spots 2 to 6 mm. across, tan to yellowish brown with dark brown borders. Known in Venezuela and the Dominican Republic.

*Guazuma ulmifolia:* Venezuela.

**Cercospora gymnanthis** Chupp (xxx) **leaf spot**

Causes leaf spots 0.5 to 3 mm. across, gray to nearly white, with thin, raised, reddish-brown borders. Known only in Jamaica.

*Gymnanthes lucida:* Jamaica.

**Cercospora haematoxylonis** Chupp (xxx) **leaf spot**

Causes rounded leaf spots 0.5 to 2 mm. long, with minute pale brown to tan centers and dark reddish-brown margins. Known only in Jamaica.

*Haematoxylon campechianum:* Jamaica.

**Cercospora hurae** F. L. Stevens (xxx) **leaf spot**

Causes leaf spots, zonate, alternate gray and brown, or large gray blotches with dark borders, 5 to 20 mm. across. Distributed in Puerto Rico, Barbados, Dominican Republic, Venezuela, and Brazil.

*Hura crepitans:* Barbados, Puerto Rico, Venezuela.

**Cercospora huricola** Chupp (xxx) **leaf spot**

Occurs on leaf spots 2 to 10 mm. across, dark reddish brown, often with gray centers, on *Hura*. Known in Brazil and Venezuela.

*Hura crepitans:* Brazil.

**Cercospora ilicicola** Maubl. (xxx) **leaf spot**

Causes circular leaf spots, 1 to 3 mm. in diameter, dingy gray, with purple borders. Distributed in Brazil. Reported in Florida, but is another fungus.

*Ilex paraguariensis:* Brazil.

**Cercospora jahnii** Syd. (xxx) **leaf spot**

Causes leaf spots 3 to 20 mm. long, gray to grayish brown with wide, dark, ferruginous margins. Known in Venezuela and Trinidad.

*Tabebuia rosea:* Venezuela.

**Cercospora kashotoensis** Yamamoto (xxx) **leaf mold**

Forms fruiting patches on lower side of leaf, effuse, olivaceous, 2 to 10 mm. across. Known only in type locality, Formosa.

*Clerodendrum inerme:* Formosa.

**Cercospora lindericola** Yamamoto (xxx) **leaf spot**

Causes irregular leaf spots of varying sizes up to a large part of the leaf area, yellowish brown to dark brown with black borders, or irregular black areas mixed with the brown. Known only in Formosa.

*Lindera oldhamii:* Formosa.

**Cercospora litseae-glutinosae** Syd. (xxx) **leaf spot**

On leaf spots dark brown to black, with paler centers, 0.5 to 5 mm. across. Known in the Philippines and Japan.

*Litsea glutinosa:* Philippines.
*L. perrottetii:* Philippines.

**Cercospora lonchocarpi** Stevenson (xxx) **leaf spot**

Causes large spots 5 to 20 mm. across, yellowish gray to tan, outlined by a narrow, dark, reddish-brown line. Distributed in Brazil, Peru, and British Guiana.

*Lonchocarpus chrysophyllus:* British Guiana.
*L. nicou:* Brazil, Peru.
*L. urucu:* Brazil.
*L. utilis:* Peru.

**Cercospora lumbricoides** Turc. & Maf. (xxx) **ash leaf spot**

Causes rounded leaf spots, yellowish, slightly zonate, with narrow reddish-brown borders. Known only in Mexico.

*Fraxinus* sp. Mexico.

**Cercospora lythracearum** Heald & Wolf (xxx) **leaf spot**

Causes circular leaf spots 3 to 10 mm. in diameter, pale brown to dingy gray or dark olivaceous, often with a green fringe on brown leaves then fading into a yellowish halo. Distributed in Texas, Trinidad, and Puerto Rico. Also reported from Formosa, Philippines, India, and Uganda.

*Lagerstroemia speciosa:* Philippines.

**Cercospora meliae** Ell. & Ev. (xxx) **leaf spot**

Causes leaf spots 0.5 to 2.5 mm. across with white centers and narrow, dark, reddish-brown line borders. Distributed in Alabama and Louisiana in North America, and in China, Formosa, and India.

*Melia azedarach:* China, India, Formosa.

**Cercospora microsora** Sacc. (xxx) **linden leaf spot**

Causes spots on twigs and leaves. On twigs, causes dark oval spots 5 to 25 mm. long; variable leaf spots on different species of *Tilia*, some are large, reddish brown with a dark line margin, others have small white specks with a wide dark border 1 to 5 mm. across. Distributed from Wisconsin and Kansas to Vermont and Delaware in North America; in Europe from Italy to Norway, Scotland, and Denmark eastward to Russia; in Caucasus, Central Asia, New South Wales, and Colombia.

*Tilia* sp.: France, Norway.
*T. cordata:* Russia, Poland.
*T. dasystyla:* Iran.
*T.* ×*europaea:* Denmark.
*T. platyphyllos:* Denmark, France, Germany.
*T. tomentosa:* Russia (Ismail-Bessarabia).

**Cercospora mirandensis** Chupp (xxx) **leaf spot**

Causes irregular small leaf spots sometimes coalescing into large areas with the centers tan to dingy gray, and wide dark red or reddish-brown margins. Known only in Venezuela.

*Miconia ibaguensis:* Venezuela.

**Cercospora molleriana** Wint. (xxx) **leaf spot**

Causes leaf spots 2 to 10 mm. in diameter, pale brown to dull gray centers with dark brown margins. Known in Portugal and Hyeres Islands (Port Cros).

*Arbutus longifolia:* Portugal.

*A. unedo:* Portugal.

**Cercospora mori** Hara (xxx) **leaf mold**

Forms moldlike fruiting patches on the lower leaf surface, olivaceous to dark in color, varying from 0.5 mm. across to large areas of the leaf surface. Distributed in Alabama, Belgian Congo, Japan, Formosa, and China.

*Morus* sp.: Belgian Congo.

**Cercospora moricola** Cke. (xxx) **leaf spot**

Causes leaf spots 1 to 8 mm. across, with gray to tan centers, and dark purple to black borders. Distributed in North America from Mississippi to Wisconsin and eastward. Also reported in England, Italian Somaliland, India, and Brazil.

*Morus alba:* Brazil, England, India, Italian Somaliland.

**Cercospora morindae** Syd. (xxx) **leaf spot**

Causes leaf spots 2 to 10 mm. across, reddish brown, sometimes with pale tan to grayish centers. Known only in India.

*Morinda tinctoria:* India.

**Cercospora myrticola** Speg. (xxx) **leaf spot**

Causes leaf spots circular to angular, 3 to 10 mm. in diameter, yellowish tan to rusty brown, sometimes with a darker border. This is occasionally damaging. An account tells of defoliation of *Myrtus communis* L. in ornamental plantings in Germany. Distributed in Brazil, Chile, Paraguay, most of Europe, and South Africa.

*Myrtus communis:* Germany, Great Britain, Greece, Italy.

*M. divaricata:* Chile.

**Cercospora myxa** Syd. (xxx) **leaf mold**

Forms moldlike fruiting patches on the lower leaf surface, effused, dark olivaceous to sooty. Known only in India.

*Cordia myxa:* India.

**Cercospora pachirae** Chupp & Muller (xxx) **leaf spot**

Causes leaf spots 2 to 5 mm. across, white to dingy gray, with a dark purple border. Known only in Venezuela.

*Pachira insignis:* Venezuela.

**Cercospora paulowniae** Hori (xxx) **leaf spot**

Causes circular leaf spots 1 to 10 mm. in diameter, grayish or fuliginous. Distributed in Japan and China.

*Paulownia tomentosa:* Japan.

**Cercospora phaeochlora** Speg. (xxx) **leaf spot**

On leaf spots, water-soaked areas gradually changing to dark reddish brown, irregular in shape, 2 to 7 mm. long, without a distinct margin. Distributed in Argentina and Chile.

*Lithraea brasiliensis:* Argentina, Chile.

*L. caustica:* Argentina, Chile.

**Cercospora pini-densiflorae** Hori & Nambu (xxx) **pine leaf blight**

Causes yellowish-brown to gray spots mostly on the upper half of the needle. On 2-year trees the needles are killed so extensively that the disease is known as "leaf blight." Known in Japan and Formosa.

*Pinus densiflora:* Japan.

*P. luchuensis:* Formosa.

*P. massoniana:* Formosa.

**Cercospora piscidiae** P. Henn. (xxx) **leaf mold**

Forms moldlike fruiting patches on the lower leaf surface, effuse, yellowish or yellowish brown. Known only in Jamaica.

*Piscidia piscipula:* Jamaica.

**Cercospora populicola** Tharp. (xxx) **poplar leaf spot**

On circular leaf spots 3 to 10 mm. in diameter, dingy gray to grayish brown. Known in Texas and Brazil.

*Populus deltoides:* Brazil.

**Cercospora populina** Ell. & Ev. (xxx) **poplar leaf spot**

Causes irregular leaf spots, 3 to 7 mm. across or coalescing into much larger areas, brown to dingy gray. Distributed in North America in Missouri, Louisiana, and Alabama; also reported in Japan and Argentina.

*Populus nigra* var. *italica:* Argentina.

**Cercospora rhinocarpi** Chupp & Muller (xxx) **leaf spot**

Causes irregular leaf spots 2 to 8 mm. across, brown or grayish brown. Known only in Venezuela.

*Anacardium excelsum:* Venezuela.

**Cercospora salicina** Ell. & Ev. (xxx) **willow leaf spot**

Causes leaf spots 0.5 to 5 mm. across, dark reddish brown. Distributed from Manitoba to Argentina, and in Formosa and China.

*Salix babylonica:* China.

*S. humboldtiana:* Peru.

*S. matsudana:* Argentina.

**Cercospora samaneae** Chupp & Muller (xxx) **leaf mold**

Forms moldlike fruiting areas on the lower leaf surface in irregular patches, sometimes covering almost the entire leaf surface, dark olivaceous to black. Known only in Venezuela.

*Pithecellobium saman:* Venezuela.

**Cercospora sapiicola** Speg. (xxx) **leaf blotch**

On brown leaf spots varying from 2 to 5 mm. across to 10 to 20 mm. blotches. Known in Argentina, Costa Rica, and Uganda.
*Sapium aucuparium* var. *salicifolium:* Argentina.

**Cercospora sapindi** Ob.-Brotero (xxx) **leaf spot**

Causes leaf spots 2 to 6 mm. across, gray, grayish brown to tan, often with a reddish-brown line margin. Known only in Colombia.
*Sapindus saponaria:* Colombia.

**Cercospora sapindi-emarginati** T. S. & K. Ramak. (xxx) **leaf spot**

Causes angular leaf spots 2 to 3 mm. across, yellowish to brown, sometimes with a white center. Known only in India.
*Sapindus trifoliatus:* India.

**Cercospora sapindicola** Tai (xxx) **leaf spot**

Causes indefinite, confluent, large leaf spots, usually irregular along the leaf margin. Known only in China.
*Sapindus mukorossii:* China.

**Cercospora schreberae** Mahmud (xxx) **leaf spot**

Causes minute yellow leaf spots that later turn brown. Late in the season spots form on petioles and twigs. Known only in India.
*Schrebera swietenioides:* India.

**Cercospora securinegae** Togash & Katsuki (xxx) **leaf spot**

Causes rounded leaf spots 2 to 5 mm. across, dingy reddish brown, then yellowish to gray, often confluent. Known only in Japan.
*Securinega suffruticosa:* Japan.

**Cercospora shoreae** Thirum. & Chupp (xxx) **leaf spot**

On irregularly shaped leaf spots 3 to 10 mm. across, dull gray with a pale brown line margin. Known only in India.
*Shorea talura:* India.

**Cercospora sissoo** Syd. (xxx) **leaf mold**

Forms on the lower leaf surface moldlike fruiting patches of closely aggregated groups of black pustules. Known only in India.
*Dalbergia sissoo:* India.

**Cercospora spegazzinii** Sacc. (xxx) **leaf spot**

On leaf spots 2 to 7 mm. across, dark reddish brown, oldest spots immarginate. Known only in Argentina. Reported in Kansas, but it seems uncertain.
*Celtis tala:* Argentina.

**Cercospora sphaeriaeformis** Cke. (xxx) **elm leaf spot**

On leaf spots 2 to 6 mm. across, yellowish gray to silver gray, with grayish centers. Distributed from Texas to Florida, Georgia, and South Carolina; also in China and Japan.
*Ulmus pumila:* China.

**Cercospora spilosticta** Syd. (xxx) **leaf spot**

Causes irregular leaf spots, 2 to 6 mm. across, or coalescing into larger areas, pale yellowish brown. Known in Venezuela and Argentina. Apparently present in Formosa.

*Pithecellobium lanceolatum:* Venezuela.

*P. ligustrinum:* Venezuela.

**Cercospora stenolobiicola** Chupp (xxx) **leaf spot**

Causes numerous leaf spots, 2 to 10 mm. across, tan to pale brown, on leaves of *Tecoma* and *Tabebuia*. Known in Argentina and Venezuela.

*Tabebuia serratifolia:* Venezuela.

**Cercospora stevensii** Young (xxx) **leaf spot**

Associated with small leaf spots, reddish brown above, black beneath. Distributed in Puerto Rico, Brazil, and Colombia.

*Andira inermis:* Colombia, Puerto Rico.

**Cercospora subsessilis** Syd. (xxx) **leaf spot**

Causes leaf spots of *Melia* and *Swietenia*, 2 to 5 mm. across, zonate, tan, gray, or pale brown. Distributed in Mississippi and Texas; Mona Island, Dominican Republic, Sierra Leone, and Anglo-Egyptian Sudan; Ceylon, India, China, Japan, and Philippines.

*Melia azadirachta:* India.

*M. azedarach:* Anglo-Egyptian Sudan, India, Philippines, Dominican Republic.

*Swietenia mahagoni:* Mona Island.

**Cercospora tabernaemontanae** Syd. (xxx) **leaf spot**

On circular leaf spots 3 to 10 mm. in diameter, pale tan to dingy gray with narrow brown borders. Known in the Philippines and Malaya.

*Tabernaemontana* sp.: Malaya.

*T. pandacaqui:* Philippines.

**Cercospora tectonae** Stevens (xxx) **teak leaf spot**

Causes angular leaf spot, 1 to 4 mm. across or coalescing into large blotches, dull brown to grayish brown or white. Distributed in Hawaii, Trinidad, and India.

*Tectona grandis:* Hawaii, India.

**Cercospora ulmicola** Chupp (xxx) **elm leaf spot**

Causes irregular leaf spots, often coalescing into a large part of the leaf area, brown to grayish brown. Known in Texas and Bermuda.

*Ulmus rubra:* Bermuda.

**Cercospora volkameriae** Speg. (xxx) **leaf spot**

Causes irregular leaf spots, 1 to 20 mm. across, dingy gray. Known in Brazil and the Gold Coast.

*Clerodendrum fragrans:* Brazil.

*C. scandens:* Gold Coast.

**Cercospora zelkowae** Hori (xxx) **leaf spot**

On rounded leaf spots 0.5 to 5 mm. in diameter, at first purplish, then brown, finally with gray centers. Known only in Japan.

*Zelkova serrata:* Japan.

**Cercosporella hurae** Linder & Whet. (xxx) **leaf spot**

Causes leaf spots up to 7 mm. across, larger by confluence, chamois colored centers, bordered by dark brown or almost black margins. Known only in Venezuela.

*Hura crepitans:* Venezuela.

**Cercosporella theae** Petch (xxx) **leaf spot**

Causes small, dark brown to black spots on young leaves; the spots coalesce and spoil older leaves of a number of broad-leaved trees. Sunken purple patches appear on green twigs. Reported in Ceylon on a number of species of *Eucalyptus* and *Acacia*. Distributed in Ceylon and India.

*Acacia decurrens:* Ceylon, India.
*A. decurrens* var. *dealbata:* Ceylon.
*A. melanoxylon:* Ceylon.
*Albizia moluccana:* India.
*Delonix regia:* India.
*Eucalyptus diversicolor:* Ceylon.
*E. robusta:* Ceylon.

**Cerotelium fici** (Butl.) Arth. (xxx) **rust**

Forms powdery, cinamon-brown rust pustules on leaves of many species of Moraceae. Distributed from North Carolina to Texas, in the West Indies, Central America, and tropical regions of the world.

*Broussonetia papyrifera:* China.
*Ficus* sp.: Portugal, Puerto Rico, Zanzibar.
*F. angustifolia:* Ecuador.
*F. carica:* Barbados, Bermuda, Brazil, China, Colombia, Congo, Cuba, Dominican Republic, El Salvador, France, Greece, Guatemala, Jamaica, Mauritius, Morocco, North Africa, Peru, Philippines, Puerto Rico, Tanganyika, Venezuela.
*F. combsii:* Cuba.
*F. crassinervia:* Puerto Rico.
*F. glomerata:* Pakistan.
*F. ibapohy:* Brazil.
*F. laevigata:* Puerto Rico.
*F. minahassae:* Philippines.
*F. odorata:* Philippines.
*F. padifolia:* Guatemala, Venezuela.
*F. radula:* Trinidad.
*F. religiosa:* Pakistan, Philippines.
*Morus* sp.: Madagascar.
*M. alba:* Philippines, Tanganyika.
*M. insignis:* Guatemala.

**Cerotelium lanneae** (Hoehn.) Arth. (xxx) **rust**

Forms rust pustules on leaves. Known in India and Pakistan.

*Lannea wodier:* India, Pakistan.

**Chaconia alutacea** Juel (xxx) **rust**

Forms brownish spots 3 to 4 mm. across on leaves of *Pithecellobium*. Distributed in British Honduras, Paraguay, and Peru.

*Pithecellobium divaricatum:* Paraguay.
*P. glomeratum:* Peru.
*P. recordii:* British Honduras.

**Chaconia ingae** (Syd.) Cumm. (xxx) **rust**

Forms pulverulent cinnamon-brown fungus pustules on leaves, followed by white telia. Distributed in Mexico, Central and South America, Puerto Rico, and Trinidad.

*Inga adenophylla:* Colombia.
*I. coriacea* var. *leptopus:* Costa Rica.
*I. edulis:* Brazil, Colombia, El Salvador, Guatemala.
*I. ingoides:* Colombia.
*I. inicuil:* Mexico.
*I. insignis:* Ecuador.
*I. laurina:* Puerto Rico.
*I. micheliana:* Guatemala.
*I. pinetorum:* British Honduras.
*I. preussii:* El Salvador.
*I. spuria:* Colombia, Guatemala.
*I. vera:* Dominican Republic, Puerto Rico.

**Chaconia tectonae** T. S. & K. Ramakr. (xxx) **teak rust**

Forms abundant bright yellow to orange rust pustules on leaves. Later waxy orange telia form, mixed with the uredosori. Distributed in India and Pakistan.

*Tectona grandis:* India, Pakistan.

**Chaetostigme cordiae** (P. Henn.) F. L. Stevens (xxx) **black mildew**

Forms black mildew fungus coatings on leaves of *Cordia* in Venezuela.

*Cordia cylindrostachya:* Venezuela.

**Choanephora cucurbitarum** (Berk & Rav.) Thaxt. (xxx) **blight**

Forms a luxuriant fungus web, white then brown to purple, with fruiting heads looking like little pins. On foliage and inflorescences extending into young fruits and causing soft rot. Reported on a number of tree species in tropical and subtropical regions. Distributed in North America, South America, Europe, and Africa.

*Theobroma cacao:* Gold Coast.

**Chrysomyxa abietis** Unger (xxx) **spruce needle cushion rust**

? Autoecious, overwintering in spruce needles infected late the previous year, fruiting in the spring after infection, and infecting the current year's needles. Attacks the young leaves of *Picea* from northern Scandinavia and western Russia southward; causes partial defoliation in severe outbreaks. Usually this rust is not considered very damaging, but occurrences are reported of extensive defoliation. In-

troduced at Louisville, Ky., in 1907, on imported nursery stock of *P. abies* from Denmark. Is not known to have become established in the United States.

*Picea abies:* Belgium, Bulgaria, England, France, Germany, Denmark, Norway, Scotland, Russia, Sweden, Poland, Switzerland.

**Chrysomyxa bombacis** Petch (xxx) **rust**

Forms rust pustules on leaves of *Bombax* in Ceylon.

*Bombax malabaricum:* Ceylon (Peradeniya).

**Chrysomyxa deformans** (Diet.) Jacz. (xxx)
**spruce twig and needle rust**

? Autoecious, probably microcyclic. Forms elongate yellow rust pustules on needles and young twigs of *Picea* in India, Pakistan, and Siberia. Its autoecious habit makes this fungus a potential danger to other species of *Picea*, which are liable to direct infection.

*Picea schrenkiana:* Siberia.

*P. smithiana:* India, Pakistan.

**Chrysomyxa expansa** Diet. (xxx) **rust**

Forms yellow rust pustules on reddish-brown leaf spots on *Rhododendron* and *Picea* in Japan and China.

*Picea jezoensis:* Japan.

**Chrysomyxa himalensis** Barclay (xxx)
**rhododendron-spruce needle rust**

Forms conspicuous rust pustules on the petioles, lower midribs, and leaf blades of the previous summer on *Rhododendron*. The rust is perennial and clumps of leaves (witches'-brooms) are developed. The leaves of infected shoots are smaller than normal. Inoculations of *Picea smithiana* needles with spores from *R. arboreum* produced rust pustules on the spruce needles. The rust is distributed in India and Pakistan.

*Picea smithiana:* India, Pakistan.

**Chrysomyxa ledi** var. **ledi** (d By.) Savile (xxx)
**ledum-spruce needle rust**

Holarctic. Heteroecious. Widely distributed on *Ledum* in North America and Europe; and on *Picea* in Europe but in North America not reported west of Saskatchewan.

*Picea* sp.: Siberia.

*P. abies:* Belgium, Denmark, Finland, Germany, Norway, Sweden.

*P. likiangensis:* China.

**Chrysomyxa ledi** var. **rhododendri** (DC.) Savile (xxx)
**rhododendron-spruce needle rust**

Heteroecious. Alternating between *Picea* needles in one stage and *Rhododendron* leaves and shoots in the other. It overwinters in spruce needles infected in the fall, fruits the next spring, and infects *Rhododendron* leaves and shoots. There it fruits promptly and infects the current year's needles on spruces. Apparently it can overwinter in *Rhododendron* and persist in localities where spruces are

lacking. Heavily rusted needles fall prematurely, and damage may result.

This rust occurs in alpine regions of Europe, Siberia, China, and Japan in both stages. It is reported in North America on *Rhododendron lapponicum* (L.) Wahl in a single locality in the District of Mackenzie, Canada, but is not known on *Picea* in the New World. On *Picea* it is believed to occur in mixture with one or more abundant rusts. The mixture is reported from Prince Edward Island to British Columbia and Alaska. It is known in the State of Washington on cultivated *Rhododendrons*, where it is believed to have been introduced from Europe.

*Abies alba:* Switzerland.
*Picea abies:* France, Germany, Great Britain, Ireland, Italy, Switzerland.
*P. jezoensis:* Japan.
*P. sitchensis:* Great Britain.

**Chrysomyxa piceae** Barcl. (xxx) **rust**

Forms rust pustules on needles of *Picea* in India. A probable alternate host seems to be still unknown.

*Picea smithiana:* India.

**Chrysomyxa pirolata** Wint. (xxx) **spruce cone rust**

Holarctic. Heteroecious. Forms pulverulent yellow rust pustules on *Pyrola*, later followed by waxy subepidermal, reddish fungus cushions. The latter are the overwintering stage of the fungus. Infection of spruce cone scales occurs while the scales are green and relatively succulent. The fungus is distributed in North America from Greenland, southern Canada and the northern half of the United States, southward in the western mountains to New Mexico and Guatemala; also in Europe, Siberia, Kamchatka, Japan, and China.

*Picea abies:* Czechoslovakia, Denmark, Germany, Norway, Sweden.

**Chrysomyxa tsugae-yunnanensis** Teng (xxx) **hemlock rust**

Forms rust pustules on needles of *Tsuga* in China.

*Tsuga yunnanensis:* China.

**Chrysomyxa woronini** Tranz. (xxx) **spruce stunted-shoot rust**

Heteroecious, accompanying ledum and spruces from Greenland through northern United States and Canada to Alaska, northern Europe, Siberia, India, Japan, and Kamchatka.

*Abies pinsapo:* Great Britain.
*Picea abies:* Denmark, Germany, Norway, Sweden.
*P. obovata:* Siberia (Yakutsk).

**Ciboria alni** (Maul) Whet. (xxx) ———

Forms sclerotia in place of seeds in catkins of *Alnus*. Known in Denmark, Germany, and Russia.

*Alnus glutinosa:* Denmark.
*A. incana:* Denmark, Russia.

**Ciboria betulae** (Wor.) White (xxx) **birch seed blight**

Attacks the pistillate flowers of catkins of *Betula*, destroying the seeds. Distributed in Denmark, Germany, Poland, Russia, Siberia, and Japan.

*Betula* sp.: Germany.
*B. ermanii* var. *subcordata:* Japan.
*B. papyrifera:* Denmark.
*B. pendula:* Denmark, Poland, Siberia, Russia.
*B. platyphylla* var. *japonica:* Japan.
*B. pubescens:* Russia.

**Ciboria shiraiana** (P. Henn.) Whet. (xxx) **mulberry popcorn disease**

Causes hypertrophy of separate segments of the fruits of *Morus*. Sclerotia form in the swollen drupelets, overwinter in the fallen fruits, and the next spring form spore-bearing cups to infect newly formed blossoms. The Old World fungus is distinct from the North American one, but their life histories and development are very similar. Distributed in Japan, Formosa, and China.

*Morus alba:* China, Formosa, Japan.
*M. australis:* Formosa, Japan.

**Ciborinia candolleana** (Lév.) Whet. (xxx) **leaf blotch**

Attacks the leaves of *Quercus* and *Castanea* causing premature leaf fall. Distributed in Great Britain, Denmark, France, and Germany.

*Castanea sativa:* Denmark, Great Britain.
*Quercus petraea:* Great Britain.
*Q. robur:* Denmark, Great Britain.
*Q. rubra:* Great Britain.

**Ciliochorella bambusarum** Shanor (xx) **bamboo leaf spot**

Forms black, stromatic fungus fruits on discolored spots on leaves. Occurs associated with the ascogenous fungus *Lateropeltis bambusarum* on fungus stromata attached to those of *Ciliochorella*. Distributed in El Salvador, Mexico, Costa Rica, and Canal Zone.

*Arthrostylidium racemiflorum:* Canal Zone, Costa Rica, El Salvador, Mexico.

**Cionothrix cupaniae** Arth. & Johnston (xxx) **felt rust**

Forms felt rust on lower side of leaves of *Cupania*. Each telial column is seated on a mammiform swelling on the leaf surface. Known in Cuba.

*Cupania americana:* Cuba.
*C. glabra:* Cuba.

**Cladosporium epiphyllum** (Pers.) Martius (xx) **black mold**

Causes olive-black mold on leaves of numerous trees in North America and Europe

*Ficus magnolioides:* Italy.
*Larix decidua:* Great Britain.
*L. leptolepis:* Great Britain.

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**Cladosporium herbarum** (Lk.) Fr. (x) **black mold**

Normally is saprophytic on all sorts of dead plant material, but can occasionally become destructive to living leaves, shoots, and young seedlings. Forms an olive-black mold on affected parts. It is practically worldwide in distribution.

*Coffea canephora* var. *robusta:* Sumatra.
*Picea* sp.: Russia.
*Pinus* sp.: Russia.
*P. rigida:* Germany.
*Populus suaveolens*: Siberia.
*Thuja orientalis:* China.

**Cladosporium laricis** Sacc. (xx) **conifer needle mold**

Causes black erumpent spots on needles of various conifers, causing damage even in older trees. Known in Italy.

*Cryptomeria japonica* f. *elegans:* Italy.
*Larix decidua:* Italy (Apennines).
*Pinus pinea:* Italy.

**Clasterosporium glomerulosum** Sacc. (xx) **needle cast**

Associated with leaf cast of *Juniperus* in a nursery at Eberswalde, Germany.

*Juniperus communis:* Germany.

**Clasterosporium javanicum** Koord. (xx) **leaf spot**

Forms sooty, irregular leaf spots on leaves of *Ficus* in Java.

*Ficus elastica:* Java (Kedu).

**Clasterosporium mori** Syd. (xx) **leaf spot**

Occurs on brown leaf spots of *Morus*. Known in China and Japan.

*Morus alba:* China.

**Claudopus nidulans** (Fr.) Pk. (xx) **sapwood rot**

A mushroom with eccentric stem, yellow throughout, including gills and spores. Usually saprophytic on dead wood. Occasionally infects open wounds exposing the sapwood in living trees. Distributed generally in temperate North America; reported in Norway and Japan, apparently common in the Old World.

*Morus* sp.: Japan.

**Clinoconidium farinosum** (P. Henn.) Pat. (xxx) **powdery mildew**

Causes profuse brown powdery mildew of leaves, shoots, and inflorescences of Lauraceous trees. Known in Brazil, Venezuela, and Puerto Rico.

*Nectandra tweediei*: Brazil.
*Ocotea leucoxylon:* Venezuela.

**Clitocybe tabescens** (Fr.) Bres. (xxx) **root rot**

A mushroom much like *Armillaria mellea*, but with no annular collar on the upper stem. Distributed in the southern United States northward to Oklahoma, Missouri, Illinois, Indiana, West Virginia, and Virginia. It occurs north to New York and Michigan, but the

root rot caused by it is not known so far north. It is reported as causing root rot in Madagascar and as being present in Honduras.

*Adenanthera pavonina:* Madagascar.
*Coffea canephora:* Madagascar.
*C. canephora* var. *robusta:* Madagascar.
*Pithecellobium dulce:* Madagascar.

**Clypeotrabutia portoricensis** (Stev.) Chardon (xxx) **leaf spot**

Causes spots on the upper leaf surface of *Coccoloba* with small punctate perithecia, the latter with a black border around the ostiole. Known in Puerto Rico and Venezuela.

*Coccoloba* sp.: Venezuela.
*C. venosa:* Puerto Rico.

**Coccochora kusanoi** (P. Henn.) Hoehn. (xxx) **oak leaf spot**

Causes dark brown leaf spots, later becoming bright, light brown, 2 to 10 mm. across, with shiny black stromata scattered over the surface. Known only in Japan.

*Quercus acuta:* Japan.

**Coccochorella quercicola** (P. Henn.) Hoehn. (xxx) **oak leaf spot**

Forms shiny black, round fruiting bodies on the leaves of *Quercus acuta* in Japan.

*Quercus acuta:* Japan.

**Coccodiella arundinariae** Hara (xxx) **bamboo leaf spot**

Forms fleshy, disc-shaped, fruiting bodies on bamboo leaves. Known only in Japan and China.

*Phyllostachys* sp.: China.

**Coccodothis sphaeroidea** (Cke.) Theiss. & Syd. (xxx) **needle wilt**

Forms black mycelial pads on the living needles of *Juniperus* in Europe. The needles wilt in some cases.

*Juniperus* sp.: Germany.
*J. oxycedrus:* France (Corsica).

**Coccomyces clusiae** (Lév.) Sacc. (xx) **leaf spot**

Forms large, light-colored spots on leaves of *Clusia*. Distributed in Puerto Rico, Costa Rica, and northern South America.

*Clusia rosea:* Puerto Rico.

**Coleopuccinia sinensis** Pat. (xxx) **rust**

Causes brown rust pustules on leaves of *Amelanchier* and *Cotoneaster* in China. Not otherwise known.

*Amelanchier* sp.: China.

**Coleosporium asterum** (Diet.) Syd. (xxx) **rust**

Heteroecious. Forms orange-yellow rust pustules on leaves of *Aster*, *Solidago*, and related herbaceous plants in early summer, followed by waxy, flat, subepidermal fungus pads. This is the overwintering stage of the fungus. The next spring tiny spores from these

pads are blown to neighboring hard pine leaves and promptly infect them. The early rust stage on the pine leaves forms white, upright tubules containing dusty yellow spores. Distributed generally in North America, Mexico, Europe, Japan, and China.

*Pinus densiflora:* Japan.
*P. massoniana:* China.
*P. thunbergii:* Japan.

**Coleosporium barclayense** Bagchee (xxx) **rust**

Causes orange, cylindrical to flattened outgrowths on needles of *Pinus griffithii*, containing orange, dusty spores. These infect neighboring *Senecio* leaves and form yellow rust pustules on the lower leaf surface, followed later by a brownish-orange overwintering stage. Distribution is limited to India and Pakistan.

*Pinus griffithii:* India, Pakistan.

**Coleosporium cacaliae** Otth (xxx) **rust**

Causes yellow rust pustules on the needles of hard pines and leaves of *Adenostyles* and *Cacalia*, overwintering on the two latter. Generally distributed in Europe, also in Siberia and Japan.

*Pinus mugo:* Switzerland.
*P. sylvestris:* Germany.

**Coleosporium campanulae** Lév. ex Kickx (xxx) **rust**

Forms white to yellow tubules on the needles of hard pines and yellow powdery pustules on the lower leaf surface of *Campanula* and related plants. Distributed in temperate North America, Europe, and Asia.

*Pinus densiflora:* Japan.
*P. griffithii:* India.
*P. nigra:* Norway.
*P. roxburghii:* India.
*P. sylvestris:* Esthonia, Germany, Great Britain, Norway, Switzerland.
*P. thunbergii:* Japan.

**Coleosporium clerodendri** Diet. (xxx) **rust**

Causes yellow to orange rust pustules on lower leaf surfaces of *Clerodendrum*. Distributed in China, Formosa, Japan, and Java.

*Clerodendrum fragrans:* Formosa.
*C. trichotomum:* China, Formosa, Japan.
*C. villosum:* Japan.

**Coleosporium eupatorii** Arth. ex Cumm. (xxx) **pine rust**

Causes rust on needles of *Pinus koraiensis*, a five-needled pine, with an alternate stage of golden rust on leaves of *Eupatorium*. Distributed in Central America, West Indies, China, and Japan.

*Pinus koraiensis:* Japan.

**Coleosporium euphrasiae** (Schum.) Wint. (xxx) **rust**

Causes rust on needles of hard pines and on leaves of *Clerodendrum* and *Euphrasia*. Distributed in Europe, Siberia, Tibet, and Japan.

*Clerodendrum villosum:* Japan.
*Pinus sylvestris:* Switzerland, Estonia, Germany, Great Britain.

**Coleosporium inulae** (Kunze) E. Fisch. (xxx) **rust**

Causes yellow rust pustules on foliage of *Pinus* and *Inula*. Distributed in Europe, Palestine, India, Canary Islands, northern Africa, and the Congo.

*Pinus halepensis:* Spain.
*P. roxburghii:* India.
*P. sylvestris:* Estonia, Germany, Switzerland.

**Coleosporium melampyri** (Reb.) Karst. (xxx) **rust**

Causes white tubular outgrowths, containing yellow spores, on needles of hard pines. These spores infect leaves of *Melampyrum* and form yellow rust pustules on the lower leaf surface, which are followed by reddish waxy crusts. The latter are the overwintering stage of the fungus. Distributed in northern and central Europe, and in eastern Asia.

*Pinus mugo:* Europe.
*P. sylvestris:* Estonia, Finland, Germany, Great Britain, Switzerland.

**Coleosporium petasitis** Lév. (xxx) **rust**

Forms flattened upright tubules on the needles of *Pinus sylvestris*, containing yellow dusty spores. These tubules are followed by yellow rust pustules on leaves of *Petasites*. Distributed in Europe, Siberia, and Japan.

*Pinus nigra:* Great Britain.
*P. sylvestris:* Estonia, Great Britain, Japan, Siberia, Switzerland.

**Coleosporium phellodendri** Kom. (xxx) **rust**

Causes yellowish-white rust pustules on the lower leaf surface of *Phellodendron*, followed by gelatinous orange pustules. Known in China, Japan, Manchuria, Korea, and Siberia.

*Phellodendron amurense:* China, Japan, Manchuria, Siberia (Ussuri).
*P. lavallei:* Japan.
*P. sachalinense:* China.

**Coleosporium pinicola** (Arth.) Arth. (xxx) **Virginia pine rust**

Autoecious. Forms yellow to orange-red waxy pustules breaking the leaf epidermis. Affected needles discolor gradually and finally may be shed. Diseased trees are apt to have but a single set of leaves of one year and appear bare. Defoliation may occur before the last-formed needles are fully grown. Distributed in North America from Delaware to eastern Tennessee. It is also reported from western Siberia and in Kamchatka.

*Pinus cembra* var. *sibirica:* Siberia.
*P. pumila:* Kamchatka.

**Coleosporium saussureae** Thuem. (xxx) **rust**

Forms golden rust pustules on leaves of *Saussurea* and on needles of five-leaved pines. Distributed in southern Siberia, Manchuria, Kamchatka, Kurile Islands, Sakhalin Island, Japan, eastern and northern China.

*Pinus cembra* var. *sibirica:* Siberia.
*P. pumila:* Japan.

**Coleosporium senecionis** Fr. ex Kickx (xxx) **rust**

Forms large tongue-shaped outgrowths on needles of pines and later orange pustules on leaves of *Senecio*. Distributed in the North Temperate Region of the Old World, Syria, Japan, the Himalayas, and Philippines; in North America, apparently introduced at widely separated points but not established so far as known. Also in South America.

*Pinus* sp.: Russia.
*P. halepensis:* France, Italy.
*P. mugo:* Denmark, Austria.
*P. nigra:* Austria, Belgium, Denmark, France, and Great Britain.
*P. nigra* var. *poiretiana:* Europe.
*P. pinaster:* France.
*P. pumila:* Kamchatka.
*P. sylvestris:* Belgium, Denmark, Estonia, France, Germany, Great Britain, Ireland, Sweden.

**Coleosporium sonchi** (Strauss) Lév. ex Tul. (xxx) **rust**

Forms large tongue-shaped hollow outgrowths, containing yellow spores, on needles of hard pines. Later leaves of *Sonchus* bear yellow, powdery rust pustules and still later waxy crusts under the leaf epidermis, which are the overwintering stage of the fungus. Found in North America at a single place in Wisconsin and not believed to be established there. Prevalent in Europe.

*Pinus sylvestris:* Estonia, Germany, Great Britain, Switzerland.

**Coleosporium tussilaginis** (Pers.) Lév. (xxx) **rust**

Forms tubules on pine needles containing rust spores and later rust pustules on leaves of *Tussilago*. Distributed in Europe.

*Pinus sylvestris:* Estonia, Germany, Great Britain, Switzerland.

**Colletotrichum dematium** (Fr.) Grove (xxx) **anthracnose**

Causes elongate lesions along the petioles and veins of leaves. Known only from Portugal.

*Platanus orientalis:* Portugal (Coimbra).

**Colletotrichum gloeosporioides** Penz. (xxx) **anthracnose**

Causes leaf spots, cankers, and dieback of many trees of the Tropics and warmer temperate regions. Has been given numerous names which von Arx (1957) states are all synonyms of *Colletotrichum gloeosporioides*. [Arx, J. A. von. Die Arten der Gattung Colletotrichum Cda. Phytopath. Ztschr. 29: 413–468. 1957.]

*Alchornea rugosa:* Moluccas (Amboina), Philippines.
*Aleurites* sp.: Nyasaland.
*A. fordii:* French Equatorial Africa.
*A. montana:* French Equatorial Africa, Indochina.
*Alstonia scholaris:* Philippines.
*Bischofia javanica:* Java.
*Ceratonia siliqua:* Italy.
*Cinnamomum burmannii:* Italy.
*C. camphora:* Mauritius.

*Clerodendrum infortunatum:* India.
*Coffea arabica:* El Salvador, Guatemala, Jamaica, Java, Kenya, Madagascar, Peru, Puerto Rico, Venezuela.
*C. canephora* var. *robusta:* Ceylon.
*C. liberica:* Java.
*Eucalyptus cladocalyx:* Australia (Melbourne).
*Ficus benjamina:* Java.
*F. elastica:* Java, Scotland (Glasgow).
*Garcinia dulcis:* Java.
*Hevea* sp.: Indochina, Uganda.
*H. brasiliensis:* Ceylon, Congo, Brazil, French Equatorial Africa, India, Indochina, Malaya, Mexico, Peru, Philippines, Sumatra.
*Mangifera indica:* British Guiana, Colombia, El Salvador, Guatemala, Hawaii, Malaya, Mauritius, Peru, Philippines, Puerto Rico, Sierra Leone, Union of South Africa, Venezuela.
*Palaquium oblongifolium:* East Indies.
*Persea americana:* El Salvador, Guatemala, Jamaica, Puerto Rico, Venezuela.
*Pithecellobium scutiferum:* Java.
*P. unguis-cati:* Puerto Rico.
*Prosopis ruscifolia:* Argentina.
*Theobroma cacao:* Guatemala, São Tomé, Surinam, Mauritius. Uganda, West Indies (Antilles).

**Colletotrichum heveae** Petch (x) **anthracnose**

Causes irregular leaf spots to large blotches, gray brown with purple-brown margins on old *Hevea* leaves in Brazil and Ceylon. Dead areas are apt to fall out. Distributed in Brazil, India, Ceylon, Malaya, Andaman Islands, and French Equatorial Africa.

*Hevea brasiliensis:* Andaman Islands, Brazil, Ceylon, French Equatorial Africa, India, Malaya.

**Colletotrichum hsienjenchang** Hino & Hidaka (x) **bamboo blight**

Causes rot of living *Phyllostachys* shoots in Japan.

*Phyllostachys bambusoides:* Japan.
*P. nigra* var. *henonis:* Japan.

**Collybia velutipes** Curt. (xx) **white sap rot**

Causes a soft white sapwood rot of numerous hardwoods. Fruits in frosty weather. Shaped like a small, tawny umbrella with vertical gills beneath bearing the spore-bearing parts and with a velvety stem. Mostly saprophytic but can attack living trees through large, open wounds exposing the wood. Distributed widely in North America from Alaska to Mexico; also in Europe, Asia, and Australia.

*Aesculus hippocastanum:* Germany.
*Fraxinus* sp.: Austria.
*Populus* sp.: Austria.
*Salix* sp.: Czechoslovakia, Austria.
*Tilia* sp.: Austria.
*Ulmus* sp.: Austria.

**Coniophora bourdotii** Bres. (x) **conifer butt rot**

A resupinate, effused fungus with umber hymenium and brown spores. Causes brown butt rot in living coniferous trees. Known in the British Isles, France, and Sweden.

*Pinus sylvestris:* Sweden.

**Coniophora olivacea** (Fr.) Karst. (xx) **butt rot**

An olive-colored resupinate fungus with olive or yellow-brown spores. Causes cubical butt rot of living broad-leaved and coniferous trees. Distributed in North America, Europe, and northern Asia.

*Picea abies:* Norway.

**Coniophora puteana** (Fr.) Karst. (xx) **butt rot**

A yellowish to fuscous olivaceous resupinate fungus with white flesh and olivaceous or ferruginous spores. Causes brown butt rot mostly of conifers. Distributed in North America from Quebec to District of Columbia and westward to British Columbia, California, and southward in Mexico. Also in Europe, Siberia, and South Africa.

*Abies sibirica:* Siberia.
*Betula* sp.: Russia.
*Crataegus oxyacantha:* Denmark.
*Hippophaë rhamnoides:* Denmark.
*Juniperus communis:* Denmark.
*Larix decidua:* Great Britain.
*Picea abies:* Denmark.
*Pinus sylvestris:* Sweden.
*Salix amygdalina:* Denmark.

**Coniothyrium betulae** Lamb. (xx) **wilt**

Associated with constriction of young birch stems and resulting wilt of distal parts. Known in Germany.

*Betula* sp.: Germany (Saxony).

**Coniothyrium cocoes** P. Henn. (x) **leaf spot**

Occurs as pimples on brown spots of leaves in East Africa.

*Cocos nucifera:* East Africa (Usambara).

**Coniothyrium heveae** Saccas (xx) **leaf spot**

Forms erumpent pustules associated with *Didymosphaeria polyspora* Cantournet on large, irregular, necrotic spots on *Hevea* leaves. Known in French Equatorial Africa.

*Hevea brasiliensis:* French Equatorial Africa.

**Corbulopsora clemensiae** Cumm. (xxx) **rust**

Forms a deeply immersed cupulate stage of rust on *Olearia* leaves, followed by a pale yellow stage with an overwintering chestnut-brown stage intermixed. Known only in New Guinea.

*Olearia* sp.: New Guinea.

**Corbulopsora gravida** Cumm. (xxx) **rust**

Forms cupulate to cylindrical rust pustules on leaves of *Olearia* in New Guinea. The late stage is yellow brown with an outside membrane holding together the elongate telia. Known only in New Guinea.

*Olearia* sp.: New Guinea.

**Corticium bombycinum** (Sommerf.) Bres. (xx) **wood rot**

Causes wood decay of *Salix* and occasionally other trees with large open wounds. Pollarded trees are especially liable to attacks. The fruiting body is flat on the surface of exposed wood or dead bark, relatively thick, white, cream, or pale yellowish brown, membranaceous. Distributed in North America and Europe.

*Salix* sp.: Great Britain.

**Corticium comedens** Nees (x) ———

A flesh-colored, thin, crusty fungus that occasionally attacks hardwoods growing in thick stands and not growing with normal vigor. In Denmark it is reported as killing pole-sized trees. Distributed in temperate United States and Europe; and is reported from Morocco, Ceylon, and Australia.

*Alnus* sp.: Denmark.
*Quercus* sp.: Denmark.

**Corticium galactinum** (Fr.) Burt (xx) **stringy white butt rot**

Causes stringy white root and butt rot of conifers and broad-leaved trees. Fruiting bodies are white, creamy or ochraceous, resupinate, effused, perennial, on roots, logs, and duff. Largely saprophytic, but can attack living roots touching dead wood infected by it in the soil. Has done much damage in orchards and rather recently has been found causing much damage in native forest stands. Distributed in North America and West Indies; known in Czechoslovakia, Poland, Finland, Siberia, and Japan. Probably much more important than is generally known.

*Abies alba:* Czechoslovakia.
*Alnus* sp.: Poland.
*Pinus* sp.: Finland.

**Corticium odoratum** (Fr.) Bourd. & Galz. (x) **root rot**

Much like *Corticium galactinum* but spores of *C. odoratum* are larger and clamp connections are lacking in thin-walled hyphae.

*Abies alba:* Czechoslovakia.
*Picea abies:* Czechoslovakia.
*Pinus* sp.: Sweden.
*Quercus robur:* Sweden.

**Corticium penicillatum** Petch (xxx) **thread blight**

Causes thread blight of coconut, blighting the leaves and even killing large groups of trees. Distributed in Ceylon, New Guinea, and New Hebrides.

*Cocos nucifera:* Ceylon, New Guinea, New Hebrides.

**Corticium repens** Berk. (xxx) **white thread blight**

Forms white mycelial strands on the bark which run upward to the leaves of broad-leaved trees. As it ascends, branches are given off to smaller branches or twigs. Fungus pads form at the axils of twigs

and leaves. It causes early defoliation and death of young terminal buds—dieback. Known in India.

*Anogeissus latifolia:* India.
*Bauhinia malabarica:* India.
*Buchanania latifolia:* India.
*Combretum decandrum:* India.
*Eugenia cumini:* India.
*E. heyneana:* India.
*Ichnocarpus frutescens:* India.
*Oroxylum indicum:* India.
*Shorea robusta:* India.
*Terminalia bellerica:* India.
*T. tomentosa:* India.

**Corticium salmonicolor** Berk. & Br. (xxx) **pink disease**

Causes the widespread pink disease of the Tropics, which attacks practically all woody plants. It occurs on the trunks and branches, first appearing as white or pink pustules on the dead bark. Then a pink mycelial layer spreads over the bark, breaks up in patches, and fades to a dirty white color. The outer wood layers are also killed.

Distributed in Florida, Mexico, Central America, Colombia, British Guiana, Surinam, Trinidad, Peru, Brazil, Caucasus, Tropical Africa, Asia, East Indies, and Australia.

*Acacia confusa:* Formosa.
*A. decurrens:* Mauritius.
*A. leucophloea:* East Indies.
*Artocarpus heterophyllus:* Ceylon, East Indies, Malaya.
*Bixa orellana:* Java.
*Bombax malabaricum:* Formosa.
*Buchanania* sp.: East Indies.
*Butea monosperma:* East Indies.
*Castilla elastica:* East Indies.
*Casuarina equisetifolia:* Mauritius.
*Cinchona officinalis:* East Indies, Guatemala, India, Peru.
*C. pubescens:* Colombia, East Indies, Guatemala.
*Cinnamomum camphora:* Malaya.
*Coffea arabica:* Congo, Java.
*C. liberica:* Java.
*Durio zibethinus:* Malaya.
*Erythroxylon coca:* Java.
*Eucalyptus* sp.: Brazil.
*Ficus carica:* Formosa.
*F. vogelii:* East Indies.
*Hevea brasiliensis:* Andaman Islands, Borneo, Brazil, Congo, East Indies, French Equatorial Africa, Guatemala, India, Indochina, Malaya, Mexico.
*Lansium domesticum:* Malaya.
*Leucaena glauca:* East Indies.
*Michelia fuscata:* Formosa.
*Morus australis:* Formosa.
*M. indica:* Tanganyika.
*Palaquium oblongifolium:* Malaya.
*Pithecellobium dulce:* East Indies, Formosa.
*Populus* sp.: Mauritius.

*P. nigra:* Brazil.
*Schleichera oleosa:* East Indies.
*Shorea* sp.: Malaya.
*Swietenia macrophylla:* Java.
*S. mahagoni:* Java.
*Tabernaemontana coronaria:* Formosa.
*Tamarindus indica:* East Indies.
*Tectona grandis:* Java, Sumatra.
*Theobroma cacao:* Brazil, Congo, Dominican Republic, Malaya, Puerto Rico.

**Corticium theae** Bern. (xxx) **black thread blight**

Forms brown fungus strands over infected leaves and twigs, which turn black and die back. It is one of the so-called thread-blight diseases. Distributed in Ceylon, India, Java, and Sumatra.
*Erythroxylon coca:* Ceylon.

**Corynelia brasiliensis** Fitzp. (xxx) **tar spot**

Forms small, roughened, black stromata mostly on the lower leaf surface and stem of *Podocarpus*. Known only in Brazil.
*Podocarpus lambertii:* Brazil.

**Corynelia fructicola** (Pat.) Hoehn. (xxx) **tar spot**

Forms small cushion-shaped, black stromata on fruits of *Myrsine* and *Rapanea* in China, India, and South Africa.
*Myrsine africana:* India.
*M. melanophleos:* Union of South Africa.
*Rapanea melanophloeos:* Union of South Africa.

**Corynelia jamaicensis** Fitzp. (xxx) **tar spot**

Forms round to elliptical black stromata on *Podocarpus* leaves. Known only in Jamaica and Cuba.
*Podocarpus purdieanus:* Jamaica.

**Corynelia nipponensis** Fitzp. (xxx) **tar spot**

Forms black stromata on *Podocarpus* leaves. Known only from Japan in a single collection.
*Podocarpus macrophyllus:* Japan.

**Corynelia oreophila** (Speg.) Starb. (xxx) **tar spot**

Forms black stromata chiefly on the lower leaf surface of *Podocarpus*. Distributed in Costa Rica, Colombia, Bolivia, Brazil, Chile, and Argentina.
*Podocarpus angustifolius:* Argentina, Bolivia.
*P. macrostachys:* Costa Rica.
*P. sellowii:* Brazil.

**Corynelia portoricensis** Fitzp. (xxx) **tar spot**

Forms thickened black stromata on leaves of *Podocarpus* in Puerto Rico. Known only in type locality.
*Podocarpus coriaceus:* Puerto Rico.

**Corynelia tropica** (Auersw. & Rab.) Starb. (xxx) **tar spot**

Forms irregular black stromata on leaves and stems of *Podocarpus*. Distributed in Chile, the Philippines, and New Zealand.

*Podocarpus andinus:* Chile.
*P. costalis:* Philippines.
*P. salignus:* Chile.

**Corynelia uberata** Fr. (xxx) **tar spot**

Forms black stromata on leaves, stems, and fruits of *Podocarpus*. Distributed in Japan, New Zealand, Equatorial and South Africa, and Australia.

*Podocarpus elongatus:* Japan, Union of South Africa.
*P. gracilior:* East Africa.
*P. latifolius:* Union of South Africa.
*P. milanjianus:* Congo, Uganda.
*P. nagi:* Japan.
*P. spinulosus:* Australia.

**Coryneliospora fructicola** (Pat.) Fitzp. (xxx) **scab**

Forms black, carbonous, superficial coating on fruits of *Myrsine* and *Rapanea*. Known in China, India, and South Africa.

*Myrsine* sp.: China.
*M. africana:* India.
*Rapanea melanophloeos:* Union of South Africa.

**Coryneum cardinale** Wagener (xx) **cypress canker**

Cypress canker and dieback occurs throughout the range of Monterey cypress in California. The future of the tree is threatened because of the limited range of the tree and the widespread range of the disease in California. On other continents *Cupressus macrocarpa* has shown phenomenal growth and has been planted extensively. Unfortunately, the canker disease has accompanied the tree to many of the foreign plantings. Known in Argentina, South Africa, Italy, France, Spain, New Zealand, and Australia. (See Handbook No. 100).

*Cupressus macrocarpa:* Argentina, Australia.
*C. sempervirens:* New Zealand, Spain.

**Coryneum eucalypti** F. Alm. & Camara (xxx) **leaf spot**

Causes small, irregular, white spots with brown margins on *Eucalyptus* leaves. Known only in Portugal.

*Eucalyptus globulus:* Portugal (Parcalhota).

**Coryneum microstictum** Berk. & Br. (xx) **leaf spot**

Causes small, whitish spots on leaves of *Arbutus* with a dark ring delimited by a reddish-brown halo. Known in Italy.

*Arbutus unedo:* Italy.

**Coryneum mori** Nomura (xx) **mulberry canker**

Causes girdling cankers of hardwoods on small branches and twigs, resulting in wilt of leaves on distal parts. Nursery trees have been seriously damaged. Known in Kashmir and Japan.

*Celtis caucasica:* India.
*Morus alba:* India, Japan.

**Coryneum myristicae** Steinm. (xxx) **nutmeg blight**

A disease known as early as 1898 in Java. Causes greenish-black sunken spots 0.5 to 2 cm. across on husks of diseased fruits, while inner tissues show brown discolorations. Heavy damage results from ruined fruits, reaching more than 60 percent in severe outbreaks. Known only in the East Indies.

*Myristica fragrans:* Java.

**Cristulariella depraedans** (Cke.) Hoehn. (xxx) **maple leaf wilt**

Forms large, gray, nonmarginate spots which coalesce and cause sudden wilting of the leaf and final defoliation. On the lower side of the wilted leaves small, white tufts form, mostly on the main veins of the leaves. Inoculations succeed under high air moisture conditions. Distributed in the United States in Connecticut and Vermont; also in England and Germany.

*Acer pseudoplatanus:* England, Germany.

**Cronartium bresadoleanum** P. Henn. (xxx) **felt rust**

Forms brown felt rust on leaves. Known in tropical Africa.

*Erythroxylon* sp.: Africa (tropical).

**Cronartium byrsonimatis** P. Henn. (xxx) **felt rust**

Forms brown rust pustules and brown, coarse felty growth on leaves in Brazil.

*Byrsonima coccolobaefolia:* Brazil (Sao Paulo).

**Cronartium coleosporioides** (Diet. & Holw.) Arth. (xxx) **felt rust**

Forms rust pustules on leaves and stems of herbs of the family Scrophulariaceae, followed in late summer by the coarse, felty, overwintering stage. The next spring, young shoots of hard pines in the neighborhood may become infected by the spores of the overwintered stage and develop none or rather slight spindle-shaped swellings or pronounced galls with rust blisters breaking through the bark. Some forms of this fungus also have the ability to spread from pine to pine without alternate hosts. Distributed from Alaska to the Mexican boundary and eastward to western Nebraska; also in Central and South America. Probably a collective species.

*Pinus* sp.: Guatemala.

**Cronartium conigenum** Hedgc. & Hunt (xxx) **pine cone-oak rust**

Forms powdery, yellow rust pustules on *Quercus* leaves followed by a brown, felty, overwintering stage on the same leaves. Infection of young developing pine cones occurs the next spring. They become much hypertrophied and bear yellow rust pustules in 2 to 3 years after infection. Distributed in Arizona, Costa Rica, Guatemala, and Mexico.

*Pinus leiophylla:* Guatemala, Mexico.
*P. leiophylla* var. *chihuahuana:* Mexico.
*P. montezumae:* Guatemala, Mexico.
*P. oocarpa:* Mexico.
*P. pseudostrobus:* Mexico.
*Quercus* sp.: Guatemala, Mexico.
*Q. oocarpa:* Costa Rica.
*Q. peduncularis:* Guatemala.

**Cronartium egenulum** H. & P. Syd. (xxx) **rust**

Forms columnar fungus bodies on the lower leaf surface of *Miconia*. Known in Brazil.

*Miconia milleflora:* Brazil (Sao Paulo).

**Cronartium flaccidum** (Alb. & Schw.) Wint. (xxx) **felt rust**
[=*Peridermium pini* var. *corticola* (Link) Rab.]

Forms yellow rust pustules on leaves of many herbaceous plants, followed by a brown, felty, overwintering stage on the same leaves. *Pinus sylvestris* is the principal pine host. The rust has a short-cycle strain able to spread directly from pine to pine also, and it has long been known as *Peridermium pini* var. *corticola*. Distributed in Europe, Siberia, China, India, and Japan. It was found in North America on Prince Edward Island but has not been seen there since.

*Pinus griffithii:* India.
*P. halepensis:* Belgium, France.
*P. mugo:* France, Norway.
*P. mugo* var. *rostrata:* Norway.
*P. nigra:* Trieste.
*P. pinaster:* Belgium, France, Italy.
*P. sylvestris:* Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, England, Finland, France, Germany, Ireland, Latvia, Norway, Poland, Russia, Scotland, Sweden, Switzerland.
*P. tabulaeformis* var. *yunnanensis:* China.

**Cronartium himalayense** Bagchee (xxx) **pine-Swertia felt rust**

Heteroecious on *Pinus roxburghii* with *Swertia* spp. as alternate hosts. Resembles *Cronartium ribicola* in its action on the pines. Distributed in India, Pakistan, and the Philippines. A destructive rust. Its introduction into other regions with extensive hard pine forests should be avoided until more is known of its virulence on other pines and *Swertias*.

*Pinus roxburghii:* India, Pakistan.

**Cronartium jacksoniae** P. Henn. (xxx) **felt rust**

Presumably heteroecious, but no coniferous host is known. Has uredal and telial stages on leaves and shoots of leguminous shrubs. The shoots are deformed, being stimulated into forming witches'-brooms. Distributed in Australia in Queensland, Victoria, and Tasmania.

*Bossiaea cinerea:* Australia (Tasmania).
*Platylobium formosum:* Australia (Victoria).

**Cronartium kamtschaticum** Jørst. (xxx) **pine felt rust**

Heteroecious. Believed, but not proved, to live on *Pinus pumila* and to have as alternate hosts *Castilleja* and *Pedicularis*. Reported in Kamchatka; probably also in Siberia (Yakutsk Region), South Sakhalin, Kuriles, and Japan.

*Pinus pumila:* Japan, Kurile Islands.

**Cronartium kemangae** Rac. (xxx) **rust**

Forms brown rust pustules on leaves of *Mangifera*. Known only in Java.

*Mangifera caesia:* Java.

**Cronartium keteleeriae** Tai (xxx) **rust**

Forms cylindric fungus spore columns, more or less compressed laterally, 2.5 to 6 mm. long, and cadmium orange in color, on leaves of *Keteleeria* in China.

*Keteleeria evelyniana:* China (Yunnan).

**Cronartium malloti** Rac. (xxx) **rust**

Forms golden-yellow to reddish-brown rust pustules on *Melanolepis* leaves. Known in Java and the Philippines.

*Melanolepis multiglandulosa:* Java, Philippines.

**Cronartium quercuum** (Cke.) Miyabe (xxx)
**Asian pine-oak blister rust**

This rust greatly resembles the American eastern pine-oak blister rust, *Cronartium cerebrum* (Pk.) Hedgc. & Long. In fact, the two have been accepted as identical until recently when significant differences were found. Oaks are principal alternate hosts of both species. *C. quercuum* is known definitely in China and Japan. A similar rust is known in Europe, and presumably the same species is the one known in Siberia, India, Korea, and Pakistan.

*Castanea crenata:* China, Japan.
*C. henryi:* China.
*C. mollissima:* China, Japan.
*Castanopsis cuspidata:* Japan.
*Fagus japonica:* Japan.
*Pinus densiflora:* Japan.
*P. khasya:* India, Philippines.
*P. luchuensis:* Japan.
*P. massoniana:* China.
*P. sylvestris:* Japan, Russia.
*P. tabulaeformis* var. *yunnanensis:* China.
*P. thunbergii:* Japan.
*Quercus* sp.: China, Pakistan.
*Q. acuta:* Japan.
*Q. acutissima:* China, Japan.
*Q. coccinea:* Germany.
*Q. dentata:* China, Japan.
*Q. fabri:* China.
*Q. glandulifera:* China, Japan, Korea.
*Q. glauca:* China, Japan.
*Q. griffithii:* India.
*Q. ilex:* Italy, Japan.
*Q. mongolica:* Japan, Korea, Siberia (Amur region).
*Q. mongolica* var. *grosseserrata:* Japan.
*Q. myrsinaefolia:* Japan.
*Q. neostuxbergii:* Japan.
*Q. nigra:* Germany.
*Q. palustris:* Japan.
*Q. petraea:* Japan.
*Q. variabilis:* China, Japan.
*Q. velutina:* Germany.

**Cronartium ribicola** J. C. Fisch. (xxx) **white pine blister rust**

Heteroecious on five-needle pine stems and branches, and *Ribes* leaves as alternate hosts. Asia is believed to be the home of this fungus. In the last 100 years it has extended its range over Europe and temperate North America and has practically traversed the North Temperate Zone from east to west, completely encircling the earth. As the parasite requires *Ribes* to complete its life cycle, removal of *Ribes* to a sufficient distance from five-needle pines will control its attacks. At heavy expense, justified by the high value of white pine forests, a catastrophe like that of the chestnut blight can be, and is being, avoided in North America.

*Pinus ayacahuite:* Belgium, England, Scotland.
*P. cembra:* England, Germany, Norway, Russia, Scotland, Switzerland.
*P. cembra* var. *sibirica:* Poland, Siberia.
*P. griffithii:* Belgium, Denmark, England, Germany, India, Japan, Pakistan, Scotland.
*P. koraiensis:* Germany, Sweden.
*P. parviflora:* Scotland, England.
*P. peuce:* Finland, Germany, Russia, Wales.
*P. pumila:* Kamchatka.

**Cronartium strobilinum** Hedgc. & Hahn (xxx) **pine cone-oak rust**

Forms yellow rust pustules with very abundant powdery masses of spores on the scales of hypertrophied infected cones of pines. Chestnut and oak leaves near the diseased pines are infected and develop early yellow powdery pustules followed by slender filamentous outgrowths of a brown color, the usual overwintering stage of the fungus. Infected leaves of evergreen oaks also carry the fungus over winter to begin a new life cycle. Known from Illinois to Texas, Florida, Virginia, and Cuba.

*Quercus virginiana:* Cuba.

**Crossopsora antidesmae-dioicae** (Rac.) Arth. & Cumm. (xxx) **felt rust**

Forms yellow rust pustules on the lower leaf surfaces of *Antidesma* followed by telial columns, yellow-brown to brown and 0.5 to 1.5 mm. long. Distributed in Java, New Guinea, Philippines, and Uganda.

*Antidesma ghesaembilla:* Philippines, New Guinea.
*A. venosum:* Uganda.

**Crossopsora fici** Arth. & Cumm. (xxx) **rust**

Forms cinnamon-brown pulverulent rust pustules on *Ficus* leaves, followed by filamentous outgrowths on the lower side of the leaves. Known in Uganda and Philippines.

*Ficus capensis:* Uganda.

**Crossopsora malloti** (Rec.) Cumm. (xxx) **rust**

Forms brown erumpent-pulvinate, subepidermal and *not* filiform rust pustules. Known in New Guinea.

*Mallotus* sp.: New Guinea.

**Crossopsora notata** (Arth. & J. R. Johnston) Arth. (xxx) **felt rust**

Forms brown rust pustules on leaves of *Byrsonima* followed by brown, stout, and short columnar outgrowths. Distributed in Cuba, Dominican Republic, and Puerto Rico, Guatemala, Bolivia, Venezuela, and Brazil.

*Byrsonima crassifolia:* Bolivia, Cuba, Dominican Republic, Guatemala, Puerto Rico, Venezuela.
*B. intermedia:* Brazil.

**Crumenula pinicola** (Fr.) Karst. (xx) **pine dieback**

Causes cankers on branches and stems of pines and resulting dieback. Apparently rare in the United States; generally distributed in Europe.

*Pinus mugo:* Denmark, Norway.
*P. mugo* var. *rostrata:* Norway.
*P. nigra:* Denmark, Netherlands.
*P. nigra* var. *poiretiana:* Belgium, Netherlands.
*P. sylvestris:* France, Netherlands, Norway, Sweden.

**Crumenula sororia** Karst. (xx) **pine dieback**

Causing cankers and dieback on small stems and twigs of pines. Reported in Finland, Netherlands, and Siberia.

*Pinus cembra* var. *sibirica:* Siberia.
*P. nigra:* Netherlands.
*P. nigra* var. *poiretiana:* Netherlands.
*P. sylvestris:* Netherlands.

**Cryptochaete rufa** (Fr.) Karst. (xxx) **hardwoods heart rot**

Pilei gregarious, purplish red, breaking through the host epidermis; centrally attached, margin free, discoid, 2 to 4 mm. across, smooth to wrinkled with age, hymenium smooth. On *Populus* and other hardwoods in northern regions of North America and Europe. Causing a white pocket rot of heartwood of living trees.

*Quercus* sp.: Germany.

**Cryptocline taxicola** (Allesch.) Petr. (xxx) **yew anthracnose**

Conidial pustules form on anthracnose lesions on *Taxus* needles. Distributed in northern Europe and Italy.

*Taxus* sp.: France, Italy.
*T. baccata:* Denmark, Great Britain, Norway.

**Cryptodiaporthe castanea** (Tul.) Wehm. (xx) **chestnut canker**

Causes cankers on Asiatic species of *Castanea* of all ages up to 50 years or more. It is known in 18 of the United States and in Europe in Great Britain, France, Netherlands, Germany, and Italy.

*Castanea crenata:* France.
*C. dentata:* Switzerland.
*C. sativa:* France, Great Britain.

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**Cryptomyces maximus** (Fr.) Rehm (xxx) **willow canker**

Causes bark canker of willow stems and shoots. The fungus forms a thick hyphal cushion under the bark, which is split open by continuing growth-pressure from within and large patches of bark are shed. Large open wounds are produced causing death of distal parts in many cases. Distributed in the United States and Europe.

*Salix alba:* Denmark.
*S. alba* var. *calva:* Great Britain.
*S. candida:* Germany.
*S. daphnoides:* Denmark.
*S. fragilis:* Denmark, Scotland.
*S. phylicifolia:* Norway.
*S. purpurea:* Germany.
*S. repens:* Denmark.
*S. ×smithiana:* Denmark.

**Cryptospora suffusa** (Fr.) Tul. (xx) **alder dieback**

Causes dying of *Alnus* branches in early summer after leafing out. Distributed in the United States and Europe.

*Alnus glutinosa:* Denmark.
*A. incana:* Denmark.

**Cryptosporella araucariae** Vogl. (xx) **stem rot**

Associated with decay of stems of *Araucaria* seedlings. Known only in Italy.

*Araucaria araucana:* Italy.

**Cryptosporella eugeniae** Nutman & F. M. Roberts (xx) **clove dieback**

Causes dieback of branches of older trees and "sudden death" of younger ones, due to girdling. The fungus enters injuries, which are abundant on bearing trees because of careless haste in harvesting the flowering branches. Injured branches are infected and die downward to the trunk. This is partially or completely girdled, and the tree is killed or nearly killed so that it is useless. Known in Zanzibar only.

*Eugenia caryophyllata:* Zanzibar.
*E. jambos:* Zanzibar.

**Cryptostroma corticale** (Ell. & Ev.) Greg. & Waller (xx) **sooty bark disease**

Causes wilt of scattered branches of *Acer*, but the leaves remain hanging on the twigs. Usually only a part of a tree wilts and dies back. Foliage the next spring is lacking on affected branches, and blisters, mostly elongated vertically, appear on the bark. Within is a sheet of white mycelium, changing to bluish green with age; this is later covered with abundant black spores. The outer bark slowly peels off, and the exposed sooty spores are not easily wet and suggest the name "sooty bark."

The disease, which was first noted in 1945 in England, spread aggressively on *Acer pseudoplatanus* and caused alarm as to the future of that tree. It was discovered in 1947 at Paris and, for a few years, spread threateningly. More recently it has died down

and appears to be rather unimportant. Reported in 1889 from North America in Wisconsin, Ontario, and Michigan (apparently saprophytic); also in Norway, England, and France (parasitic).

*Acer negundo:* France (Grenoble).
*A. platanoides:* Great Britain (Essex and London), Norway.
*A. pseudoplatanus:* France, Great Britain.

**Cucurbitaria laburni** Pers. (x) **dieback**

Forms rough projecting groups of coriaceous black perithecia on twigs of *Laburnum* associated with twig dieback. Distributed in the United States and generally in Europe where its host is grown.

*Laburnum anagyroides:* Germany.

**Cucurbitaria naucosa** (Fr.) Fckl. (xx) **elm dieback**

Similar to *Cucurbitaria laburni*, which see. Occurs on cankers and causes dieback of small branches, and finally death of *Ulmus* trees. Distributed in British Isles, France, Germany, Switzerland, and Sweden.

*Ulmus glabra:* Switzerland.

**Cucurbitaria piceae** Borthw. (xx) **spruce bud blight**

Forms a black stroma covering the buds of *Picea*. Infection is followed by swelling of the buds. New growth is mostly suppressed. The infected shoots are thin with short needles and are likely to die prematurely. Damage caused is appreciable. Distributed in Scotland, Germany, and Switzerland.

*Picea abies:* Germany, Scotland.

**Cucurbitaria pithyophila** (Fr.) de N. (x) ———

Occurs on living branches of *Abies*, *Picea*, and *Pinus* trees and seedlings. Forms nodules on branches and kills small seedlings. Distributed widely in the United States and in Europe; also reported in Japan.

*Abies alba:* Germany.
*A. nordmanniana:* Germany.
*Picea abies:* Germany, Norway.
*Pinus cembra:* Germany.
*P. sylvestris:* Germany, Norway, Scotland.

**Cucurbitaria sorbi** Karst. (xx) **dieback**

Occurs on wounded twigs and branches of *Sorbus* causing dieback. Damaging to nursery stock. Reported in New York and in Finland and Germany.

*Sorbus aucuparia:* Germany.

**Cylindrocladium quinqueseptatum** Boed. & Reitsma (xxx) **clove leaf spot**

Occurs on circular, whitish, red-edged spots and irregular brown patches on leaves of *Eugenia* seedlings. Known only from Java.

*Eugenia caryophyllata:* Java.

**Cylindrocladium scoparium** Morg. (xxx) **root rot**

Causes root rot of numerous conifers and broad-leaved species; also dieback of older trees. Many species mentioned as susceptible are exotics in those places where the fungus has been damaging. It is widely distributed in the United States, Canada, West Indies, South America, Europe, Asia, South Africa, East Indies, Australia, and Tasmania.

*Acacia decurrens* var. *mollis:* Union of South Africa.
*Dipholis salicifolia:* Jamaica.
*Eucalyptus* sp.: Argentina, Brazil.
*E. citriodora:* Japan.
*E. coccifera:* Japan.
*E. gigantea:* Japan.
*E. globulus:* Japan.
*E. gunnii:* Japan.
*E. longifolia:* Japan.
*E. obliqua:* Japan.
*E. pauciflora:* Japan.
*E. regnans:* Japan.
*E. resinifera:* Japan.
*E. robusta:* Japan.
*E. saligna:* Japan.
*E. tereticornis:* Japan.
*E. viminalis:* Japan.

**Cylindrosporium castaneae** (Lév.) Krenner (x) **leaf spot**

Occurs on very small, dark-brown spots on leaves of *Castanea.* Infected leaves twist spirally and are shed prematurely. Distributed in the United States and Europe.

*Castanea sativa:* Hungary.

**Cylindrosporium kelloggii** Ell. & Ev. (xxx) **black-oak leaf spot**

Causes small spots, 1 to 2 mm. in diameter, first dark brown, then with a small white center and dark brown margins; often coalesce up to 0.5 to 1 cm. Known in California and Oregon on *Quercus kelloggii* and in Brazil on *Q. robur.*

*Quercus robur:* Brazil.

**Cylindrosporium koenigii** Thirum. (xxx) **leaf spot**

Occurs on whitish leaf spots 3 to 10 mm. in diameter, epiphyllous, slightly raised and appearing as anthracnose patches on *Murraya.* Known only in India.

*Murraya koenigii:* India.

**Cylindrosporium maculans** (Allesch.) Jacz. (x) **leaf spot**

Occurs on spots on *Morus* leaves. Distributed in Russia, Poland, Yugoslavia, Albania, and Denmark.

*Morus alba:* Russia (Tashkent).

**Cystopsora oleae** Butl. (xxx) **leaf rust**

Forms rust pustules on light brown leaf spots on *Olea.* Distributed in India, Ceylon, and Pakistan.

*Olea dioica:* India, Pakistan.

**Cytidia salicina** (Fr.) Burt (xx) **canker**

Causes stem cankers of willows, especially in basket willow plantations, and of poplars and occasionally other broad-leaved north temperate species. Generally distributed in Alaska, Canada, United States, Europe, and also reported in Algeria, South Africa, and Siberia.

*Populus* sp.: Great Britain.
*Salix* sp.: Austria, Estonia, Finland, Norway, Siberia (Tara, Ussuri).
*S. aurita:* Great Britain.
*S. caprea:* Norway.

**Cytodiplospora mori** I. Miyake (xx) **twig blight**

Forms black thickened stromata that burst the overlying epidermis of *Morus* twigs. Haustoria enter the host cells. Known only in Japan.

*Morus alba:* Japan.

**Cytospora abietis** Sacc. (xx) **conifer canker**

Many *Cytospora* species have been proved to be imperfect stages of *Valsa* species. The *Cytosporas* are much more abundant, and more aggressive in attacking living trees, while the *Valsa* stages are rather uncommon and appear later than the *Cytospora* stages. It seems best to list each as given by the authors of the articles indexed.

*Cytospora abietis* forms small erumpent subepidermal pustules oozing abundant conidia, often in tendrils. Causes a canker of lower branches of conifers and spreads upward in an infected tree. Infection seems to be by entry into wounded bark. Inoculations into wounds have been successful. Drought may lower resistance to infection. Distributed in Canada, the United States, and Europe.

*Larix decidua:* Great Britain.

**Cytospora ambiens** Sacc. (xx) **dieback**

See general comments under *Cytospora abietis.* Associated with dieback of numerous broad-leaved species. Distributed generally in North and South America, and in Europe and Japan.

*Alnus glutinosa:* Denmark.
*Betula pendula:* Denmark.
*Castanea crenata:* France.
*C. sativa:* Belgium.
*Cotoneaster* sp.: Great Britain.
*Fraxinus excelsior:* Denmark.
*Morus alba:* Japan.
*Populus nigra* var. *italica:* Denmark.
*Quercus* sp.: Great Britain.
*Salix* sp.: Great Britain.
*Ulmus* sp.: Great Britain, Denmark.
*U. glabra:* Italy.

**Cytospora atra** Sacc. (x) **dieback**

See general comments under *Cytospora abietis.* Associated with dieback of *Morus* and *Broussonetia.* Distributed in Great Britain, Denmark, Germany, and India.

*Morus alba:* Great Britain (Kew).

**Cytospora cenisia** Sacc. (x) **juniper dieback**

See general account under *Cytospora abietis*. Associated with dieback of *Juniperus*. Distributed in the United States and Europe.

*Juniperus communis:* Finland, Germany, Italy.
*J. virginiana:* Finland, Germany, Italy.

**Cytospora curreyi** Sacc. (xxx) **conifer canker**

See *Cytospora abietis* for general life history. Causes cankers of branches of various conifers. Distributed in the United States and Europe.

*Larix decidua:* Great Britain.
*Picea* sp.: Great Britain.
*Pinus strobus:* Denmark.
*P. sylvestris:* Great Britain.

**Cytospora pinastri** Fr. (x) **blight**

See *Cytospora abietis* for general life history. A weak parasite causing blight of conifer needles occasionally. Widely distributed in the United States and Europe.

*Abies alba.:* France, Scotland.
*A. pinsapo:* Spain.

**Cytospora salicis** Rab. (x) **willow dieback**

See *Cytospora abietis* for general account. Associated with twig dieback of *Salix*. Distributed in Alaska, Canada, and the United States, South America, Europe, and India.

*Salix alba:* England, Ireland, Scotland, Wales.
*S. babylonica:* Portugal.
*S. fragilis:* Great Britain.
*S. pentandra:* Great Britain.
*S. purpurea:* Great Britain.
*S. viminalis:* Great Britain.

**Cytosporella damnosa** Petri (xx) **dieback**

See also *Cytospora abietis*. Causes dieback of twigs of pines in Italy. Inoculations succeeded. Known only in Italy.

*Pinus pinaster:* Italy.

**Cyttaria berterii** Berk. (xxx) **beech morel**

In antarctic lands there are a number of unique fungi that grow on the living branches of antarctic beeches. They are all parasitic and are eaten by the people of those regions. They are small, round to pear shaped, up to about 3 cm. wide; fleshy, with numerous sunken, rounded pits within which the spores are borne; usually in clusters on the branches, perennial. *Cyttaria berterii* lives on *Nothofagus obliqua* in Fuegia, Patagonia, and Chile; and on *N. glauca* in Chile.

*Nothofagus glauca:* Chile.
*N. obliqua:* Chile.
*N. obliqua* var. *macrocarpa:* Chile.

**Cyttaria darwinii** Berk. (xxx) **beech morel**

See *Cyttaria berterii* for a general description of the *Cyttarias*. Fruiting bodies white to gray, globular, 2 to 4 cm. in diameter with sunken pits 2 to 3 mm. across. Grows on *Nothofagus antarctica* and *N. betuloides* in Fuegia, Patagonia, and Chile.

*Nothofagus antarctica:* Chile, Argentina.
*N. betuloides:* Chile, Argentina.
*N. pumilio:* Chile, Argentina.

**Cyttaria espinosae** Lloyd (xxx) **beech morel**

See *Cyttaria berterii* for a general description of the *Cyttarias*. Parasitic on *Nothofagus*. Distributed in Chile and Argentina.

*Nothofagus obliqua:* Argentina.
*N. procera:* Chile, Argentina (Patagonia).

**Cyttaria gunnii** Berk. (xxx) **beech morel**

See *Cyttaria berterii* for a general description of the *Cyttarias*. Parasitic on *Nothofagus*. Distributed in Tasmania, New Zealand, and Australia.

*Nothofagus cunninghamii:* Tasmania.
*N. fusca:* New Zealand.
*N. menziesii:* New Zealand.
*N. moorei:* New South Wales (Victoria).

**Cyttaria harioti** Fisch. (xxx) **beech morel**

See also *Cyttaria berterii* for a general description of this fungus. Parasitic on *Nothofagus*. Distributed in Fuegia, Chile, and Argentina.

*Nothofagus antarctica:* Chile, Argentina.
*N. betuloides:* Chile, Argentina.
*N. dombeyi:* Chile.
*N. nitida:* Chile.
*N. pumilio:* Chile, Argentina.

**Cyttaria hookeri** Berk. (xxx) **beech morel**

See *Cyttaria berterii* for a general description of the *Cyttarias*. Parasitic on *Nothofagus*. Distributed in Fuegia, Patagonia, and Hermite Island.

*Nothofagus antarctica:* Argentina, Chile.
*N. betuloides:* Argentina, Chile.
*N. dombeyi:* Argentina.
*N. pumilio:* Argentina, Chile.

**Cyttaria reichei** P. Henn. (xxx) **beech morel**

See *Cyttaria berterii* for a general account of the *Cyttarias*. Parasitic on *Nothofagus* branches in Chile.

*Nothofagus obliqua:* Chile.

**Cyttaria septentrionalis** Herb. (xxx) **beech morel**

See *Cyttaria berterii* for a general description of the *Cyttarias*. Parasitic on *Nothofagus* in Australia.

*Nothofagus moorei:* Australia (Queensland, New South Wales).

**Daedalea quercina** L. (xx) **oak brown rot**

Forms a large, corky, pale wood-colored conk, thick bracket shaped, with irregularly spaced flat gills beneath. It usually occurs on stumps and large fallen timber, but occasionally grows out from dead branch wounds on living trees. Oaks are its favorite hosts, but it grows uncommonly on a number of other broad-leaved species. It causes a reddish brown, cubical dry rot of heart and sapwood. Distributed in North America from Canada southward to the highlands of Mexico; generally in Europe where oak grows; also in South Africa, and across Siberia to Vladivostok, India, and Japan.

*Quercus* sp.: Great Britain, Japan, Norway, Portugal, Russia (Voronezh).
*Q. mongolica:* Siberia (Amur region).
*Q. suber:* Russia (Caucasus).
*Q. suber* var. *occidentalis:* Russia (Caucasus).

**Daedalea unicolor** Fr. (xx) **trunk rot**

Forms a conk, white, annual, mostly resupinate with slight overlapping shelving; small, villous on top; pores white, very short, labyrinthiform, at length torn into teeth. Common on stumps, trunks, and timbers, causing a white rot. Not uncommon on living broad-leaved trees at large branch and trunk wounds. Sometimes forms depressed cankers by killing the cambium and underlying sapwood. Distributed throughout the North Temperate Zone.

*Acer* sp.: Norway, Great Britain.
*A. platanoides:* Hungary.
*A. pseudoplatanus:* Denmark.
*Aesculus hippocastanum:* Denmark, Hungary.
*Alnus* sp.: Norway.
*Betula* sp.: Great Britain, Hungary, Norway.
*B. davurica:* Siberia (Ussuri).
*B. pendula:* Siberia, Poland.
*B. pubescens:* Norway, Siberia (Omsk).
*Carpinus* sp.: Great Britian.
*C. cordata:* Siberia (Ussuri).
*Castanea* sp.: Great Britain.
*C. sativa:* Japan.
*Fagus sylvatica:* Denmark, Germany, Hungary, Norway.
*Morus alba:* Hungary.
*Picea abies:* Norway, Sweden.
*Populus* sp.: Norway.
*P. tremula:* Siberia (Ussuri).
*Quercus* sp.: Great Britain.
*Q. mongolica:* Siberia (Amur region and Ussuri).
*Robinia* sp.: Great Britain.
*Salix* sp.: Great Britain.
*S. caprea:* Denmark.
*Sorbus aucuparia:* Denmark.
*Styrax obassia:* Japan.

**Daldinia concentrica** Ces. & de N. (xx) **mottled rot**

Forms smooth, hemispherical black growths, 1 to 2.5 cm. in diameter, on bark or wood. When mature, these growths have the consistency and appearance of charcoal, and are concentrically zoned within. The decay is a white rot, mottled and streaked with black mycelial masses. The fungus is weakly parasitic in dying tissues. Distributed practically over the whole world.

*Betula* sp.: Norway.

*Hevea brasiliensis:* Brazil, Ceylon, India, Malaya.

**Dasturella boswelliae** Patel, Payak & Kulkarni (xxx) **rust**

Forms rust pustules, brownish-black, minute; followed by subepidermal telial sori up to 290$\mu$ broad and 130$\mu$ high on leaves of *Boswellia.* Known only in India.

*Boswellia serrata:* India.

**Dasturella divina** (Syd.) Mund. & Kheswalla (xxx) **rust**

Forms rust pustules, subepidermal, erumpent, pulverulent, bright brown, followed by dark cinnamon-brown pustules in the form of cellular sheets 60 to 114$\mu$ × 8 to 17$\mu$. On leaves of *Dendrocalamus* and *Randia.* Known in India, Viet Nam, Pakistan, and Japan.

*Dendrocalamus strictus:* India, Pakistan.

*Randia brandisii:* India.

*R. candolleana:* India.

*R. dumetorum:* India.

**Dasturella grewiae** (Pat. & Har.) Thirum. (xxx) **rust**

Forms golden brown rust pustules on leaves of *Grewia*, followed by pulverulent chestnut-brown pustules on the same leaves. Distributed in Transvaal and Senegal.

*Grewia ferruginea:* French West Africa (Senegal).

*G. monticola:* Union of South Africa (Transvaal).

**Dasyscypha abieticola** Henn. & Shirai (xx) **canker**

Associated with slightly swollen or depressed cankers of stems and branches of pines and firs in Japan. The fungus fruiting bodies are tiny shallow bowls with small stems, yellow within and fleshy in texture; borne on the surface of infected bark. Reported only in Japan.

*Abies homolepis:* Japan.

*Picea jezoensis* var. *hondoensis:* Japan.

**Dasyscypha abietis** (Karst.) Sacc. (xx) ———

On branches of *Picea.* Reported in New York and Vermont; and in Europe in Finland and Norway.

*Picea abies:* Finland.

**Dasyscypha calyciformis** (Willd.) Rehm (xx) **canker**

Associated with canker of conifers. It is a small cup fungus that is a wound pathogen, but usually is saprophytic. In high latitudes and elevations in northern and central Europe, it becomes parasitic enough

to cause some loss in conifers, and is especially mentioned as injurious to *Abies balsamea*. Distributed in North America, Europe, Siberia, Japan, and New Zealand.

*Abies alba:* Austria, Germany, Norway, Switzerland.
*A. cephalonica:* Norway.
*A. firma:* Japan.
*A. nordmanniana:* Norway.
*A. sibirica:* Norway, Siberia, Switzerland.
*Larix decidua:* Switzerland.
*Picea abies:* Czechoslovakia, Denmark, Great Britain, Switzerland.
*Pinus banksiana:* Belgium, New Zealand.
*P. monticola:* Scotland.
*P. mugo* var. *pumilio:* Austria.
*P. nigra:* Belgium.
*P. nigra* var. *poiretiana:* Belgium.
*P. ponderosa:* New Zealand.
*P. radiata:* New Zealand.
*P. sylvestris:* Belgium, Estonia, Norway.

**Dasyscypha pini** (Brunch.) Hahn & Ayers (xx) **pine canker**

Associated with dying of young trees of *Pinus* and dying of tops of older trees in Norway to Finland. Thirty to sixty percent of the trees in a stand may be diseased and some die outright in Europe. Distributed at high latitudes and elevations in Michigan to Montana, Washington, and British Columbia, and in northern Scandinavia and Finland.

*Pinus nigra:* Norway.
*P. sylvestris:* Finland, Norway, Sweden.

**Dasyscypha subtilissima** (Cke.) Sacc. (xx) **pine canker**

Forms shallow cupulate fruiting bodies on stem cankers of *Pinus*. In wet weather they are expanded to 1 to 2 mm. wide, the inner disc is orange yellow, the outside is white and villous. Distributed in Michigan and New York; and in Scotland, Norway, Sweden, Finland, and France in Europe.

*Abies alba:* Great Britain.
*Larix decidua:* Great Britain.
*Picea abies:* Norway.
*Pinus densiflora:* Scotland.
*P. mugo:* Norway.
*P. mugo* var. *rostrata:* Norway.
*P. nigra:* Norway.
*P. sylvestris:* Norway, Scotland.
*P. thunbergii:* Scotland.

**Dasyspora gregaria** (Kunze) P. Henn. (xxx) **rust**

Forms rust pustules on leaves of *Xylopia*. The early-season stage is yellow, tufted, and more or less crowded, mostly on the lower leaf surface. Later, a pulverulent chestnut-brown stage is produced, which carries the fungus over winter. Distributed from Guatemala to Panama, Venezuela, and Peru.

*Xylopia* sp.: Guatemala, Venezuela.
*X. frutescens:* Guatemala.
*X. grandiflora:* Peru.

**Diaporthe aristata** (Fr.) Karst. (xx) **canker**

Forms subepidermal pimplelike erumpent pustules on dead bark. Associated with cankers of young and old *Betula* trees in Europe. Distributed in Iceland, Denmark, Norway, and Sweden.

*Betula* sp.: Denmark, Norway, Sweden.

**Diaporthe oncostoma** (Duby) Fckl. (xx) **dieback**

Forms tiny tufts of fungus filaments breaking through the epidermis of diseased bark on twigs and smaller branches. Associated with dieback of *Robinia* and *Toona*. Distributed from New York and Illinois to Georgia and West Virginia; also in Europe.

*Toona sinensis:* France.

**Diaporthe taleola** (Fr.) Sacc. (xx) **oak canker**

Associated with canker of small stems and branches of *Quercus*. Causes considerable damage to young trees by girdling stems and to old trees by causing shedding of twigs. Distributed in Europe.

*Quercus* sp.: Belgium, France, Germany, Italy, Netherlands, Sweden.

*Q. petraea:* Austria, Germany, Switzerland.

*Q. pubescens:* Austria, Germany, Switzerland.

*Q. robur:* Austria, Denmark, Germany, Switzerland.

**Diatractium cordiae** (F. L. Stevens) Syd. (xx) **leaf spot**

Occurs on discolored spots on leaves of *Cordia*. These spots may remain greenish after the rest of the leaf is yellow. Distributed in Barbados, Grenada, Puerto Rico, Colombia, and Venezuela.

*Cordia* sp.: Grenada, Venezuela.

*C. glabra:* Barbados, Colombia, Puerto Rico, Venezuela.

**Dicheirinia archeri** Cumm. (xxx) **rust**

Forms rust pustules on leaves of *Lonchocarpus* in Surinam and Peru.

*Lonchocarpus nicou:* Peru, Surinam.

*L. urucu:* Peru.

*L. utilis:* Peru.

**Dicheirinia binata** (Berk.) Arth. (xxx) **rust**

Forms powdery cinnamon-brown rust pustules on leaves of *Erythrina* followed by a chestnut-brown stage. Distributed in the West Indies, Guatemala, Panama, Nicaragua, Colombia, and Venezuela.

*Erythrina* sp.: Nicaragua.

*E. crista-galli:* Puerto Rico.

*E. glauca:* Colombia, Cuba, Grenada, Guatemala, Puerto Rico, Venezuela.

*E. mitis:* Trinidad.

**Dicheirinia guianensis** Cumm. (xxx) **rust**

Forms rust pustules on leaves of *Lonchocarpus* in British Guiana.

*Lonchocarpus nicou:* British Guiana.

**Didymascella tetraspora** (Phill. & Keith) Maire (xxx) **juniper leaf blight**

Forms dark, pustular spots bursting through the epidermis of leaves of *Juniperus*. The leaves die and young seedlings are killed, while older trees are partially defoliated. Lower branches near the ground are most heavily attacked. Distributed in Scotland, Corsica, and Algeria.

*Juniperus* sp.: Europe, Scotland.
*J. oxycedrus:* Algeria, Corsica.

**Didymascella thujina** (Durand) Maire (xxx) **leaf blight**

Similar to *Didymascella tetraspora* but attacks leaves *of Thuja* and *Chamaecyparis*. It is native in North America and is widely distributed in Europe and New Zealand.

*Chamaecyparis lawsoniana:* Great Britain (Leonardslee).

**Didymella araucariae** Voglino (xx) **wilt**

Associated with wilt and shedding of leaves of *Araucaria* in Italy.

*Araucaria araucana:* Italy.

**Didymella cocoina** Sechet (xx) **leaf spot**

Occurs on large leaf spots on *Cocos*, gray with brown margins, which are less than 1 mm. wide. Known only in Madagascar.

*Cocos nucifera:* Madagascar.

**Didymella heveana** Saccas (xx) **leaf spot**

Occurs on *Hevea* leaf spots, brownish to reddish gray, 1 to 3 cm. in diameter, bounded by narrow marginal zones. Known in French Equatorial Africa.

*Hevea brasiliensis:* French Equatorial Africa.

**Didymella mangiferae** Batista (xxxx) **leaf spot**

Associated with leaf spots on *Mangifera*, finally resulting in defoliation. Known in Brazil.

*Mangifera indica:* Brazil.

**Dielsiella pollaccii** (Elisei) Cicc. & Castell. (xx) **black spot**

Forms black crusts easily detachable, each on a central subepidermal foot, on leaves and stems of *Catha* in Abyssinia.

*Catha edulis:* Abyssinia.

**Dimeriella cordiae** (P. Henn.) Th. (xxx) **black mildew**

Forms a black fungus web over the upper surface of leaves of *Cordia*. Distributed in Brazil, Colombia, Venezuela, Puerto Rico, and Dominican Republic.

*Cordia* sp.: Venezuela.
*C. corymbosa:* Colombia.
*C. ferruginea:* Colombia.
*C. lanceolata:* Colombia.
*C. sulcata:* Puerto Rico.

**Dimeriellopsis heterotrichi** Toro (xxx) **black mildew**

Forms a black, woolly fungus web on the upper side of leaves of *Heterotrichum.* Known in Venezuela.
*Heterotrichum macrodon:* Venezuela.

**Dimerina graffi** Syd. (xxx) **black mildew**

Forms black mildew of leaves of *Gmelina* in the Philippines.
*Gmelina philippensis:* Philippines.

**Dimerina jacquiniae** Garman (xxx) **black mildew**

Forms small groups of black spherical perithecia with scant mycelium. On leaves of *Jacquinia.* Known only in Puerto Rico.
*Jacquinia barbasco:* Puerto Rico (Mona Island).

**Dimerium autrani** (Henn.) Sacc. & Trott. (xxx) **black mildew**

Forms black mycelial crusts on the upper surface of leaves of *Canthium.* Known in Eritrea.
*Canthium schimperianum:* Eritrea.

**Dimerium elegans** Syd. (xxx) **black mildew**

Forms black mildew on leaves. Known in Japan.
*Lithocarpus cuspidata:* Japan.

**Dimerium melioloides** (Berk. & Curt.) Garman (xxx) **black mildew**

Forms dense groups of black mildew perithecia on leaves of *Clusia.* Known in Puerto Rico, Cuba, and Brazil.
*Clusia rosea:* Puerto Rico.

**Dimerium stevensii** Garman (xxx) **black mildew**

Forms shiny black fungus perithecia on leaves of *Cordia.* Known in Puerto Rico.
*Cordia corymbosa:* Puerto Rico.

**Diorchidium piptadeniae** Diet. (xxx) **rust**

Forms pale brown rust pustules on leaves of *Piptadenia* followed by a brown-spored stage. Known in Brazil.
*Piptadenia latifolia:* Brazil.
*P. laxa:* Brazil.

**Diplodia cerci-chinensis** Togashi & Tsukamoto (xxx) **twig blight**

Associated with twig blight of *Cercis* in Japan.
*Cercis chinensis:* Japan.

**Diplodia epicocos** Cke. (xx) **palm leaf spot**

Occurs on leaf spots of palms in Jamaica, India, and Tanganyika.
*Cocos nucifera:* India, Jamaica, Tanganyika.
*Washingtonia filifera:* Tanganyika.

**Diplodia gongrogena** Temme (xx) **poplar gall**

Occurs on woody tumors on branches of *Populus* in Germany and Austria.

*Populus alba:* Austria.
*P. nigra:* Austria.
*P. tremula:* Austria, Germany.

**Diplodia hungarica** Bub. (xx) **ash leaf spot**

Occurs on definite, coriaceous leaf spots of *Fraxinus* with brown margins. Known in Hungary.

*Fraxinus ornus:* Hungary.

**Diplodia melaena** Lév. (x) **elm dieback**

Associated with dieback of elm twigs. Distributed in France, Italy, Germany, and Denmark.

*Ulmus* sp.: Germany.
*U. glabra:* Denmark.

**Diplodia morina** Syd. (xx) **mulberry root disease**

Causes death of *Morus* roots. Inoculations through the epidermis of roots succeeded. Branches are also reported killed. Known in India.

*Morus alba:* India.

**Diplodia pinea** (Desm.) Kickx (xx) **canker, twig blight**

Forms black fungus pustules on dead bark of cankers. Occurs generally in both North and South Temperate Zones as a saprophyte in felled timber. It causes blue discoloration of newly cut lumber and of sapwood in wounded living coniferous trees. It is able to attack unwounded trees occasionally, but usually occurs only on trees that have some wound exposing inner woody tissues or suffering some setback in vigor. Exotic trees are especially liable to serious attack. It is present wherever extensive plantations of exotic conifers have been made, notably in New Zealand and South Africa.

*Abies* sp.: Union of South Africa.
*A. pinsapo:* Chile.
*Araucaria cunninghamii:* Australia (Queensland).
*Cupressus sempervirens:* Australia (Queensland).
*Pinus canariensis:* Union of South Africa, Portugal, Argentina.
*P. halepensis:* Italy, Portugal, Argentina, Brazil, Union of South Africa.
*P. khasya:* Australia (Queensland).
*P. montezumae:* Nyasaland.
*P. mugo:* Africa (Cape Colony).
*P. mugo* var. *mughus:* Union of South Africa.
*P. nigra:* New Zealand, Romania.
*P. nigra* var. *poiretiana:* New Zealand, Portugal.
*P. patula:* Australia.
*P. pinaster:* Argentina, Australia, Mozambique, Portugal, Union of South Africa.
*P. pinea:* Italy, Portugal.

*P. roxburghii:* Australia.
*P. sylvestris:* Argentina, Austria, England, France, Italy, Romania.
*P. thunbergii:* Argentina.
*Thuja orientalis:* Portugal.

**Diplodia recifensis** Batista (xx) **mango wilt**

Forms globose, carbonaceous perithecia with brown to violaceous mycelium on *Mangifera.* The fungus is a weak pathogen, entering the burrows made in living trees by the insect *Xyleborus affinis* Eichh. The fungus spreads into surrounding tissues, finally reaching the xylem vessels and cuts off the water supply to the leaves. Wilt ensues and the tree may be killed. In Pernambuco, Brazil, about 25 percent of the mango trees of the city are so severely affected as to be liable to die. The insect depends on the fungus for food. There are also bacterial and nematode symbionts. The disease, called recife sickness, is known only in Brazil.

*Mangifera indica:* Brazil.

**Discella carbonacea** (Fr.) Berk. & Br. (xx) **willow canker**

Occurs on stem cankers forming erumpent, black fungus pustules breaking through the epidermis of dead bark. Inoculations in wounds succeeded. Distributed in the United States and Europe.

*Salix alba* var. *vitellina:* Netherlands.
*S. viminalis:* Netherlands.

**Discula betulina** (West.) v. Arx (xx) **anthracnose**

Conidial pustules are associated with anthracnose leaf spots of *Betula;* brown and up to 6 mm. in diameter. Distributed in Europe and Siberia.

*Betula pendula:* Great Britain, Siberia.
*B. pubescens:* Russia.

**Discula quercina** (West.) v. Arx (xxx) **leaf spot**

Causes leaf spots of broad-leaved trees and damping-off of seedlings of species of temperate climates. Distributed in the United States and Europe.

*Fagus sylvatica:* Austria, Belgium, Denmark, France, Germany, Great Britain, Italy.
*Quercus petraea:* Denmark.
*Q. robur:* Great Britain, Denmark, Netherlands.
*Tilia* sp.: Czechoslovakia, Great Britain.
*T. cordata:* Denmark, Germany, Russia.
*T.* ×*europaea:* Denmark.
*Ulmus pumila:* Romania.

**Dothichiza populea** Sacc. & Br. (xx) **poplar canker**

Infections first appear as brown, rounded to elliptical spots in the bark of young *Populus* stems, frequently with dead leaves or twigs at the center. The bark soon dies to the wood. Later the dead bark bursts open by pressure of callus formed beneath the edges of dead tissue. Growth of the canker stops after the new wood layer forms, and does not resume activity until the next spring. Cankers often

girdle and kill small branches. Water sprouts commonly appear below the girdle, but are soon girdled in turn. In the spring, fungus pustules burst through the epidermis and exude tendrils of tiny spores to start new infections. Their germ tubes can enter healthy tissue, but injuries greatly favor rapid spread of the disease.

Poplar canker was known in Europe as early as 1884 and has spread well over that continent. Activity in breeding and propagating poplars has accelerated its progress over western Europe and in Argentina, Canada, and the United States. It is limited to young planted stands.

*Populus* sp.: Great Britain.
*P. alba:* Germany.
*P. angulata:* France, Netherlands.
*P. balsamifera:* Italy.
*P.* ×*berolinensis:* Netherlands.
*P.* ×*canadensis:* France, Germany, Italy, Belgium.
*P.* ×*canadensis* var. *charkowiensis:* Netherlands.
*P.* ×*canadensis* f. *erecta:* Netherlands.
*P.* ×*canadensis* var. *eugenei:* Germany, Italy, Netherlands.
*P.* ×*canadensis* f. *gelrica:* Netherlands.
*P.* ×*canadensis* var. *lloydii:* Netherlands.
*P.* ×*canadensis* var. *marilandica:* Netherlands.
*P.* ×*canadensis* var. *regenerata:* Germany, Netherlands.
*P.* ×*canadensis* var. *serotina:* Belgium, Great Britain, Netherlands.
*P.* ×*canescens:* Germany.
*P. koreana:* Netherlands.
*P. laurifolia:* Netherlands.
*P. maximowiczii:* Netherlands.
*P. nigra:* Germany, Italy, Netherlands.
*P. nigra* var. *elegans:* Netherlands.
*P. nigra* var. *italica:* Argentina, Belgium, Germany, Italy, Netherlands.
*P.* ×*petrowskyana:* Germany, Italy.
*P.* ×*rasumowskiana:* Netherlands.
*P.* ×*robusta:* Belgium, Germany, Great Britain, Netherlands.
*P. simonii:* Germany, Italy.
*P. simonii* f. *fastigiata:* Netherlands.
*P. suaveolens:* Netherlands.
*P. trichocarpa:* Germany.
*P. tristis:* Netherlands.

**Dothidella ulei** P. Henn. (xxx) **leaf blight**

The first symptom of the South American leaf blight of *Hevea* is the blackening, withering, and shedding of young leaves. Less severely attacked leaves continue to grow, and the larger spots become papery and torn. The mature foliage assumes a ragged appearance. The lower surface of the spots is velvety with conidia. Later, the upper surface develops black fungus perithecia often arranged in small circles. Swollen lesions occur on young twigs. Continued attacks result in death of the entire tree.

The growing of rubber is seriously threatened by the ravages of this disease. It is distributed from Mexico southward through Central America and in South America to Brazil, Peru, and Bolivia.

*Hevea brasiliensis:* Bolivia, Brazil, British Guiana, Colombia, Costa Rica, French Guiana, Guatemala, Mexico, Nicaragua, Panama, Peru, Surinam, Trinidad, Venezuela.
*H. collina:* Brazil.
*H. confusa:* British Guiana.
*H. guianensis:* Brazil, Dutch Guiana, Manaos, Surinam.
*H. guianensis* var. *lutea:* Peru.
*H. lutea:* Peru.
*H. paludosa:* Brazil.
*H. randiana:* Brazil.
*H. spruceana:* Brazil, British Guiana, Colombia, Costa Rica, Panama, Surinam, Trinidad.

**Dothidina peribebuyensis** (Speg.) Chardon (xxx) **tar spot**

Forms small dark brown fruiting bodies on brown spots on leaves of *Miconia* and related trees. Known in Paraguay, Brazil, Colombia, and Puerto Rico.
*Miconia* sp.: Colombia.

**Dothiorella caseariae** Speg. (xxx) **black spot**

Forms black, slightly carbonaceous fungus mats 400 to 600 microns wide on the upper side of living leaves of *Casearia*. Known only in Argentina.
*Casearia sylvestris:* Argentina.

**Dothiorella holstii** (P. Henn.) v. Arx (xxx) **anthracnose**

Conidial pustules form on anthracnose spots on leaves of *Tabernaemontana* in Ceylon and Tanganyika.
*Tabernaemontana holstii:* Tanganyika (Usambara).

**Dothiorella phomiformis** (Sacc.) Petr. & Syd. (xxx) **oak anthracnose**

Conidial pustules form on anthracnose spots, ochraceous to brown with pale centers, on *Quercus* leaves. Known in Japan.
*Quercus glandulifera:* Japan.

**Drepanoconis larviformis** Speg. (xx) **powdery galls**

Forms small galls, covered with a white powdery coating, growing on shoots, leaves, and fruits. The parasite attacks *Nectandra* and *Cryptocarya* in Brazil.
*Cryptocarya mandioccana:* Brazil.
*Nectandra nitidula:* Brazil.
*N. puberula:* Brazil.
*N. tweediei:* Brazil.

**Echidnodella cedralensis** Toro (xxx) **black mildew**

Forms colonies on distinct brownish spots 4 to 8 mm. across, with many black perithecia in each group. On the upper surface of leaves of *Rapanea* in Venezuela.
*Rapanea* sp.: Venezuela.

586625—61——7

**Echinodontium tinctorium** Ell. & Ev. (xx) **brown stringy rot**

The conk is large, woody, blackish, with the upper surface fissured. Beneath, it has spines instead of pores. It characteristically enters through branch stubs, and causes a brown stringy rot of heartwood of *Abies*, *Tsuga*, *Picea*, and *Pseudotsuga*. In North America it causes heavy losses in mature stands. Distributed in North America and Japan.

*Tsuga diversifolia:* Japan.

**Elsinoë antidesmae** Rac. (xxx) **leaf scab**

Causes scab of leaves in Java.

*Antidesma heterophyllum:* Java.

**Elsinoë bertholletiae** Bitanc. (xxx) **leaf scab**

Causes leaf scab of *Bertholletia* in Brazil.

*Bertholletia excelsa:* Brazil.

**Elsinoë bitancourtiana** Thirum. (xxx) **leaf scab**

Causes leaf scab of *Scutia* in India.

*Scutia myrtina:* India.

**Elsinoë centrolobii** Bitanc. & Jenkins (xxx) **leaf scab**

Associated with scab of leaves of *Centrolobium* in Brazil.

*Centrolobium robustum:* Brazil.

**Elsinoë cinchonae** Jenkins (xxx) **scab**

Forms lesions on leaves, young stems, and fruits of *Cinchona*. The lesions are raised above the surface of the host tissues, forming scab-like spots with numerous dark fungus pustules. Distributed in Peru and Colombia.

*Cinchona delessertiana:* Peru.
*C. officinalis:* Colombia.
*C. pubescens:* Colombia, Peru.

**Elsinoë costai** Bitanc. & Jenkins (xxx) **leaf scab**

Forms distinct wartlike galls on the lower surface of leaves in Brazil.

*Cordia sellowiana:* Brazil.

**Elsinoë diospyri** Bitanc. & Jenkins (xxx) **leaf scab**

Occurs on scattered leaf spots 0.5 to 2.5 mm. across, with white to gray centers and dark chestnut to black edges, on *Diospyros* in Brazil.

*Diospyros kaki:* Brazil.

**Elsinoë erythrinae** Bitanc. & Jenkins (xxx) **leaf scab**

Forms thickened scabs on leaves of *Erythrina* in Brazil.

*Erythrina crista-galli:* Brazil.
*E. speciosa:* Brazil.

**Elsinoë lepagei** Bitanc. & Jenkins (xxx) **leaf scab**

Causes small, scabby, wartlike outgrowths on leaves of *Achras*.

*Achras zapota:* Brazil.

**Elsinoë mattirolianum** Arn. & Bitanc. (xxx) **leaf scab**

Forms small buff scabs on leaves of *Arbutus* in Italy, Germany, and Portugal.

*Arbutus unedo:* Germany, Italy, Portugal.

**Elsinoë mayaguensis** Bitanc. & Jenkins (xxx) **leaf scab**

Forms numerous, scattered leaf spots 1 to 8 mm. across, vinaceous-buff, on *Cordia.* Known in Puerto Rico and Brazil.

*Cordia* sp.: Puerto Rico.

*C. sellowiana:* Brazil.

**Elsinoë pitangae** Bitanc. & Jenkins (xxx) **leaf scab**

Causes scab disease of *Eugenia* leaves in Brazil and Argentina.

*Eugenia pitanga:* Brazil.

**Elsinoë puertoricensis** Jenkins & Bitanc. (xxx) **scab**

Produces a conspicuous scab on leaves, stems, and fruits of *Randia.* Distributed in Martinique, Puerto Rico, and Haiti.

*Randia aculeata:* Martinique, Puerto Rico.

**Elsinoë talisiae** Bitanc. & Jenkins (xxx) **scab**

Causes scab of leaves and fruits of *Eugenia* and *Talisia* in Brazil.

*Eugenia luschnathiana:* Brazil.

*Talisia esculenta:* Brazil.

**Elsinoë tiliae** Creelman (xxx) **linden scab**

Causes scab disease of *Tilia* leaves, petioles, larger veins, and young twigs. On the leaves the pathogen attacks the larger veins especially. The spots are pale gray with black borders. Later the gray centers fall out, leaving a shothole appearance and the leaves become ragged. On woody parts the lesions are elongate with raised black borders. The scabs fall out so that the affected parts have a pitted appearance. Distributed in Nova Scotia, Virginia, and Argentina.

*Tillia ×europaea:* Argentina.

**Endophyllum griffitsiae** Rac. (xxx) **rust**

Forms yellow rust on leaves of *Randia* and *Pavetta.* Known in India, Java, and China.

*Randia longiflora:* Java.

**Endophyllum superficiale** (Karst. & Roum.) F. L. Stevens & Mendiola (xxx) **rust**

Forms brownish-yellow rust pustules on leaves of *Sterculea* and *Clerodendrum.* Known in Viet Nam and the Philippines.

*Clerodendrum calamitosum:* Philippines.

*C. fragrans:* Philippines.

*C. intermedium:* Philippines.

*C. quadriloculare:* Philippines.

**Endothia fluens** (Sow.) Shear & N. E. Stevens (x) **canker**

Associated with canker of *Castanea* and *Quercus* shoots, and later dieback. Forms fungus pustules with pulverulent orange-yellow contents. The affected trees grow in very poor soil and the fungus, which is generally a saprophyte, becomes weakly pathogenic. Distributed in North America from southern Pennsylvania and Ohio to South Carolina and northern Mississippi; also in Europe, Asia, and Japan.

*Castanea* sp.: Italy.

**Endothia gyrosa** (Schw.) Fr. (xx) **hardwoods canker**

A slow-growing wound parasite on exposed roots and on branches of broad-leaved trees. Sparsely distributed from Connecticut to Michigan, southward to Florida and Texas; also in Kansas and California. Reported in Germany, Italy, western Europe, Ceylon, New Zealand, and the Philippines.

*Castanea crenata:* Spain.
*C. dentata:* Portugal.
*C. sativa:* Italy.
*Eucalyptus diversicolor:* Portugal.
*Quercus fruticosa:* Portugal.
*Q. lusitanica:* Portugal.
*Q. pyrenaica:* Portugal.
*Q. suber:* Portugal.

**Endothia parasitica** (Murr.) P. J. & H. W. And. (xxx) **bark blight**

Causes lesions of the bark on all parts of chestnut and oak trees above ground. Infections girdle the tree and kill distal parts. Bark blight has practically exterminated the American chestnut as a timber tree. Evidently it was carried to Europe in lumber during World War I, and has spread into chestnut growing regions of Italy, France, Yugoslavia, Switzerland, Spain, and the Caucasus. It was native in China and Japan and possibly India. The European chestnut is going through the same course with this disease as has our American species.

*Acer palmatum:* Japan.
*Castanea* sp.: Beligum.
*C. crenata:* Italy, Japan, Spain.
*C. dentata:* Italy.
*C. mollissima:* China.
*C. sativa:* Czechoslovakia, France, India, Italy, Spain, Switzerland, Yugoslavia.
*Fagus sylvatica:* Switzerland.
*Quercus dentata:* Japan.
*Q. ilex:* Italy, Switzerland.
*Q. petraea:* Italy, Switzerland.
*Q. pubescens:* Italy, Switzerland.
*Q. robur:* Italy, Yugoslavia.
*Q. suber:* Russia (Caucasus).
*Q. suber* var. *occidentalis:* Russia (Caucasus).

**Endoxylina astroidea** Fr. (xx) **pith rot**

Causes rot of pith in trunks of *Fraxinus* that comes to the surface at broken branch stubs. Recorded first in U.S.S.R. in 1940, but had evidently been there 30 or 35 years as it was widely spread. Inoculations succeeded in wounds. Known in Sweden and Russia.

*Fraxinus excelsior:* Russia.

**Epicoccum granulatum** Penz. (xxx) **wood decay**

Associated with delignification of wood in living trees of *Aquilaria*, and exudation of an aromatic resin apparently formed in the decomposition of the wood. Artificially infected wood has delignified like that inside the trees. Known in India.

*Aquilaria agallocha:* India.

**Epidochium ilicinum** Goid. & Camici (xx) **oak canker**

Causes small cankers on branches of *Quercus* up to 8 cm. in diameter. They extend into the wood toward the pith. The phloem, cambium, and discolored xylem were completely necrotic. Inoculations in wounds resulted in cankers after 10 months and the original fungus was re-isolated. Known in Italy.

*Quercus ilex:* Italy.

**Erikssonia protii** Cash (xx) **leaf spot**

Occurs on buff spots 2 to 15 mm. across on leaves of *Trattinickia*. Stromata on lower leaf surface, black, rough, stellate, with carbonaceous base slightly sunken in the epidermis and readily breaking off. Known in Panama.

*Trattinickia aspera:* Panama.

**Erysiphe acaciae** Blumer (xxx) **powdery mildew**

Forms white powdery mildew on leaves of *Acacia*. Known only in India.

*Acacia catechu:* India.

**Erysiphe cichoracearum** DC. (xxx) **powdery mildew**

Forms white powdery mildew on leaves of many crop plants and some trees. *Mallotus* and *Mangifera* are among the trees attacked. Distributed especially in the North Temperate Zone; India, Formosa, and in South Africa.

*Mallotus japonicus:* Formosa.

*Mangifera indica:* India, Union of South Africa.

**Erysiphe japonica** (Ito & Hara) Wei (xxx) **powdery mildew**

Forms white to gray powdery mildew on leaves of *Quercus*. Distributed in China and Japan.

*Quercus aliena:* China.

*Q. baronii:* China.

*Q. mongolica* var. *grosseserrata:* Japan.

**Erysiphe polygoni** DC. (xxx) **powdery mildew**

A very common and nearly cosmopolitan, gray to brownish, powdery mildew on hundreds of different plants, including numerous broad-leaved trees. Distributed in China, India, Japan, Congo, and Madagascar. Common in North America.

*Castanopsis concolor:* China.
*C. delavayi:* China.
*Mangifera indica:* Madagascar.
*Quercus glauca:* Japan.
*Q. schottkyana:* China.
*Robinia pseudoacacia:* Japan.

**Euryachora rhytismoides** (J. Müll.) Ferd. & O. Rostr. (xx) **tar spot**

Forms black spots on leaves of young *Acer* trees. Distributed in Germany and Denmark.

*Acer pseudoplatanus:* Denmark.

**Eutypa erumpens** Mass. (xx) **tar spot**

Forms black, raised tar spots on bark of various broad-leaved trees. Enters through wounds and causes considerable damage. Distributed in the British West Indies and the Gold Coast.

*Myristica fragrans:* West Indies.
*Theobroma cacao:* West Indies.

**Excipulina pinea** (Karst.) Hoehn. (xx) **dieback**

Forms conidial pustules associated with death of terminal buds of pines with later dying back of twigs and young shoots on older trees; younger ones are not commonly attacked. Distributed in Europe.

*Pinus contorta:* Norway.
*P. mugo:* Norway.
*P. nigra:* Norway.
*P. sylvestris:* Norway.

**Exobasidium cinnamomi** Petch (xxx) **cinnamon excrescences**

Forms rough, pale brown excrescences up to 8 cm. long on branches of *Cinnamomum* in Ceylon.

*Cinnamomum cassia:* Ceylon (Peradeniya).
*C. zeylanicum:* Ceylon (Peradeniya).

**Exobasidium indicum** H. & P. Syd. & Butl. (xxx) **leaf gall**

Causes sordid white galls on leaves of *Symplocos* in India and Ceylon.

*Symplocos theaefolia:* India.

**Exobasidium lauri** Geyl. (xxx) **stem gall**

Causes long sulcate outgrowths to form on stems of *Laurus*. Distributed in the Canary Islands and Sardinia.

*Laurus canariensis:* Spain (Canary Islands).
*L. nobilis:* Italy (Sardinia), Spain (Canary Islands).

**Exobasidium unedonis** Maire (xxx) ———

Deforms the branches and destroys the leaves of *Arbutus*. It fruits on the lower surfaces of leaves and branches. Known in Algeria.
*Arbutus unedo:* Algeria.

**Exosporium deflectens** Karst. (xxx) **juniper needle cast**

Conidial pustules are associated with needle cast of *Juniperus*. Known in Wisconsin, Finland, and Romania.
*Juniperus communis:* Romania.

**Exosporium juniperinum** Jacz. (xxx) **juniper needle cast**

Associated with needle cast of *Juniperus*. Known in Russia.
*Juniperus* sp.: Russia.

**Exosporium palmivorum** Sacc. (xx) **palm leaf spot**

Occurs on leaf spots of palms, 1 to 3 cm. in diameter, brown with olive-brown, pulvinate pustules. Distributed in North America, Europe, India, and Andaman Islands.
*Cocos nucifera:* Andaman Islands.
*Phoenix canariensis:* France.

**Exosporium ulmi** Eriks. (xx) **elm dieback**

Associated with twig dieback of young *Ulmus* in Sweden.
*Ulmus* sp.: Sweden.

**Favolus albus** Lloyd (xx) ———

A wound parasite of *Ficus* in the Philippines.
*Ficus* sp.: Philippines.

**Fistulina hepatica** Fr. (xx) **brown heart rot**

Causes "brown oak" in infected heartwood of *Quercus* and similar coloration in other trees, as *Eucalyptus*, *Castanea*, etc. The affected oak wood is more valuable than sound wood until it reaches a late stage of rot when disintegration weakens it. The fungus forms soft, fleshy conks resembling an animal's tongue with the rough side down. Each pore is a separate tube, the whole having a reddish color. Distributed in North America, Europe, East Indies, and Australia.
*Carpinus* sp.: Great Britain.
*Castanea* sp.: Great Britain.
*C. sativa:* Russia (Caucasus), Great Britain, Portugal.
*Eucalyptus* sp.: Australia, Portugal.
*E. marginata:* Australia.
*Fagus sylvatica:* France, Germany, Great Britain, Norway.
*Fraxinus* sp.: Great Britain.
*Platanus* sp.: Portugal.
*Quercus* sp.: France, Germany, Great Britain, Norway, Portugal.
*Q. petraea:* Great Britain.
*Q. robur:* Great Britain.
*Salix* sp.: Great Britain.
*Ulmus* sp.: Great Britain.

**Fomes annosus** (Fr.) Karst. (xx) **root rot**

Forms small conks on the lower side of partially upturned roots, or under duff at the bases of diseased trees. These are flattened discs or irregular brackets up to 12 cm. across, grayish brown, with distinct ridges where new growth is made each year. The lower surface is white to yellowish, with tiny rounded pores and a distinctly ridged sterile margin. This fungus causes a white, stringy, root and butt rot of conifers and occasionally of broad-leaved trees. Trees die as a result of the cambium above the root collar being killed by the fungus. It is distributed throughout the North Temperate Hemisphere and it is reported in Australia.

*Abies alba:* Belgium, Denmark, Germany, Great Britain, Ireland, Italy, Norway, Poland, Turkey.
*A. georgei:* China.
*A. mariesii:* Japan.
*A. pindrow:* India.
*A. pinsapo:* Great Britain.
*A. sachalinensis:* Japan.
*A. sibirica:* Siberia.
*A. veitchii:* Japan.
*Aesculus indica:* Pakistan.
*Alnus glutinosa:* Norway, Great Britain.
*A. incana:* Norway.
*Betula* sp.: Denmark, Germany, Great Britain, Norway, Poland, Sweden.
*B. pendula:* Denmark, Great Britain.
*B. pubescens:* Denmark.
*Cedrus deodara:* Great Britain, India.
*Crataegus monogyna:* Denmark, Germany.
*C. oxyacantha:* Denmark, Great Britain.
*Cryptomeria japonica:* Great Britain.
*Fagus crenata:* Japan.
*F. sylvatica:* Great Britain, Germany, Denmark.
*Fraxinus excelsior:* Denmark.
*Larix decidua:* Denmark, Germany, Great Britain, Ireland, Norway, Sweden.
*L.* ×*eurolepis:* Great Britain.
*L. gmelinii:* Russia, Siberia.
*L. leptolepis:* Belgium, Denmark, Great Britain, Netherlands, Norway, Sweden.
*L. sibirica:* Norway.
*Picea abies:* Austria, Belgium, Denmark, Finland, Germany, Great Britain, Ireland, Latvia, Norway, Russia, Sweden, Switzerland, Yugoslavia.
*P. glehnii:* Japan.
*P. jezoensis:* Siberia (Ussuri), Norway.
*P. likiangensis:* China.
*P. smithiana:* India.
*Pinus cembra:* Norway.
*P. griffithii:* India, Belgium, Pakistan.
*P. mugo:* Denmark, Norway.
*P. mugo* var. *rostrata:* Norway.
*P. mugo* var. *rotundata:* Norway.

*P. nigra:* Belgium, Denmark, Great Britain.
*P. nigra* var. *poiretiana:* Belgium, Great Britain, Ireland.
*P. pinaster:* France, Great Britain.
*P. roxburghii:* India.
*P. sylvestris:* Austria, Belgium, Czechoslovakia, Denmark, France, Germany, Great Britain, Ireland, Latvia, Norway, Poland, Russia, Spain, Sweden.
*Populus tremula:* Sweden.
*Quercus leucotrichophora:* India.
*Q. mongolica* var. *grosseserrata:* Japan.
*Sorbus aucuparia:* Denmark, Germany, Great Britain, Norway, Poland.
*S. intermedia:* Denmark, Norway.
*Ulmus glabra:* Denmark.

**Fomes annularis** (Fr.) Lloyd (xx) **rot**

Forms sessile conks, very hard, with heavy crust, grayish-black to blackish, glabrous, concentrically ridged, pore surface grayish, tubes unstratified and as much as 12 cm. long, mouths even, circular, very thick walled, 2.5 to 4 per mm. On many broad-leaved trees. Distributed in California, Hawaii, Jamaica, Brazil, Great Britain, Gold Coast, Congo, India, Malaya, and Formosa.

*Alphonsea arborea:* Philippines.
*Artocarpus heterophyllus:* Philippines.
*Canarium ovatum:* Philippines.
*Cocos nucifera:* Philippines.
*Diospyros* sp.: Philippines.
*Dipterocarpus grandiflorus:* Philippines.
*Ficus* sp.: Philippines.
*Grevillea robusta:* Philippines.
*Hevea brasiliensis:* Brazil, Malaya.
*Mangifera indica:* Philippines.
*Parashorea malaanonan:* Philippines.
*Parkia javanica:* Philippines.
*Pithecellobium saman:* Jamaica.
*Tamarindus indica:* Philippines.
*Ulmus* sp.: Great Britain.

**Fomes badius** (Berk.) Cke. (xx) **spongy heart rot**

Conk large, sessile, ungulate, brown, and woody. On wounded hardwood trees causing a yellow spongy rot with black zone lines. Distributed in Texas, Arizona, Mexico, Bahamas, Cuba, Curacao, Dominican Republic, and Puerto Rico; also in India, Australia, and New Zealand.

*Acacia aulalocarpa:* Australia.
*A. catechu:* India.
*A. scorpioides:* India.
*A. suma:* India.
*Shorea robusta:* India.

**Fomes cajanderi** Karst. (xx) **brown cubical rot**

Conk effuse-reflexed or sessile, pinkish to rose colored, blackening with age, medium sized, pores pinkish to rosy. Attacks open wounds on coniferous, rarely on hardwood, trees. Associated with a brown

rot of the wood. Distributed in Canada, the United States, and in Bermuda, where it seriously attacked the Bermuda juniper until that tree was practically exterminated by it and an insect.

*Juniperus bermudiana:* Bermuda.

**Fomes caryophylli** (Rac.) Bres. (xx) **heart rot**

Causes severe heart and root rot in many broad-leaved trees of the Old World Tropics, entering the living trunks and roots through wounds. Distributed in the Gold Coast, Mauritius, Ceylon, India, Java, Japan, and the Philippines.

*Anogeissus latifolia:* India.
*Eugenia cumini:* India.
*Madhuca indica:* India.
*Shorea robusta:* India.

**Fomes conchatus** (Fr.) Gill. (xx) **hardwoods heart rot**

Conk sessile to effuse-reflexed, woody, date-brown, concentrically grooved, tomentose, margins acute. Tubes cinnamon, short; pores, glistening, minute, round. Causes yellow decay of heartwood of numerous hardwoods. Distributed in North America north of Mexico; and in Europe, India, Pakistan, South Africa, and Australia.

*Acacia* sp.: Portugal.
*Alnus* sp.: Portugal.
*Antidesma* sp.: India.
*Arbutus unedo:* Portugal.
*Casuarina* sp.: Australia.
*Cotoneaster affinis* var. *bacillaris:* India.
*Eucalyptus* sp: Portugal.
*E. obliqua:* Australia (southern).
*E. piperita:* Australia.
*Fagus sylvatica:* Germany, Norway.
*Melia azedarach:* Union of South Africa.
*Populus* sp.: Portugal, Union of South Africa.
*Quercus* sp.: Pakistan.
*Salix* sp.: Great Britain, Russia.
*S. alba:* Denmark.
*S. caprea:* Denmark.
*Ulmus wallichii:* Pakistan.

**Fomes connatus** (Weinm.) Gill. (xx) **heart rot**

Conk white, hirsute, corky, often with moss and algae on the upper side, sessile, medium sized, single or overlapping on a common flat base. Readily infects large open wounds on living hardwood trees. This fungus causes a soft gray rot of the heartwood, usually fruiting in some injury. In the Old World it is known as *Fomes populinus* (Fr.) Cke. Distributed in North America from British Columbia, Kansas, Iowa to Arkansas, and eastward to Georgia, Nova Scotia, and Prince Edward Island. It is generally distributed in Europe and in Siberia and South Africa.

*Acer* sp.: Germany, Norway, Russia.
*A. mono:* Siberia (Ussuri).
*A. platanoides:* Norway, Russia.
*Aesculus hippocastanum:* Denmark, Germany.
*Alnus glutinosa:* Russia.

*Betula* sp.: Germany.
*B. pendula:* Denmark.
*B. pubescens:* Russia.
*Curtisea faginea:* Union of South Africa.
*Fagus sylvatica:* Denmark, Germany.
*Fraxinus excelsior:* Russia.
*Juniperus* sp.: Russia (Caucasus).
*Platanus* sp.: Norway.
*Populus* sp.: Great Britain, Norway, Russia.
*P. alba:* Denmark, Great Britain, Russia.
*P. balsamifera:* Denmark, Norway.
*P.* × *canadensis:* Germany.
*P. nigra:* Great Britain, Russia.
*P. tremula:* Russia.
*Quercus petraea:* Russia.
*Q. robur:* Russia.
*Robinia* sp.: Great Britain.
*Salix alba:* Denmark.
*S. cinerea:* Denmark.
*S. fragilis:* Russia.
*S. grandifolia:* Denmark.
*Sorbus aucuparia:* Russia.
*Tilia* sp.: Great Britain, Norway.
*T. cordata:* Russia.
*Ulmus* sp.: Great Britain, Norway.
*U. glabra:* Russia.
*U. laevis:* Russia.

**Fomes demidoffii** (Lév.) Cke. (xx) **juniper heart rot**

Conk woody, hoof shaped, medium to large, zonate, sepia to black, irregularly cracked. A wound parasite causing white rot of *Juniperus* heartwood. Widely distributed in North America, Russia, Yugoslavia, Kenya, and Pakistan.

*Juniperus excelsa:* Russia, Yugoslavia.
*J. macropoda:* Pakistan.
*J. procera:* Kenya.

**Fomes fastuosus** (Lév.) Cke. (xx) **white pocket rot**

Conk solitary or multiple crowded on a common base, sessile, flat or convex, corky, zonate, rusty brown, margin obtuse and sterile below; pore surface yellowish, pores minute, mouths dark brown, soft and velvety; tubes stratified. Associated with a white pocket heart rot. Occurs on numerous broad-leaved trees. Distributed in Florida, Mexico, Central America, West Indies, Brazil, Chile, France, Gold Coast, South Africa, Madagascar, Mauritius, Ceylon, India, Japan, Formosa, Philippines, and Australia.

*Boswellia serrata:* India.
*Casuarina equisetifolia:* India.
*Shorea robusta:* India.

**Fomes fomentarius** (Fr.) Kickx (xx) **trunk rot**

Conk sessile, hoof shaped, outer layer horny, gray, zonate, medium sized. On trunks of standing and fallen hardwood trees. It infects large open wounds and causes a white mottled wood rot extending

from the first center of infection. Distributed widely in North America. Also in Europe, northern Africa, northern Asia, and Malacca.

*Abies sibirica:* Siberia.
*Acacia* sp.: Portugal.
*Acer mandshuricum:* Siberia (Ussuri).
*A. mono:* Siberia (Ussuri).
*A. pseudoplatanus:* Russia (Caucasus).
*Aesculus hippocastanum:* Austria, Denmark.
*Alnus* sp.: Germany, Portugal.
*A. glutinosa:* Denmark.
*A. incana:* Norway.
*Betula* sp.: Belgium, Denmark, Germany, Great Britain, Norway, Russia.
*Carpinus* sp.: Germany.
*C. betulus:* Russia (Caucasus).
*Eucalyptus* sp.: Portugal.
*Fagus sylvatica:* Austria, Belgium, Czechoslovakia, Denmark, Germany.
*Fraxinus* sp.: Russia (Caucasus).
*Juglans regia:* Russia (Caucasus).
*Morus* sp.: Portugal.
*Pinus* sp.: Portugal.
*Populus* sp.: Portugal.
*P. alba:* Denmark.
*P. deltoides:* Denmark.
*P. nigra:* France.
*P. tremula:* Russia.
*Quercus* sp.: Great Britain, India, Portugal.
*Q. mongolica:* Siberia (Ussuri).
*Q. suber:* Morocco, Russia (Caucasus).
*Q. suber* var. *occidentalis:* Russia (Caucasus).
*Salix* sp.: Portugal.
*Tilia* sp.: Great Britain.
*Ulmus* sp.: Denmark, Germany, Portugal.

**Fomes fraxineus** (Fr.) Cke. (xx) **hardwoods butt rot**

Conk sessile, corky to rigid, often multiple-crowded, light colored with reddish stains, later darker with a thin, hard crust, somewhat zonate, rough and uneven. Pores whitish, cinereous to brownish, tubes 2 to 10 mm. long, mouths subangular, thin walled. Associated with a white rot. Usually on trunks of *Fraxinus* near the ground; also noted on other hardwoods. Distributed in Eastern United States, Eastern Canada, British Guiana, Europe, and Japan.

*Broussonetia papyrifera:* France.
*Fraxinus* sp.: Great Britain.
*Populus* sp.: Russia.
*Ulmus* sp.: France.

**Fomes igniarius** (Fr.) Kickx (xx) **hardwoods heart rot**

Conk sessile, woody, hoof shaped, brown to black, deeply cracked pore surface gray-brown to brown, older pore layers white-stuffed pores 4 to 5 per mm. A wound parasite of living hardwood trees

rarely of conifers. Causes a spongy, yellowish-white rot bounded by black zones or lines. Distributed generally in North America, Europe, and Asia. Also in the Congo and Australia.

*Acer platanoides:* Russia.
*Alnus fruticosa:* Siberia.
*A. glutinosa:* Netherlands, Denmark, Russia.
*A. incana:* Germany, Netherlands, Norway.
*A. japonica:* Japan.
*Betula* sp.: Finland, Germany, Japan, Norway, Russia, Sweden.
*B. albo-sinensis:* China.
*B. costata:* Siberia (Ussuri).
*B. pendula:* Germany, Siberia.
*B. pubescens:* Norway, Siberia (Omsk).
*Carpinus* sp.: Russia (Caucasus).
*C. betulus:* Belgium, France, Germany.
*C. cordata:* Siberia (Ussuri).
*Corylus avellana:* Denmark.
*Crataegus oxyacantha:* Denmark.
*Fagus orientalis:* Russia (Caucasus).
*F. sylvaticus:* Belgium, England, France, Germany, Japan, Norway, Russia.
*Fraxinus* sp.: Germany, Great Britain, Norway.
*Hippophaë rhamnoides:* Denmark, Germany.
*Juglans mandshurica:* Siberia (Ussuri).
*J. regia:* Bulgaria, Italy.
*Larix sibirica:* Siberia.
*Populus* sp.: France, Germany, Great Britain, Latvia, Russia, Sweden.
*P. alba:* Netherlands, Denmark, Russia.
*P. balsamifera:* Siberia.
*P. ×canadensis:* Italy.
*P. nigra:* Netherlands.
*P. tremula:* Denmark, Estonia, Germany, Norway, Russia, Siberia.
*Quercus* sp.: Belgium, France, Germany, Japan, Norway, Russia, Siberia.
*Q. mongolica:* Siberia.
*Q. petraea:* Denmark.
*Q. robur:* Denmark, Germany, Netherlands.
*Q. suber:* Russia (Caucasus).
*Salix* sp.: France, Germany, Great Britain, Norway, Poland, Russia, Siberia.
*S. alba:* Denmark, Germany.
*S. caprea:* Denmark, Norway.
*S. fragilis:* Denmark, Poland.
*S. myrsinifolia:* Norway.
*S. pentandra:* Denmark.
*S. viminalis:* Siberia.
*Sorbus* sp.: Russia.
*Tilia ×europaea:* Denmark.
*Ulmus* sp.: Germany, Russia.
*U. glabra:* Germany.

**Fomes igniarius** var. **laevigatus** (Fr.) Overh. (xx) **butt rot**

Conk widely effused, semiwoody, rusty brown, margin receding each year, pore surface reddish brown, the tubes stratified, 1 to 3 mm. long each year, pores round, 8 to 10 per mm., edges thick. Associated with yellowish-white rot of hardwoods, especially birches. Definite sunken lesions are formed with the conks on the dead bark. Distributed in Canada and the United States, Europe, and Japan.

*Betula* sp.: Germany, Great Britain.
*B. ermanii* var. *communis:* Japan.
*B. maximowicziana:* Japan.
*B. pubescens:* Norway.
*Salix caprea:* Norway.

**Fomes korthalsii** (Lév.) Cke. (xx) **butt rot**

Conk corky, hemispherical, reflexed, flat, zonate, ferruginous, margin obtuse and sterile, pores minute and rounded. Causes butt and heart rot of *Castanopsis*. Distributed in Sumatra, Java, Hawaii, and Philippines.

*Castanopsis argentea:* Java.

**Fomes lamaoensis** (Murr.) Sacc. & Trott. (xx) **brown root rot**

Conk woody, sessile, thin, multiple, flat, medium sized, surface zonate, horny incrusted. Causes brown root disease in the Eastern Tropics, attacking numerous broad-leaved trees. Diseased roots are incrusted with sand, earth, and stones bound together with brown mycelium. The bark is brown or mottled with white patches. The wood is honeycombed in advanced decay. Distributed through the Eastern Tropics and Africa. Also in Trinidad, Brazil, and British Guiana.

*Acacia decurrens:* East Indies.
*Albizia falcata:* Sumatra.
*Aleurites montana:* Ceylon.
*Areca cathecu:* Malaya.
*Artocarpus heterophyllus:* East Indies.
*Bischofia javanica:* Formosa.
*Bombax malabaricum:* Ceylon.
*Ceiba pentandra:* East Indies, Malaya.
*Celtis* sp.: Congo.
*Chlorophora excelsa:* Tanganyika.
*Cinnamomum camphora:* Formosa.
*Cocos nucifera:* New Guinea.
*Coffea arabica:* Java, Kenya, Uganda.
*C. canephora* var. *robusta:* Java, West Africa.
*C. liberica:* West Africa.
*Dalbergia latifolia:* East Indies.
*D. sissoo:* Formosa.
*Elaeis guineensis:* Sumatra, Malaya.
*Erythrina* sp.: East Indies.
*Funtumia elastica:* Ivory Coast.
*Hevea brasiliensis:* Ceylon, Congo, East Indies, French Equatorial Africa, Gold Coast, India, Indochina, Ivory Coast Malaya, Philippines.
*Leucaena glauca:* East Indies.

*Machilus longipaniculata:* Formosa.
*Maesa formosana:* Formosa.
*Melia azedarach:* Formosa.
*Murraya paniculata:* Formosa.
*Myristica fragrans:* East Indies.
*Pterocarpus indicus:* East Indies.
*Saurauja oldhamii:* Formosa.
*Shorea robusta:* India.
*Styrax benzoin:* Ivory Coast.
*Swietenia macrophylla:* East Indies.
*S. mahagoni:* East Indies.
*Tectona grandis:* East Indies.
*Theobroma cacao:* Gold Coast, Ivory Coast, New Guinea, West Africa.

**Fomes ligneus** (Berk.) Cke. (xx) **root rot**

Conk black, sessile, hard, heavy, applanate to hoof shaped, large, with a thin but distinct crust, the margin obtuse; pore surface cream or dirty white, the pores round, 4 per mm., with thick edges. On broad-leaved trees. Distributed in Nicaragua, St. Vincent Island of British West Indies, and Mauritius. Other reports are uncertain.

*Hevea brasiliensis:* Brazil.
*Ocotea bullata:* Union of South Africa.

**Fomes lignosus** (Klotzsch) Bres. (xx) **root rot**

Conk sessile, drying hard and rigid, convex or flat, large, surface red-brown, zonate with yellow and orange bands; pore mouths angular to circular. On roots of *Hevea* and many jungle trees. Causes white to yellowish decay, inflicting serious losses. It forms smooth, white or reddish mycelial cords on the outside of diseased roots and the younger growths form fan-shaped sheets. Identity uncertain, is probably a collective species. Reported in African and Asiatic Tropics and from Mexico southward to Peru and Brazil.

*Acacia* sp.: East Indies.
*Albizia fastigiata:* Congo.
*Aleurites montana:* Ceylon, Congo, Indochina.
*Altingia excelsa:* Java.
*Artocarpus altilis:* Brazil.
*A. heterophyllus:* Spanish Guinea (Fernando Po), Brazil.
*Bixa orellana:* Malaya.
*Bombax munguba:* Brazil.
*Calophyllum* sp.: Brazil.
*Calycophyllum spruceanum:* Brazil.
*Carapa guianensis:* Brazil.
*Cecropia* sp.: Brazil.
*Ceiba pentandra:* Brazil, Congo, Malaya.
*Cinnamomum camphora:* Malaya.
*Cocos nucifera:* Brazil, Malaya, New Guinea, Spanish Guinea (Fernando Po).
*Coffea arabica:* Brazil, Congo.
*C. canephora* var. *robusta:* West Africa, Congo.
*C. liberica:* Ivory Coast.
*Cola acuminata:* Sierra Leone.

*C. vera:* Sierra Leone.
*Delonix regia:* Congo.
*Elaeis guineensis:* Ceylon, Malaya.
*Erythrina* sp.: Spanish Guinea (Fernando Po).
*E. indica:* Philippines.
*Ficus* sp.: Brazil, Congo, Philippines.
*Grevillea robusta:* Uganda.
*Hevea brasiliensis:* Borneo, Brazil, Ceylon, Congo, Costa Rica, Gold Coast, India, Indochina, Ivory Coast, Java, Malaya, Mexico, Philippines, Spanish Guinea (Fernando Po), Sumatra.
*Hura crepitans:* Brazil.
*Koompassia malaccensis:* Malaya.
*Leucaena glauca:* Congo.
*Livistona cochin-chinensis:* Malaya.
*Lonchocarpus sericeus:* Congo.
*Lophira alata:* Congo.
*Mangifera indica:* Brazil.
*Melaleuca leucadendron:* Uganda.
*Musanga smithii:* Congo.
*Ochroma pyramidale:* Ceylon.
*Oncosperma filamentosum:* Malaya.
*Palaquium oblongifolium:* Malaya.
*Pentaclethra macrophylla:* Congo.
*Piptadenia africana:* Congo.
*Pouteria macrocarpa:* Brazil.
*Pterocarpus soyauxii:* Congo.
*Theobroma cacao:* Brazil, Congo, Gold Coast, Ivory Coast, Sierra Leone, Spanish Guinea (Fernando Po), West Africa.
*Zanthoxylum melanorachis:* Congo.

**Fomes linteus** (Berk. & Curt.) Cke. (xx) **spongy white rot**

Forms large, corky, brown, shelving conks. Upper surface rough, concentrically zoned, radiately wrinkled. Lower surface brown with a pale tinge, velvety with a silky sheen. Pores minute, 6 to 8 per mm., tubes brown to pale brown, 0.25 cm. long, with abundant brown setae. Causes spongy white rot of broad-leaved trees. Possibly a collective species. Distributed from Texas southward to Mexico, Central America, West Indies, Trinidad, and Brazil; also in Pakistan, Australia, Kenya, East Africa, South Africa, and New Caledonia.

*Acacia aulalocarpa:* Australia.
*Olea* sp.: Union of South Africa.
*O. europaea:* Kenya.

**Fomes nigrolimitatus** (Rom.) Egeland (xx) **conifer heart rot**

Conk resupinate, soft, punky, with thin black lines between older pore layers; pores 5 to 6 per mm. Associated with a conspicuous white pocket rot of coniferous heartwood. Distributed from Colorado and California northward to British Columbia and Alaska in North America. Also in Norway, Sweden, higher Alps of Europe, and in Japan, China, and New Zealand.

*Abies georgei:* China.
*Picea likiangensis:* China.

**Fomes officinalis** (Fr.) Faull (xx) **conifer heart rot**

Conk sessile, cheesy when fresh, drying rigid; knoblike to ungulate, large, white to yellowish, sulcate, rimose, interior friable when dry, bitter, pores white or discolored on drying, tubes 3 to 20 mm. long each season, mouths angular, thick walled, 3 to 4 per mm. A wound parasite of overmature coniferous trees causing brown rot. Distributed from Alaska southward to Nevada and eastward to Ontario and Quebec; widely distributed in Europe, North Africa, and in Siberia, Japan, China, and Sakhalin Island.

*Abies sachalinensis:* Japan.
*Cedrus atlantica:* Algeria, Spanish Morocco, Switzerland, Russia.
*C. libanensis:* Asia Minor.
*Larix decidua:* Austria, France, Italy, Russia, Switzerland.
*L. gmelinii:* Japan, Russia, Sakhalin Island, Siberia.
*L. leptolepis:* Japan.
*L. sibirica:* Russia, Siberia.
*Pinus* sp.: Russia.
*P. cembra:* Siberia.
*P. tabulaeformis* var. *yunnanensis:* China.
*Pseudotsuga menziesii:* Netherlands.

**Fomes pectinatus** (Klotzsch) Cke. (xx) **trunk rot**

Conk hard, sessile to effuse-reflexed, flat, medium sized, reddish brown, with thin margins; pore surface yellowish or reddish brown, pores 8 to 12 per mm. A wound parasite of broad-leaved trees. Distributed in Mexico, Central America, West Indies, Africa, Asia, Philippines, and Java.

*Irvingia malayana:* Malaya.
*Tabernaemontana pandacaqui:* Philippines.
*T. sphaerocarpa:* Java.

**Fomes pini** (Fr.) Karst. (xx) **conifer heart rot**

Conks brown to nearly black, varying in shape from thin shell shaped to bracket and hoof shaped, averaging up to 20 cm. across; rough, with concentric furrows and brownish-black above; below, the pore surface is brown with the pores varying from small and round to large and irregular. Usually conks are located at dead branch stubs. Nearly all conifers except *Sequoia*, cypresses, and junipers are attacked. It is rare on hardwoods. Damage caused by it is heavy because of its general distribution on many hosts practically throughout the temperate coniferous forests of the Northern Hemisphere around the world. The decay is a white pocket rot with an early red ring stage.

*Abies alba:* Germany.
*A. pindrow:* India.
*A. sachalinensis:* Japan.
*A. sibirica:* Siberia.
*Betula* sp.: Siberia (Ussuri).
*Cedrus deodara:* India.
*Larix decidua:* Germany, Great Britain, Norway, Sweden.
*L. gmelinii:* Russia, Sakhalin Island, Siberia.
*L. gmelinii* var. *japonica:* Manchuria, Sakhalin Island.
*L. gmelinii* var. *olgensis:* Siberia.

586625—61——8

*L. leptolepis:* Japan.
*L. potaninii:* China.
*Picea abies:* Czechoslovakia, Germany, Norway, Russia, Sweden, Switzerland.
*P. jezoensis:* Japan, Korea, Manchuria, Sakhalin Island, Siberia.
*P. likiangensis:* China.
*P. obovata:* Siberia.
*P. omorika:* Balkan Mountains.
*P. smithiana:* India.
*Pinus* sp.: Germany, Great Britain, Portugal, Russia, Siberia.
*P. cembra* var. *sibirica:* Siberia.
*P. gerardiana:* India.
*P. griffithii:* India.
*P. halepensis:* France.
*P. koraiensis:* Siberia.
*P. monticola:* Great Britain.
*P. peuce:* Yugoslavia.
*P. pinaster:* France, Portugal,
*P. pinea:* Portugal.
*P. roxburghii:* India.
*P. sylvestris:* Belgium, Czechoslovakia, Denmark, Germany, Latvia, Norway, Poland, Russia, Siberia, Sweden.
*P. tabulaeformis* var. *yunnanensis:* China.
*Pseudotsuga menziesii:* Great Britain.
*Tsuga chinensis:* China.
*T. yunnanensis:* China.

**Fomes pinicola** (Fr.) Cke. (xx) **wound rot**

Conk large, woody, shelf shaped, or usually hoof shaped on *Abies;* upper surface smooth, zonate, gray to black, often with a wide red margin. Lower surface white to yellowish. Causes a brown crumbly rot of coniferous and broad-leaved trees and timbers. Very common on dead timbers, but occasionally infects large wide wounds of living tree trunks. Distributed practically throughout the North Temperate Zone.

*Abies* sp.: Germany, Russia.
*A. firma:* Japan.
*A. pindrow:* Pakistan.
*A. sachalinensis:* Japan.
*A. sibirica:* Siberia.
*Alnus* sp.: Denmark, Sweden.
*Betula* sp.: Denmark, Sweden.
*Fagus sylvatica:* Belgium, Denmark.
*Picea* sp.: Russia.
*P. abies:* Denmark, Germany, Norway, Sweden.
*P. jezoensis:* Japan.
*Pinus* sp.: Germany.
*P. densiflora:* Japan.
*P. khasya:* India.
*Quercus* sp.: France, India.
*Tsuga sieboldii:* Japan.

**Fomes pomaceus** (Pers.) Lloyd (xx) **heart rot**

Conk woody, thick, bracket shaped, with obtuse edge, gray or black behind; pore surface brown, tubes 1 to 4 mm. long each season, older

tubes stuffed with white mycelium, mouths brown, rather thick walled, 4 to 6 per mm. This fungus occurs mostly on *Prunus* but is reported occasionally on other broad-leaved trees. Causes a white rot discolored with brownish flecks and streaks. Distributed in North America from Maine and Ontario to Georgia, westward to the prairies and from New Mexico to Montana and Manitoba. It is present generally in Europe and is reported from Siberia, India, Ceylon, Borneo, and Australia.

*Abies alba:* France, Germany.
*Populus tremula:* Norway.
*Quercus mongolica:* Siberia (Amur Region).
*Xylia xylocarpa:* India.

**Fomes ribis** (Fr.) Gill. (xx) **butt rot**

Conk rusty brown, sessile, rigid and woody, thin, sometimes multiple-confluent and large. Pore surface brown, the tubes up to 3 mm. long, the mouths angular, averaging 5 to 8 per mm. At the bases of living stems of several shrubs and small trees. Distributed in North America from southern Canada to Maryland and Georgia westward to the prairies, in Louisiana, Montana, New Mexico, and Oregon. Apparently more common in Europe and known in Siberia and India.

*Arbutus andrachne:* Russia.
*Quercus* sp.: Russia.
*Shorea robusta:* India.
*Ulmus* sp.: Portugal.

**Fomes robiniae** (Murr.) Sacc. & D. Sacc. (xx) **heart rot**

Conk sessile, woody, applanate to hoof shaped, large, very much fissured, with concentric furrows and thick margin; pore surface brown, pores rounded, thick walled, 4 to 6 per mm. On living broad-leaved trees, mostly of *Robinia*, causing a spongy yellowish rot in the heartwood. Distributed in North America where *Robinia* grows naturally, including Mexico and the West Indies. Rare in Europe. Widely distributed in the Tropics: South Africa, Sudan, Ceylon, India, Japan, Philippines, New Caledonia, Samoa, Hawaii, and Australia; also reported in Russia and Siberia.

*Acacia armata:* Australia.
*A. scorpioides:* Egyptian Sudan.
*A. seyal:* Egyptian Sudan.
*Albizia lebbek:* Egyptian Sudan.
*Anogeissus latifolia:* India.
*Boswellia serrata:* India.
*Casuarina lepidophloia:* Australia.
*C. stricta:* Australia.
*Curtisea faginea:* Union of South Africa.
*Dalbergia sissoo:* India.
*Elaeodendron croceum:* Union of South Africa.
*E. glaucum:* India.
*Eucalyptus odorata:* Australia.
*E. oleosa:* Australia.
*E. paniculata:* Australia.
*E. regnans:* Australia.
*Heritiera minor:* India.
*Kiggelaria africana:* Union of South Africa.
*Melaleuca pubescens:* Australia.

*Morus alba:* Japan.
*Olea laurifolia:* Union of South Africa.
*Pistacia lentiscus:* Greece.
*P. mutica:* Russia.
*P. vera:* Siberia (western).
*Ptaeroxylon obliquum:* Union of South Africa.
*Quercus* sp.: India.
*Robinia* sp.: Dominican Republic, Jamaica.
*Schotia latifolia:* Union of South Africa.
*Scolopia mundtii:* Union of South Africa.
*Shorea robusta:* India.
*Terminalia bellerica:* India.
*T. tomentosa:* India.
*Xymalos monospora:* Union of South Africa.

**Fomes robustus** Karst. (xx) **white heart rot**

Conk sessile, or larger and woody; often hoof shaped, cracked, with age grayish brown to grayish black; pore surface yellowish-brown, the tubes 3 to 10 mm. long each year, white-stuffed with age, the pores circular, thick walled, 4 to 6 per mm. Causes white heart rot of dead snags or living trunks of trees, both coniferous and broad-leaved. Distributed sparsely in North America from Alaska southward to Mexico, Nicaragua, and Jamaica; generally in Europe, and in Siberia, Japan, New Zealand, Australia, and South Africa.

*Abies alba:* Austria, Great Britain, Poland.
*A. nephrolepis:* Siberia (Ussuri).
*A. nordmanniana:* Russia.
*A. sachalinensis:* Japan.
*A. sibirica:* Siberia.
*Acacia* sp.: Portugal.
*Angophora lanceolata:* Australia.
*Banksia* sp.: Australia.
*Buxus sempervirens:* Russia.
*Callitris propinqua:* Australia.
*Castanea* sp.: Austria.
*Casuarina lepidophloia:* Australia.
*C. luehmannii:* Australia.
*C. stricta:* Australia.
*C. suberosa:* Australia.
*Eucalyptus botryoides:* Australia.
*E. camaldulensis:* Australia.
*E. fasciculosa:* Australia.
*E. odorata:* Australia.
*E. oleosa:* Australia.
*E. ovata:* Australia.
*E. saligna:* Australia.
*E. viminalis:* Australia.
*Hippophaë rhamnoides:* Norway.
*Larix leptolepis:* Great Britain.
*Melaleuca decussata:* Australia.
*Nothofagus fusca:* Australia, New Zealand.
*N. menziesii:* Australia, New Zealand.
*Olea laurifolia:* Union of South Africa.
*Picea* sp.: Russia, Japan.

*P. abies:* Austria, Germany.
*Pistacia lentiscus:* Portugal.
*Quercus* sp.: Austria, Great Britain, Portugal, Russia, Sweden.
*Thujopis dolobrata:* Japan.
*Xymalos monospora:* Union of South Africa.

**Fomes roseus** (Fr.) Karst. (xx) **conifer heart rot**

Conk woody, flesh colored, medium sized, sessile, effuse-reflexed or bracketed, rugose. Tubes pale flesh color, short, stratose, pores concolorous, round, minute. Causes brown pocket rot of living trees of conifers. Distributed in the United States, British Columbia, Jamaica, Europe, China, and the Philippines.

*Juniperus* sp.: Great Britain.
*Picea* sp.: Great Britain.
*P. likiangensis:* China.

**Fomes senex** (Nees & Mont.) Cke. (xx) **heart rot**

Conk flattened, large, with brown, rugulose surface, without a distinct crust. Pores very minute, mouths dark brown, soft and velvety. Associated with a honeycomb heart rot of numerous trees in the Tropics. So-called *Fomes senex* in America does not agree with Old World type specimens, and may not be correctly identified. Distributed in Chile, Brazil, France, Gold Coast, South Africa, Madagascar, Mauritius, Java, Ceylon, India, Japan, Formosa, Philippines, and Australia.

*Aesculus indica:* India.
*Boswellia serrata:* India.
*Casuarina equisetifolia:* India.
*Chukrasia tabularis:* India.
*Eugenia* sp.: Union of South Africa.
*Melia azedarach:* Formosa, India.
*Morus* sp.: India.
*Shorea robusta:* India.

**Fomes setulosus** Lloyd (xx) **white pocket heart rot**

Conk convex, smooth, brown, and woody; pores very minute with brown mouths. Associated with a white pocket rot of broad-leaved trees. Distributed in Costa Rica, Ceylon, India, South Australia, New Zealand, and Tasmania.

*Eucalyptus camaldulensis:* Australia.
*E. viminalis:* Australia.
*Mallotus philippinensis:* India.

**Fomes torulosus** (Pers.) Lloyd (xx) **heart rot**

Conk flat and thin, pubescent when young, with raised concentric soft ridges. Pores minute, the mouths purplish. On broad-leaved trees with large open wounds. Distributed from Arkansas and Missouri to Texas and Mississippi in North America; widely scattered in Europe and in Japan.

*Arbutus unedo:* Portugal.
*Buxus sempervirens:* Portugal.
*Castanea sativa:* Portugal.
*Pistacia lentiscus:* Portugal.

**Fomes tricolor** (Murr.) Sacc. & Trott. (xx) **heart rot**

Conk large, flat, with black fissured crust. Pores minute, mouths brownish. A wound parasite especially on *Shorea*. Distributed in the Philippines and in India.

*Shorea robusta:* India.

**Fomes ulmarius** (Fr.) Gill. (xx) **heart rot**

Conk sessile to effuse-reflexed, convex to flat, pale above, large, pore surface pinkish, pores 5 to 8 per mm. A wound parasite of living broad-leaved trees associated with a brown cubical rot. Rarely on conifers. Distributed from Georgia to Texas and Arkansas, southward to Mexico and Honduras; possibly in British Guiana; also in Europe, South Africa, and Japan.

*Cryptomeria japonica:* Japan.
*Fraxinus* sp.: Portugal.
*Ocotea bullata:* Union of South Africa.
*Platanus orientalis:* Portugal.
*Podocarpus* sp.: Union of South Africa.
*Populus* sp.: Portugal.
*Quercus* sp.: Portugal.
*Ulmus* sp.: Portugal, Great Britain.
*Virgilia capensis:* Union of South Africa.

**Fusamen amentorum** (Delacr.) v. Arx (xx) **willow anthracnose**

Forms conidial pustules associated with anthracnose of *Salix* leaves and catkins. Distributed in Europe and Algeria.

*Salix* sp.: Italy.
*S. aurita:* Denmark.
*S. cinerea:* Denmark.
*S. dasyclados:* Denmark.
*S. repens:* Denmark.
*S.* ×*smithiana:* Denmark.
*S. viminalis:* Denmark.

**Fusamen deformans** (Schroet.) Karst. (xxx) **willow anthracnose**

Conidial pustules are associated with anthracnose and decay of catkins of *Salix* in northern Europe.

*Salix caprea:* Denmark.

**Fusarium albedinis** (Killian & Maire) Malencon (xx) **"bayoud"—date palm wilt**

The species of *Fusarium* are small, inconspicuous, threadlike fungi that live in the soil saprophytically on dead plant remains. Practically all *Fusarium* species can live thus, but some can become aggressive parasites on roots of many plants and cause wilt of the upper parts by interrupting water conduction. They often cause damping-off of young seedlings and inflict heavy damage. They occur everywhere that trees grow. Wilt or dieback may be caused on stems and branches, and leaf spots appear on trees beyond the seedling stage. Here they form grayish or white cottony wefts on the surface, and small pustules break through the epidermis and exude light-colored spore masses or tendrils. They can be identified only with a microscope.

The "bayoud" or white disease of date palms is apparently endemic only in the North African date-growing region. Scattered trees die slowly, year after year, with white spotting or streaking of the leaves. In an epidemic, many trees may die rapidly and for a number of years in a given area. Damage may be heavy but is limited to parts of Algeria and Morocco. A similar disease of *Elaeis* is reported in the French Congo.

*Elaeis guineensis:* Congo, French Equatorial Africa.
*Phoenix dactylifera:* Algeria, Morocco.

**Fusarium avenaceum** (Fr.) Sacc. (xxx) **damping-off**

See *Fusarium albedinis* for a general account of all Fusaria. *F. avenaceum* is one of the most widely distributed fungi in the temperate zones and is known to attack more than 150 genera of plants of all descriptions. This fungus is one of several parasites which cause damping-off of seedlings in tree nurseries, a major problem in many countries.

*Pinus* sp.: Argentina.

**Fusarium bulbigenum** var. **blasticola** (Rostr.) Wr. (xxx) **damping-off**

See *Fusarium albedinis* for a general account of the Fusaria. *F. bulbigenum* var. *blasticola* is well known as the cause of severe damping-off of young coniferous seedlings in North America and Europe.

*Abies alba:* Switzerland.
*Cupressus* sp.: Argentina.
*Picea abies:* Switzerland.
*Pinus* sp.: Argentina.
*P. mugo:* Denmark, Formosa.
*P. mugo* var. *rostrata:* Denmark.
*P. sylvestris:* Germany.

**Fusarium coeruleum** (Lib.) Sacc. (xxx) **root rot**

See general account under *Fusarium albedinis*. *F. coeruleum* is reported as a pathogen of *Acacia* roots in India.

*Acacia melanoxylon:* India.

**Fusarium fuliginosporum** Sibilia (xxx) **root rot**

See general account under *Fusarium albedinis*. *F. fuliginosporum* causes rot of seedlings of deodar cedar in Italy.

*Cedrus deodara:* Italy.

**Fusarium javanicum** Koord. (xx) ———

See general account under *Fusarium albedinis*. Associated with wilting and death of tropical trees, also with staining of wood of *Populus*. Distributed in Italy, Africa, Asia, Java, and the Philippines.

*Cinchona pubescens:* Madagascar.
*Hevea brasiliensis:* India, Ceylon.
*Polulus* × *canadensis:* Italy.
*Theobroma cacao:* Philippines, French West Africa.

**Fusarium lateritium** Nees (xx) ———

See *Fusarium albedinis* for general description. *F. lateritium* is associated with canker, dieback, damping-off of numerous woody plants especially in temperate regions, but is very widely distributed in all parts of the world.

*Aleurites montana:* Nyasaland.
*Coffea arabica:* Tanganyika.
*Morus alba:* Formosa.
*Pinus occidentalis:* Haiti.

**Fusarium orthoceras** Appel & Wr. (xxx) **damping-off**

See general account under *Fusarium albedinis*. *F. orthoceras* occurs in humus and decaying plant parts in the soil. More or less frequent in all parts of the world. Reported as pathogenic on tree seedlings in Argentina.

*Eucalyptus* sp.: Argentina.
*Pinus* sp.: Argentina.

**Fusarium oxysporum** Schlecht. (xxx) ———

See general account under *Fusarium albedinis*. This fungus lives saprophytically in soil and infected plant parts, but can assume an active pathogenic role on many kinds of plants including numerous coniferous and broad-leaved seedling trees. Distributed in North America, Europe, Argentina, and Africa.

[Information from United Nations, F.A.O., states that 500,000 acres are planted to *Pinus radiata* in the vicinity of Concepcion, Chile, but no specific information or reports of fungus damage there have been found by the writer. Presence of this widely distributed *Fusarium* in Argentina, which is causing serious damage to *P. radiata* in that country, makes it seem likely that it may also be in Chile.]

*Bougainvillea glabra:* Gold Coast.
*Coffea canephora* var. *robusta:* Congo.
*Elaeis guineensis:* Belgian Congo, Nigeria.
*Pinus halepensis:* Argentina.
*P. radiata:* Argentina.

**Fusarium oxysporum** Schlecht. var. **aurantiacum** (Lk.) Wr. (xx) **damping-off**

See general account under *Fusarium albedinis*. Associated with damping-off of conifers and broadleaves. Known in California, Europe, and Japan.

*Abies alba:* Germany.
*A. cephalonica:* Germany.
*A. nordmanniana:* Germany.
*A. sachalinensis:* Germany.
*A. sibirica:* Germany.
*A. veitchii:* Germany.
*Juniperus communis:* Germany.
*Larix decidua:* Great Britain, Germany.
*L. leptolepis:* Germany.
*Picea jezoensis:* Germany.
*P. omorika:* Germany.
*P. orientalis:* Germany.

*Pinus densiflora:* Japan.
*P. ponderosa:* Germany.
*P. sylvestris:* Germany.
*P. thunbergii:* Japan.
*Quercus dentata:* Japan.
*Sciadopitys verticillata:* Germany.
*Thuja orientalis:* Germany.

**Fusarium oxysporum** Schlecht. f. **perniciosum** (Hepting) Toole (xxx) **wilt**

See general account under *Fusarium albedinis*. *F. oxysporum* f. *perniciosum* has destroyed thousands of mimosa trees in the States extending from New Jersey southward to Georgia and Alabama and has been reported in Argentina. A similar disease has been reported in Russia. It causes sudden wilting and death of diseased trees, and it is practically impossible to eradicate if once established in new regions.

*Albizia julibrissin:* Argentina.

**Fusarium solani** (Mart.) Appel & Wr. (xx) **root rot**

See general account under *Fusarium albedinis*. Associated with root rot of trees and young seedlings. Distributed in North America, Europe, and India.

*Dalbergia sissoo:* India.
*Pinus sylvestris:* Sweden.

**Fusarium solani** (Mart.) Appel & Wr. f. **albizziae** Bagchee (xx) **canker**

See general account under *Fusarium albedinis*. A wound parasite following freezing injury to the bark on *Albizia* tree trunks. Inoculations in wounds succeeded. Known in India.

*Albizia procera:* India.

**Fusarium solani** (Mart.) Appel & Wr. var. **eumartii** (Carp.) Wr. (xxx) ——

See general account under *Fusarium albedinis*. Associated with disease in cacao, coffee, etc. Distributed in the United States and in subtropical and tropical regions of Asia and Africa.

*Coffea arabica:* Tanganyika.

**Fusarium solani** (Mart.) Appel & Wr. var. **martii** (Appel & Wr.) Wr. (xxx) **damping-off**

See general account under *Fusarium albedinis*. Associated with damping-off and root rot of older seedlings. Reported in Argentina and the Cameroons.

*Pinus* sp.: Argentina.

**Fusarium tumidum** Sherb. (xx) **wilt**

See general account under *Fusarium albedinis*. Associated with disease of branches and vascular disease in woody tree stems. Distributed in the United States, Europe, and Africa.

*Xylopia* sp.: Congo.

**Fusarium vasinfectum** Atk. (xx) **wilt**

See general account under *Fusarium albedinis.* Associated with wilt and damping-off of various plants and seedling trees. Distributed in North America, South America, Congo, and China. Probably in every cotton-growing country, cotton being especially susceptible to attack.

*Elaeis guineensis:* Congo.
*Pinus* sp.: Argentina.

**Fusicladium butyrospermi** Griff. & Maubl. (xx) **scab**

Occurs on yellow leaf spots with brown margins on *Butyrospermum* in French West Africa.

*Butyrospermum parkii:* French West Africa.

**Fusicladium elasticae** Koord. (xxx) **scab**

Forms olive hyphal growths on leaves of *Ficus elastica* in Java.

*Ficus elastica:* Java.

**Fusicladium pirinum** (Lib.) Fckl. var. **pyracanthae** Thuem. (xxx) **scab**

Forms felty, black, sooty masses on infected twigs, and black lesions on leaves and buds of *Pyracantha coccinea* in Ireland. In the United States a similar scab disease on the same host has been called *Fusicladium pyracanthae* (Otth) Rostr.

*Pyracantha coccinea:* Ireland.

**Fusicoccum araucariae** Voglino (xx) ———

Forms numerous subepidermal pustules on dead stems. Associated with stem rot of *Araucaria* seedlings and causes dieback. Known in Italy.

*Araucaria araucana:* Italy.

**Ganoderma applanatum** (S. F. Gray) Pat. (xx) **white mottled rot**

Conk sessile, woody, grayish to brown, with a hard, hornlike crust above, pore surface white to yellowish turning brown black where scratched. Tubes distinctly stratified, the mouths circular, thick walled, 4 to 6 per mm. Rather frequent in old open wounds on nearly all kinds of trees. Distribution practically worldwide.

*Abies* sp.: Russia.
*A. alba:* Ireland, Poland.
*A. sachalinensis:* Japan.
*Acacia* sp.: Portugal.
*A. catechu:* India.
*A. decurrens* var. *mollis:* Union of South Africa.
*A. horrida:* Australia, New South Wales.
*A. scorpioides:* India.
*Acer mono:* Japan.
*A. pseudoplatanus:* Ireland.

*Aesculus hippocastanum:* Ireland.
*Albizia fastigiata:* Union of South Africa.
*Alnus* sp.: Austria.
*A. formosana:* Formosa.
*Angophora lanceolata:* Australia.
*Arbutus unedo:* Portugal.
*Artocarpus heterophyllus:* India.
*Betula pendula:* Siberia.
*B. platyphylla:* Japan.
*Buxus sempervirens:* Portugal.
*Castanea* sp.: Ireland.
*C. sativa:* Portugal.
*Celtis kraussiana:* Union of South Africa.
*Cinnamomum cecidodaphne:* India.
*Curtisia faginea:* Union of South Africa.
*Dalbergia sissoo:* India.
*Diospyros discolor:* Philippines.
*Elaeis guineensis:* Angola, Congo, Sao Tomé.
*Eucalyptus* sp.: Australia, New South Wales, Portugal.
*E. regnans:* Australia (Victoria).
*Fagus japonica:* Japan.
*F. sylvatica:* Austria, Denmark, France, Germany, Ireland.
*Fraxinus* sp.: France, Great Britain, Ireland.
*F. excelsior:* Denmark, Poland.
*Mallotus philippinensis:* India.
*Morus* sp.: France.
*Olea laurifolia:* Union of South Africa.
*Picea abies:* Poland.
*Pinus* sp.: Portugal.
*Podocarpus* sp.: Union of South Africa.
*Populus* sp.: France, Netherlands.
*P. alba:* Norway.
*Quercus* sp.: France, Great Britain, Ireland, Portugal.
*Q. mongolica:* Siberia (Amur region).
*Q. mongolica* var. *grosseserrata:* Japan.
*Q. myrsinaefolia:* Japan.
*Q. stenophylla:* Japan.
*Salix alba:* Denmark.
*S. urbaniana:* Japan.
*Schinus molle:* Australia.
*Shorea robusta:* India.
*Tilia* sp.: Ireland.
*T.* ×*europaea:* Denmark.
*T. japonica:* Japan.
*Toona ciliata:* India.
*Ulmus* sp.: Ireland, Portugal.

**Ganoderma lucidum** (Fr.) Karst. (xx) **heart rot**

Conk sessile, multiple, leathery to corky, rigid on drying, circular to reniform, large, with a coat of reddish varnishlike substance drying to a thin crust. The tubes 2 to 18 mm. long, with thin-walled pores about 4 per mm. Stem rarely formed, lateral up to 10 cm.

long. On broad-leaved trees causing butt rot. Rare on conifers. Widely distributed in Eastern United States, Europe, Africa, and India.

*Acacia* sp.: East Indies, Union of South Africa.
*A. catechu:* India.
*A. confusa:* Philippines.
*A. decurrens* var. *mollis:* Union of South Africa.
*A. melanoxylon:* India.
*A. scorpioides:* India, Egyptian Sudan.
*Acrocarpus fraxinifolius:* India.
*Albizia acle:* Philippines.
*A. amara:* Union of South Africa.
*A. falcata:* Sumatra.
*A. fastigiata:* Union of South Africa.
*A. procera:* India.
*Aleurites moluccana:* Philippines.
*Anacardium occidentale:* Africa (Seychelles).
*Areca cathecu:* India, Malaya.
*Bambusa arundinacea:* Philippines.
*Carpinus* sp.: Great Britain.
*Castanea sativa:* Portugal.
*Casuarina equisetifolia:* India.
*C. stricta:* Argentina.
*Cocos nucifera:* India, Malaya, New Guinea.
*Corylus avellana:* Norway.
*Dalbergia latifolia:* India.
*D. sissoo:* India, Philippines.
*Delonix regia:* India, New Guinea, Philippines, Union of South Africa.
*Dracontomelum dao:* Philippines.
*Elaeis guineensis:* Angola, Belgian Congo, Ceylon, East Indies, Gold Coast, Malaya, Nigeria.
*Eucalyptus citriodora:* India.
*E. globulus:* Argentina.
*Ficus carica:* Argentina, Portugal.
*Gourliea spinosa:* Argentina.
*Guazuma* sp.: India.
*Haematoxylon campechianum:* Jamaica.
*Hevea* sp.: Ceylon, India.
*H. brasiliensis:* Ceylon, East Indies.
*Larix* sp.: Siberia.
*Leucaena glauca:* Philippines.
*Melia azadirachta:* Egyptian Sudan, India.
*Morus alba:* India.
*Olea laurifolia:* Union of South Africa.
*O. verrucosa:* Union of South Africa.
*Parashorea plicata:* Philippines.
*Picea* sp.: Russia.
*P. abies:* Norway.
*Pongamia pinnata:* India.
*Populus* sp.: Portugal.
*Ptaeroxylon obliquum:* Union of South Africa.
*Pterocarpus indicus:* Malaya, Philippines.

*P. marsupium:* India.
*Quercus* sp.: Great Britain, Portugal.
*Q. semicarpifolia:* India.
*Robinia pseudoacacia:* Argentina.
*Salix* sp.: Union of South Africa.
*Shorea robusta:* India.
*Tamarindus indica:* Ceylon.
*Taxus baccata:* Poland.
*Tipuana tipu:* Argentina.
*Toona ciliata:* India.
*Ulmus* sp.: Great Britain.
*Wallaceodendron celebicum:* Philippines.
*Ziziphus mucronata:* Union of South Africa.

**Ganoderma pseudoferreum** (Wakef.) v. Overeem & Steinm. (xx)

Conk sessile, flat, multiple, azonate, upper surface fissured, ferruginous to fuscus-umbrinous, margin sterile; pores minute, round, thick walled. A wound parasite on numerous broad-leaved trees. Distributed in the Congo, French Equatorial Africa, India, Indochina, Malaya, and East Indies.

*Albizia moluccana:* Malaya.
*Aleurites montana:* Indochina.
*Arenga pinnata:* Malaya.
*Cinnamomum* sp.: Java.
*Cocos nucifera:* Malaya.
*Coffea arabica:* East Indies.
*Durio zibethinus:* Java.
*Elaeis guineensis:* Malaya.
*Enterolobium cyclocarpum:* Malaya.
*Erythrina* sp.: East Indies.
*Ficus benjamina:* East Indies.
*Hevea* sp.: French Equatorial Africa.
*H. brasiliensis:* Belgian Congo, India, Indochina, Java, Malaya, Sumatra.
*Melia azedarach:* East Indies.
*Myristica* sp.: Malaya.
*Palaquium oblongifolium:* Malaya.
*Parkia roxburghii:* Malaya.
*Peltophorum inerme:* Malaya.
*Pterocarpus* sp.: Malaya.
*Theobroma cacao:* Java, Malaya.
*Toona sureni:* East Indies.

**Ganoderma resinaceum** Boud. (xx) **heart rot**

Conk large, sessile, rounded, concentrically zonate, crust shiny, yellowish-chestnut to umber red; edges rounded, acute; pores minute, rounded, fuscus-cinnamon. A wound parasite on hardwoods and conifers in Europe.

*Acer* sp.: Russia.
*Pinus* sp.: Great Britain.
*Quercus* sp.: Russia, Austria, Great Britain.

**Gibberella lateritia** (Ness) Snyd. & Hans. (xx) ———

Forms perithecia on lesions and causes blight of buds on broad-leaved trees. Known in southeastern United States, Japan, and Yugoslavia.

*Morus alba:* Japan.
*Robinia* sp.: Yugoslavia.

**Gibberella moricola** (de N.) Sacc. (xx) **twig canker**

Forms perithecia on lesions of twigs of *Morus* and *Ficus carica.* Distributed in Europe, China, and Japan.

*Ficus carica:* England.
*Morus* sp.: Germany, Netherlands.
*M. alba:* Germany, Japan.
*M. australis:* Japan.

**Gibberella xylarioides** (Stey.) Heim & Saccas (xx) **vascular wilt**

An aggressive wound parasite of injuries reaching the conductive tissue of woody stems of *Coffea* plants, and causing wilt of above-ground parts and final death. Known in French Equatorial Africa, Gold Coast, and the Congo.

*Coffea canephora* var. *robusta:* Belgian Congo, Ivory Coast.
*C. dewevrei:* Congo.
*C. excelsa:* Belgian Congo, Ivory Coast.
*C. neo-arnoldiana:* Belgian Congo.

**Gliocladium vermoesenii** (Biourge) Thom (xx) **palm decay**

Causes decay of buds, leaves, and stems of palms. Inoculations in wounds and without wounds in one species proved the fungus to be pathogenic. Known in California and the Congo.

*Areca* sp.: Congo.

**Gloeosporium illicii** Hemmi (xxx) **anthracnose**

Conidial pustules form on anthracnose spots on *Illicium* in Japan.

*Illicium anisatum:* Japan.

**Gloeosporium kawakamii** Miyabe (xxx) **witches'-broom**

Causes witches'-brooms on *Paulownia* in Japan; also reported in Italy on *Daphniphyllum.* The leaves on the brooms are small, pale green and curled, with red-brown spots on the blades and petioles. Seedlings often are killed. Distributed in Japan and Italy.

*Paulownia coreana:* Japan.
*P. tomentosa:* Japan.

**Gloeosporium lunatum** Ell. & Ev. (xxx) **joint decay**

Causes decay of joints of *Opuntia*, which threatened to occupy the entire grazing area of Australia about 4 decades ago. The fungus was taken from North America in the hope that it would become epidemic and halt further advance of the pest. In fact, it soon started to exterminate the *Opuntia;* a fine example of the newly introduced disease when conditions favor it.

*Opuntia aurantiaca:* Australia.
*O. stricta:* Australia.
*O. vulgaris:* Australia.

**Gloeosporium meliicola** Speg. (xxx) **anthracnose**

Conidial pustules are associated with anthracnose of leaves of *Melia* in Argentina.

*Melia azedarach:* Argentina (Salta).

**Glomerella cingulata** (Ston.) Spauld. & Schrenk (xxx) **anthracnose**

Forms perithecia sunken in the substratum. Causes decay lesions of all aerial parts of numerous broad-leaved all-aged trees in practically all temperate and tropical regions of the world. *Colletotrichum gloeosporioides* is the imperfect stage of *Glomerella cingulata.*

*Aleurites fordii:* Nyasaland.
*Canarium album:* China.
*Coffea arabica:* Congo, India, Madagascar, New Caledonia, Tanganyika, Uganda.
*C. bukohensis:* Tanganyika.
*C. canephora* var. *robusta:* New Hebrides, Sumatra, Tanganyika.
*C. excelsa:* Tanganyika.
*Elaeis guineensis:* Gold Coast.
*Eucalyptus cladocalyx:* Tanganyika.
*Eugenia caryophyllata:* Mauritius.
*Ficus elastica:* Italy.
*Hevea brasiliensis:* Brazil, Ceylon, Congo, Costa Rica, Fiji, French Equatorial Africa, India, Indochina, Indonesia, Malaya, Nigeria, Philippines, Sierra Leone, Uganda.
*Juniperus silicicola:* Mauritius.
*Mangifera indica:* Madagascar, Mozambique, Mauritius, Tanganyika, Colombia, Venezuela, Jamaica.
*Paulownia tomentosa:* Japan.
*Persea americana:* Philippines, Sierra Leone, Tanganyika, Uganda.
*Tabebuia rosea:* Mauritius.
*Theobroma cacao:* Gold Coast, Tanganyika.

**Glomerella cinnamomi** Yoshino (xxx) **anthracnose**

Forms perithecia sunken in the diseased bark or leaves. Causes anthracnose lesions on leaves, petioles, buds, and young shoots of nursery stock of *Cinnamomum*; the lesions are rounded, reddish-brown, fading to light brown. Stems are girdled by brown rot, the plants dying. Known in Formosa and Japan.

*Cinnamomum camphora:* Formosa, Japan.

**Glomerella coffeicola** Averna-Sacca (xxx) **anthracnose**

Forms perithecia sunken in the tissues of bark and leaves. Causes anthracnose lesions on leaves and shoots of *Coffea* in Brazil.

*Coffea arabica:* Brazil.

**Glomerella gossypii** (Southworth) Edg. (xxx) **anthracnose**

Forms perithecia immersed in bark and leaf tissues and causes anthracnose lesions on cotton bolls and kapok seed pods. Distributed in the United States, Egypt, South and West Africa, Bulgaria, and Trans-Caucasia. It is present in most cotton-growing countries.

*Ceiba pentandra:* Congo.

**Gnomonia leptostyla** (Ces. & de N.) Kleb. (xxx) **leaf spot**

Forms globular perithecia immersed in the substratum. Affects all *Juglans* and some *Carya* species of North America, Europe, and Asia. The leaf spots produced are small, white to grayish-yellow with brown edges, irregular, limited to interveinal areas on the lower leaf surface or on the young fruits. Heavily spotted leaves or fruits may fall prematurely. Repeated attacks may weaken trees until they die. Distributed in North America, Europe, Iran, and Japan.

*Carya* sp.: France.
*Juglans* sp.: France, Germany, Italy, Japan, Portugal, Yugoslavia.
*J. ailantifolia:* France.
*J. ailantifolia* var. *cordiformis:* France.
*J. hindsii:* France.
*J. nigra:* Germany.
*J. regia:* Denmark, France, Germany, Great Britain, Italy, Russia.
*J.* ×*sinensis:* France.
*Pterocarya* sp.: France.
*P. fraxinifolia:* Iran.

**Gnomonia oharana** Matsum. (xxx) **elm leaf spot**

Forms perithecia which carry viable spores to pass the winter and start spring infection. Causes leaf spots of *Ulmus* and defoliation results from severe attacks. Known in Japan.

*Ulmus japonica:* Japan.
*U. parvifolia:* Japan.
*U. pumila:* Japan.

**Gnomonia pseudoplatani** Tub. (xxx) **maple leaf blotch**

Occurs on large lesions on leaves of *Acer* in Germany.

*Acer pseudoplatanus:* Germany.

**Gnomonia quercus-ilicis** Berl. (xxx) **oak leaf spot**

Associated with leaf spots of *Quercus* in Italy.

*Quercus ilex:* Italy.

**Gnomonia veneta** (Sacc. & Speg.) Kleb. (xxx) **blight**

Causes brown streaks and spots along the main leaf veins, on petioles, and on young twigs leading to premature leaf fall and twig blight of *Platanus*. Distributed in North America and Europe and reported in Argentina.

*Platanus* ×*acerifolia:* France, Germany, Great Britain.
*P. occidentalis:* Argentina, Denmark, France.
*P. orientalis:* Great Britain, Denmark, Corsica, France, Italy, Germany.
*P. orientalis* var. *insularis:* Germany.

**Gnomoniella fimbriata** (Fr.) Sacc. (xxx) **leaf spot**

Stroma flat-pulvinate, shiny-black, 0.5 to 2 mm. wide. Associated with leaf spots on *Carpinus*. Distributed in North America, Europe, Iran, and Japan.

*Carpinus* sp.: Germany, Iran (Ziarat Forest), Norway.
*C. betulus:* Denmark.
*C. erosa:* Japan.

**Gnomoniella tubiformis** (Tode) Sacc. (xxx) **leaf spot**

Occurs on chestnut-colored leaf spots on *Alnus* in Alaska, United States, and Europe.

*Alnus cordata:* Italy.
*A. glutinosa:* Denmark, Great Britain, Norway.
*A. incana:* Denmark, Norway.

**Graphiola applanata** Syd. & Butl. (xxx) **false smut**

Forms small, black, hard, raised fungus bodies on leaves of *Phoenix* in India and Pakistan.

*Phoenix sylvestris:* India, Pakistan.

**Graphiola arengae** Rac. (xxx) **false smut**

Forms hard raised fungus bodies on circular yellow leaf spots on *Arenga*. Known in the Philippines.

*Arenga ambong:* Philippines.

**Graphiola borassi** Syd. & Butl. (xxx) **false smut**

Forms false smut pustules on leaves of *Borassus* in India.

*Borassus flabellifer:* India.

**Graphiola cocoina** Pat. (xxx) **false smut**

Forms small, black, raised fungus bodies on small, brown spots on leaves of *Cocos* in Fiji and Tahiti.

*Cocos nucifera:* Tahiti, Fiji.

**Graphiola phoenicis** (Moug.) Poit. (xxx) **false smut**

Forms small, black, globular spore cases on both sides of leaves of palms in tropical countries around the world.

*Phoenix* sp.: Congo, Egypt, El Salvador, Gold Coast.
*P. canariensis:* Denmark, Peru.
*P. dactylifera:* Algeria, Anglo-Egyptian Sudan, Barbados, Brazil, Denmark, Formosa, India, Jamaica, Mauritius, Peru, Philippines, Puerto Rico, Seychelles, Tanganyika, Venezuela.
*P. hanceana* var. *formosana:* Formosa.
*P. paludosa:* India.
*P. sylvestris:* India.
*Sabal causiarum:* Puerto Rico.

**Griggsia cyathea** F. L. Stevens & Dalbey (xx) ———

Forms numerous slightly raised black spots on leaves of *Cyathea* in Puerto Rico.

*Cyathea arborea:* Puerto Rico.

**Guignardia aesculi** (Pk.) V. B. Stewart (xxx) **leaf blotch**

Causes small dark red or brown spots ranging in size to large blotches attacking much of the leaf surface and the petioles of *Aesculus*, especially *A. hippocastanum*. Premature defoliation often results. Distributed in North America where these hosts grow. Also in Belgium, France, Germany, and Great Britain.

*Aesculus glabra:* Germany.
*A. hippocastanum:* Germany.
*A. indica:* Belgium, France, Great Britain.

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**Guignardia atropurpurea** Chardon (xxx) **leaf spot**

Occurs on rounded spots, 1 to 5 mm. in diameter, on leaves of *Miconia* in Brazil.

*Miconia* sp.: Brazil.

**Guignardia betulae** (Auersw.) Sacc. & Trott. (xxx) **leaf spot**

Occurs on leaf spots of *Betula*. Known in Germany and Denmark.

*Betula* sp.: Germany.

**Guignardia buxi** Desm. (xxx) **box leaf spot**

Occurs on yellow spots on the lower surface of *Buxus* in the United States and Europe.

*Buxus sempervirens:* Spain.

**Guignardia javanica** Koord. (xxx) **leaf spot**

Associated with indefinite, large, dark leaf spots on *Cordia* in Java.

*Cordia suaveolens:* Java.

**Guignardia punctiformis** Chardon (xxx) **leaf spot**

Occurs on leaf spots rounded, brownish, 4 to 6 mm. across on *Miconia* in Brazil.

*Miconia* sp.: Brazil.

**Guignardia rhytismophila** Rehm (x) **leaf spot**

Associated with *Rhytisma* on leaves of *Acer* in East Germany.

*Acer pseudoplatanus:* Germany (Saxony).

**Guignardia yersini** Vincens (xxx) **leaf spot**

Associated with leaf spots of *Cinchona* in Indochina.

*Cinchona officinalis:* Indochina.

*C. pubescens:* Indochina.

**Gymnosporangium amelanchieris** (DC.) E. Fisch. (xxx) **juniper rust**

Forms small galls on the lower surfaces of leaves of *Amelanchier*. On *Juniperus* it causes diffuse swollen areas along the branches. Distributed in Europe and Japan.

*Amelanchier asiatica:* Japan.

*A. ovalis:* France, Germany, Italy, Switzerland.

*Juniperus communis:* Germany, Italy, Switzerland.

*J. rigida:* Japan.

**Gymnosporangium bermudianum** Earle (xxx) **juniper rust**

Forms rounded galls 6 to 12 mm. in diameter, reddish-brown on small stems, with a later stage on the same galls on *Juniperus*. Distributed in the Gulf States and the Bermuda and Bahama Islands.

*Juniperus bermudiana:* Bermuda.

**Gymnosporangium clavariiforme** (Pers.) DC. (xxx)
**juniper rust**

Forms cylindric fungus fruits containing cinnamon-brown, powdery spores on leaves, petioles, twigs, and fruits of *Amelanchier* and related rosaceous shrubs and trees. An alternate stage forms elongate fusiform swellings in season, with numerous projecting spore horns 5 mm. long, on the branches of *Juniperus*. Distributed in the United States, Europe, Morocco, and Asia.

×*Crataegomespilus grandiflora:* Germany.
*Crataegus calycina:* Norway.
*C. heldreichii:* Greece.
*C. intricata:* Norway.
*C.* ×*lambertiana:* Norway.
*C. monogyna:* Corsica, Denmark, Great Britain, Morocco, Norway, Russia (Crimea), Sweden.
*C. nigra:* Russia (Crimea), Sweden.
*C. oxyacantha:* Denmark, France, Germany, Great Britain, Italy, Norway.
*C. pentagyna:* Germany.
*C. sanguinea:* Norway.
*C. scabrifolia:* China.
*C. succulenta:* Norway.
*Juniperus communis:* Austria, France, Denmark, Germany, Great Britain, Norway, Poland, Sweden, Yugoslavia.
*J. communis* var. *stricta:* Denmark.
*J. oxycedrus:* France, Greece, Russia.
*J. rigida:* Korea.
*Sorbus aria:* Sweden.
*S. intermedia:* Norway.

**Gymnosporangium cornutum** Arth. ex Kern (xxx)
**juniper rust**

Causes slight fusiform swelling of smaller woody branches and, less often, locally thickened brown patches on needles of *Juniperus* in spring. Later, thickened, discolored areas with annular groups of projecting fungus tubules develop on leaves of *Sorbus*. Distributed in temperate and subarctic North America, Europe, North Africa, and Siberia, Japan, Kamchatka, and South Sakhalin.

*Juniperus communis:* Great Britain, Norway.
*J. communis* var. *nipponica:* Japan.
*J. rigida:* Japan.
*Sorbus americana:* Norway.
*S. aucuparia:* Great Britain, Japan, Norway, Siberia.
*S.* ×*hybrida:* Norway.
*S. intermedia* var. *arranensis:* Norway.
*S. kamtschatcensis:* Kamchatka.
*S. sambucifolia:* Kamchatka.

**Gymnosporangium cunninghamianum** Barcl. (xxx)
**cypress rust**

In spring forms hemispherical, dark-brown, compact bodies attached to twigs and larger branches of 4 to 5 mm. diameter on *Cupressus*. Later the green leaves of *Pyrus pashia* and *Cotoneaster* are discolored

with patches, orange-red above and yellowish below, and about twice their normal thickness in spots where rust bodies are deeply sunken but project distinctly above the leaf surface. Distributed in India, Pakistan, and China.

*Cupressus duclouxiana:* China, India, Pakistan.

**Gymnosporangium distortum** Arth. & Cumm. (xxx) **cypress rust**

Distorts infected *Cotoneaster* leaves and twigs that bear rust pustules over the entire infected area. Has an alternate stage on *Cupressus*. Known in India and Kashmir.

*Cupressus duclouxiana:* India.

**Gymnosporangium exiguum** Kern (xxx) **juniper rust**

Forms rust pustules on needles of *Juniperus* in spring; later, an alternate stage on leaves and fruits of *Crataegus* causes hypertrophy of veins, petioles, and fruits and forms cinnamon-brown spores which infect *Juniperus* needles. Known in the United States and Mexico.

*Juniperus deppeana:* Mexico.

**Gymnosporangium formosanum** Hirat. &. Hashioka (xxx) **juniper rust**

Infects living needles of *Juniperus* in Formosa.

*Juniperus squamata:* Formosa.

**Gymnosporangium fusisporum** E. Fisch. (xxx) **juniper rust**

Forms rust pustules on leaves of *Cotoneaster* and *Juniperus* in Switzerland.

*Juniperus sabina:* Switzerland.

**Gymnosporangium gäumanni** Zogg (xxx) **juniper rust**

Forms cinnamon to blackish-brown fungus pustules on needles of *Juniperus* in Switzerland.

*Juniperus communis* var. *saxatilis:* Switzerland.

**Gymnosporangium haraeanum** Syd. (xxx) **juniper rust**

Forms reddish-brown gelatinous masses on leaves of *Juniperus* in the spring. Later rust pustules appear on somewhat thickened brownish spots on leaves of *Pyrus sinensis* and *Crataegus* and contain powdery, pale, cinnamon-brown spores. Distributed in China, Korea, and Japan. Sporadic on the Pacific Coast of the United States on plants grown for ornament. Infected plants were shipped into Connecticut but the rust was detected on arrival.

*Crataegus cuneata:* China.
*C. hupehensis:* China.
*C. pinnatifida:* China.
*Juniperus chinensis:* China, Japan, Korea.
*J. chinensis* f. *japonica:* Japan.

**Gymnosporangium idetae** Yamada ex K. Hara (xxx) **juniper rust**

Forms rust pustules with grayish-brown powdery spores on leaves of *Amelanchier* in summer. In spring, causes fusoid swellings of *Juniperus* twigs with brown, hemispheric fungus masses up to several inches across. Distributed in Japan.

*Amelanchier asiaticum:* Japan.
*Juniperus rigida:* Japan.

**Gymnosporangium inconspicuum** Kern (xxx) **juniper rust**

Early seasonal stage forms fusiform swellings of stems of *Juniperus*. Grows in crowded groups on thickened discolored spots on leaves of *Photinia*. Spores powdery, cinnamon-brown in summer. Imported into Connecticut from Japan; detected, and diseased plants were destroyed. Distributed in Japan, China, and Korea.

*Juniperus chinensis:* Japan, China.
*J. chinensis* f. *japonica:* Japan.
*Photinia amphidoxa:* China.
*P. parvifolia:* China.
*P. villosa:* China, Japan.
*P. villosa* var. *laevis:* Japan.

**Gymnosporangium malloti** Hirat. (xxx) **rust**

Forms projecting rust tubules on leaves.

*Mallotus japonicus:* Japan.

**Gymnosporangium meridissimum** Crowell (xxx) **cypress rust**

Forms pulvinate, brown, round galls on twigs of *Cupressus* in Guatemala.

*Cupressus lusitanica* var. *benthamii:* Guatemala.

**Gymnosporangium mespili** (DC.) Kern (xxx) **juniper rust**

Forms its spring stage on leaves and stems of *Crataegus*, *Cotoneaster*, and related cultivated fruits. Later, dark chestnut-brown growths form on fusiform swellings on branches of *Juniperus* in Europe and Asia.

*Cotoneaster* sp.: Germany.
*C. integerrima:* Siberia.
*Crataegus monogyna:* Denmark, Great Britain.
*C. oxyacantha:* France, Great Britain, India, Kashmir.
*Juniperus macropoda:* Kashmir.
*J. oxycedrus:* France.
*J. phoenicea:* France, Switzerland.
*J. sabina:* Germany, Great Britain, Switzerland.

**Gymnosporangium minus** Crowell (xxx) **cypress rust**

Forms pulvinate, brown, rust telia on stems of *Cupressus* in Greece.

*Cupressus sempervirens:* Greece.

**Gymnosporangium nipponicum** Yamada (xxx) **juniper rust**

Forms tubular outgrowths with powdery spores on leaves of *Sorbus* in summer; later produces small galls on leaves and branches of *Juniperus*. Distributed in Japan and China.

*Juniperus chinensis* var. *sargentii:* Japan.
*Sorbus alnifolia:* China.
*S. aucuparia:* Japan.

**Gymnosporangium orientale** Syd. (xxx) **hawthorn rust**

Forms projecting slender tubules on fruits and rarely on twigs of *Crataegus*. Distributed in Greece, Russia, Asia Minor, and Iran.

*Crataegus insegnae:* Russia, Iran.

**Gymnosporangium sabinae** (Dicks.) Wint. (xxx) **juniper-pear rust**

Causes swellings on twigs, deformed fruits, and leaf spots on *Pyrus* and slight swellings of twigs and branches of *Juniperus*. Generally distributed in Europe.

*Juniperus chinensis* f. *japonica:* France.
*J. excelsa:* Yugoslavia.
*J. foetidissima:* Denmark.
*J. oxycedrus:* Germany.
*J. phoenicea:* Germany.
*J. sabina:* Denmark, France, Germany, Great Britain.
*J. sabina* f. *tamariscifolia:* Denmark.
*J. sphaerica:* France.

**Gymnosporangium shiraianum** K. Hara (xxx) **juniper rust**

Forms thickened orange-yellow spots with orange or reddish margins on the lower side of leaves of cultivated *Pyrus*. Each spot bears tubules with fulvous powdery spores. On *Juniperus* it forms small leaf galls, flattened-hemispherical and purple-brown to chestnut. Known in Japan.

*Juniperus conferta:* Japan.

**Gymnosporangium solenoides** (Diet.) Kern (xxx) **rust**

Forms elongated protuberances of a gall-like nature 2 to 3 mm. high on leaves of *Sorbus* and containing cinnamon-brown spores. Later, an alternate stage shows as fusiform swellings with a knotty, rough surface on stems of *Chamaecyparis*. Reddish-brown, pulvinate spore pustules burst forth on the surface of the swollen stem shedding brownish spores. Distributed in Japan.

*Chamaecyparis pisifera:* Japan.
*Sorbus alnifolia:* Japan.
*S. aria:* Japan.

**Gymnosporangium speciosum** Pk. (xxx) **juniper rust**

Causes large elongate swellings of branches of *Juniperus*. Distributed in Colorado, Arizona, and New Mexico, and in Guatemala.

*Juniperus ashei:* Guatemala.

**Gymnosporangium torminali-juniperinum** E. Fisch. (xxx) **juniper rust**

Forms projecting fungus tubules on hypertrophied leaf spots on *Sorbus*, and dark chestnut-brown, hemispherical small masses on leaves of *Juniperus*. Distributed in Europe.

*Juniperus communis:* Switzerland.
*Sorbus torminalis:* Germany.

**Gymnosporangium tremelloides** Hartig (xxx) **juniper rust**

Forms crowded groups of fungus aecia on thickened, discolored spots on leaves of *Crataegus* and telial spore cushionlike brown masses on juniper needles, young twigs, and larger branches, the latter up to 1 to 4 cm. long. There is uncertainty about the identity of this fungus, and it is impossible to give its distribution from the literature. It is European in known distribution.

*Crataegus oxyacantha:* Norway.
*C. sanguinea* var. *chlorocarpa:* Norway.
*C. succulenta:* Norway.
*Juniperus communis:* France, Denmark, Sweden.
*Sorbus aria:* Denmark, Germany, Norway, Sweden.
*S. aucuparia:* Sweden.
*S. chamaemespilus:* Germany.

**Gymnosporangium tsingshenensis** Wei (xxx) **cypress rust**

Known only in the telial stage on *Cupressus*. It forms telial galls or cushionlike excrescences on all-aged branches and trunks, up to 100 years old. The gelatinous spore horns are scarlet shading to orange and brown with age. Known only in China.

*Cupressus funebris:* China.

**Gymnosporangium yamadae** Miyabe (xxx) **juniper rust**

Forms telial galls on stems of *Juniperus*. They are spherical and reddish brown. The alternate aecial stage is known on *Malus*. Distributed in China, Japan, Korea, and Manchuria.

*Juniperus chinensis:* China, Manchuria, Japan, Korea.
*J. chinensis* f. *japonica:* Japan.
*J. chinensis* var. *sargentii.* Japan.

**Hadronema orbiculare** Syd. (x) **leaf spot**

Forms small circular, velvety fungus patches on leaves of *Quercus*. Distributed in Japan and the Philippines.

*Quercus glauca:* Japan.

**Hainesia kolae** Speg. (xxx) **anthracnose**

Anthracnose of *Cola acuminata* imported to Argentina from Africa. On cotyledons. Distributed in Dakar, Africa, and Argentina.

*Cola acuminata:* Argentina (La Plata).

**Hapalophragmiopsis ponderosa** (Syd. & Butl.) Thirum. (xxx) **gall rust**

Produces brown telial sori on woody galls, 1 to 5 cm. in diameter, on *Acacia* in India and Pakistan.

*Acacia leucophloea:* India, Pakistan.

**Hapalophragmium acaciae** Bacc. (xxx) **gall rust**

Forms rust galls on branches of *Acacia* in Italian Somaliland.
*Acacia* sp.: Italian Somaliland.

**Haplographium calophylli** Wiehe (xxx) **wilt**

Causes a killing vascular wilt of *Calophyllum* in Mauritius and El Salvador. Apparently has gone from Eastern Tropics to western ones. Known in Mauritius and El Salvador.
*Calophyllum brasiliense:* El Salvador.
*C. tacamahaca:* Mauritius.

**Helicobasidium compactum** Boed. (xxx) **root rot**

Causes root rot of various trees accompanied by decline of the foliage, production of sprouts, and death. Distributed in the Old World Tropics and reported in El Salvador.
*Albizia falcata:* Sumatra.
*Chlorophora excelsa:* Tanganyika.
*Coffea arabica:* East Indies, El Salvador.
*Hevea brasiliensis:* East Indies.
*Leucaena glauca:* East Indies.
*Pinus roxburghii:* Union of South Africa.
*Tectona grandis:* East Indies.

**Helicobasidium longisporium** Wakef. (xxx) **root rot**

Reported as a new species causing root rot of *Theobroma* in Uganda.
*Theobroma cacao:* Uganda.

**Helicobasidium mompa** Tanaka (xxx) **violet root rot**

Forms purple rhizomorphs on roots and bases of trunks of trees. A mycelial mat develops on the soil surface and upward a few inches on the stems. This mat has a powdery white spore-producing surface until July when it becomes brown above and blackish red purple beneath. The leaves of diseased trees become smaller and fall earlier than usual, and the tree dies when most of the roots are dead. Distributed in Japan, Formosa, and probably Korea and China. Reported in Java but a mistake in identity of the fungus makes the report doubtful.

This fungus is a distinct threat to many food plants as well as the woody-stemmed trees. It seems to be especially virulent on mulberry trees. Its ability to live saprophytically in plant debris in soil makes it very difficult to eliminate if once established in new regions.
*Acer campestre:* Japan.
*A. mono:* Japan.
*Aphananthe aspera:* Japan.
*Aralia spinosa:* Japan.
*Broussonetia kazinoki:* Japan.
*B. papyrifera:* Japan.
*Calophyllum inophyllum:* Japan.
*Castanea crenata:* Japan.
*Celtis sinensis:* Japan.
*Chamaecyparis obtusa:* Japan.
*C. pisifera:* Japan.

*Cinnamomum camphora:* Japan.
*Cryptomeria japonica:* Japan.
*Diospyros kaki:* Japan.
*Eucommia ulmoides:* Japan.
*Euptelea polyandra:* Japan.
*Ficus carica:* Japan.
*F. elastica:* Japan.
*F. retusa:* Japan.
*Firmiana platanifolia:* Japan.
*Ginkgo biloba:* Japan.
*Juglans ailantifolia:* Japan.
*Mallotus japonicus:* Japan.
*Meliosma myriantha:* Japan.
*Morus alba:* Japan, China, Formosa.
*M. australis:* Formosa, Japan.
*Paulownia tomentosa:* Japan.
*Photinia glabra:* Japan.
*Picea abies:* Japan.
*Pinus densiflora:* Japan.
*P. parviflora:* Japan.
*Pistacia chinensis:* Japan.
*Platanus orientalis:* Japan.
*Platycarya strobilacea:* Japan.
*Populus maximowiczii:* Japan.
*P. nigra:* Japan.
*Quercus acuta:* Japan.
*Q. acutissima:* Japan.
*Q. gilva:* Japan.
*Q. glandulifera:* Japan.
*Q. myrsinaefolia:* Japan.
*Rhaphiolepis umbellata:* Japan.
*Salix bakko:* Japan.
*S. vulpina:* Japan.
*Sapindus mukorossii:* Japan.
*Sapium japonicum:* Japan.
*Styrax shiraiana:* Japan.
*Torreya nucifera:* Japan.
*Ulmus pumila:* Japan.
*Zelkova serrata:* Japan.

**Helicobasidium purpureum** (Tul.) Pat. (xxx) **root rot**

Known in its sterile form as *Rhizoctonia crocorum* on numerus root crops, and nursery plants of conifers and broad-leaved species. Occasionally root rot forms a basidiomycetous fruiting body. In this stage it formerly was called *Corticium vagum*, but in recent years is known as *Helicobasidium purpureum.* Distributed in North and South America, Europe, Australia, Asia, and Africa.

*Abies alba:* Denmark.
*Acer campestre:* Italy.
*Araucaria cunninghamii:* Australia.
*Crataegus monogyna:* Denmark.
*Fagus sylvatica:* Denmark.
*Ficus* sp.: Philippines.

*Fraxinus excelsior:* Denmark.
*Larix* sp.: Netherlands.
*L. decidua:* Germany.
*Morus alba:* Japan.
*Nothopanax fruticosus:* Philippines.
*Picea abies:* Denmark, Germany.
*P. glauca:* Denmark.
*Pinus mugo:* Denmark.
*P. nigra:* Denmark.
*Salix purpurea* var. *pendula:* Czechoslovakia.

**Helicobasidium tanakae** Miyabe (xxx) **root rot**

Forms irregular, large, thick, velvety-brown fungus felts on trunks of many tree species. Distributed in Japan, Formosa, and China.

*Broussonetia kazinoki:* Japan.
*Firmiana platanifolia:* Japan.
*Juglans* sp.: Japan.
*Morus* sp.: China, Japan.
*M. alba:* Formosa.
*Paulownia tomentosa:* Formosa, Japan.
*Pittosporum undulatum:* Japan.
*Quercus dentata:* Japan.
*Q. glandulifera:* Japan.
*Salix* sp.
*Zanthoxylum* sp.: Japan.

**Helicoceras celtidis** (Biv.) Linder (xxx) **dark mildew**

Forms brown tomentose patches on the lower surface of leaves of *Celtis*. Distributed in the United States, Europe, Algeria, and Palestine.

*Celtis australis:* Algeria, Italy, Palestine.
*C. tournefortii:* Palestine.

**Helminthosporium halodes** Drechs. var. **elaeicola** Kovachich (xxx) **leaf spot**

Causes brown leaf spots on leaves of *Elaeis* killing large leaf areas when severe. Known in the Congo.

*Elaeis guineensis:* Congo.

**Helminthosporium heveae** Petch (xxx) **leaf spot**

Causes the "bird's eye" leaf spot of *Hevea* especially in young nursery plants, but also spreads to older ones and causes defoliation. Distributed in Mexico, Central America, Brazil, Congo, French Equatorial Africa, Ivory Coast, Tropical Asia, East Indies, and the Philippines.

*Hevea brasiliensis:* Andaman Islands, Brazil, Ceylon, Congo, Java, French Equatorial Africa, India, Indochina, Ivory Coast, Malaya, Mexico, Nicaragua, Philippines, Sumatra.

**Hemileia canthii** Berk. & Br. (xxx) **rust**

Forms powdery yellow rust spores in small groups of fungus pustules on the lower surface of leaves of a number of wild broad-leaved trees. Distributed in India, Pakistan, and Philippines.

*Canthium gynochthodes:* Philippines.
*C. horridum:* Philippines.
*C. parviflorum:* India.
*C. pedunculare:* Philippines.
*C. rheedii:* India.
*Holarrhena antidysenterica:* Pakistan.

**Hemileia coffeicola** Maubl. & Roger (xxx) **coffee rust**

Much like *Hemileia vastatrix* but the fruiting is more diffuse on the entire lower side of leaves of *Coffea arabica.* Known in the French Cameroons and Sao Thomé.

*Coffea arabica:* French Cameroons.

**Hemileia holarrhenae** H. & P. Syd. (xxx) **rust**

Forms rust pustules, minute, densely grouped, yellow, and pulverulent on leaves of *Holarrhena* in India and Pakistan.

*Holarrhena antidysenterica:* India, Pakistan.

**Hemileia scholzii** (P. Henn.) Syd. (xxx) **rust**

Forms powdery, yellow rust pustules on leaves of *Clerodendrum.* Distributed in the Gold Coast, Congo, and Mauritius.

*Clerodendrum buchholzii:* Gold Coast.
*C. paniculatum:* Mauritius.

**Hemileia thomasii** Thirum. & Naras. (xxx) **rust**

Forms rust pustules on leaves of *Randia* in India.

*Randia uliginosa:* India.

**Hemileia vastatrix** Berk. & Br. (xxx) **coffee rust**

Forms golden, powdery rust pustules on leaves of *Coffea* throughout the Old World tropical countries where coffee is grown. The damage was tremendous at first as the trees were killed or injured so extensively that growing of coffee was given up in a number of countries and became unprofitable in others. Rusted leaves die and fall prematurely, plants of all ages being killed in a few years. It is not known in the Americas.

*Coffea arabica:* China, Congo, Egyptian Sudan, Formosa, India, Indochina, Java, Madagascar, Moluccas, New Caledonia, Pakistan, Philippines, Tanganyika, Uganda.
*C. arabica* var. *mokka:* Union of South Africa.
*C. arabica* var. *myrtifolia:* Congo.
*C. canephora:* French West Africa, Philippines.
*C. canephora* var. *robusta:* Egyptian Sudan, India, Java, Madagascar, Philippines, Tanganyika, Uganda.
*C. congensis:* Madagascar.
*C. congensis* var. *chalotii:* Uganda.
*C. eugenioides:* Kenya.
*C. excelsa:* Philippines, Tanganyika, Uganda.
*C. liberica:* French West Africa, India, Madagascar, Tanganyika, Uganda.

**Hendersonia montana** Vuill. (xx) **needle cast**

Associated with brown spotting of needles of *Pinus mugo* and resultant needlecast in France.

*Pinus mugo:* France.

**Hendersonia sorbi** Moesz (xx) **leaf spot**

Associated with brown spot of living leaves of *Sorbus*.

*Sorbus aucuparia:* Latvia.

**Hericium coralloides** (Fr.) Pers. (xx) **heart rot**

A wound parasite entering large open wounds on hardwood trees. A large, white, hydnum with pendant teeth, a single stem branching into sterile primary branches and fertile secondary branches. Distributed widely in North America, Europe, and Siberia.

*Sorbus aucuparia:* Norway.

**Hericium erinaceus** (Fr.) Pers. (xx) **heart rot**

The conk usually is single with a single stem, white to yellowish, pendulous, spatulate or epaulet-shape, 5 to 30 cm. across, with pendant spines, white, 3 to 6 cm. long, straight, simple, crowded. It grows on trunks of wounded living hardwoods. Distributed generally in North America, southward into Mexico and in Europe, Siberia, India, and Japan.

*Alnus* sp.: Great Britain.
*Carpinus* sp.: Great Britain.
*Castanopsis cuspidata:* Japan.
*Fagus sylvatica:* Germany.
*Juglans* sp.: France.
*Quercus* sp.: Denmark, Great Britain.
*Q. mongolica:* Siberia.

**Herpotrichia boldoae** Speg. (xxx) **felt blight**

Forms olive, cottony fungus growth on branches of *Peumus* in Chile.

*Peumus boldus:* Chile (Talcahuano).

**Herpotrichia nigra** Hartig (x) **conifer brown felt blight**

Forms dark brown irregular felty growths on lower branches and on small coniferous trees, under snow lying late in the spring. It kills the needles and twigs pressed down by melting snow in a saturated atmosphere. European nurseries at high elevations have had to be abandoned in some localities. This blight probably occurs wherever conifers grow near timberline, and is definitely reported in the mountains of eastern and western North America, in higher parts of Europe, and in Siberia.

*Abies sibirica:* Siberia.
*Juniperus chinensis* f. *japonica:* Poland, Sweden, Switzerland.
*J. communis:* Germany, Norway, Poland.
*J. communis* var. *saxatilis:* Germany.
*Picea abies:* Norway, Denmark, Germany, Poland, Switzerland.
*P. engelmannii:* Norway.

*P. omorika:* Balkans.
*Pinus cembra:* Switzerland.
*P. mugo:* Poland, Germany, Switzerland.
*P. sylvestris:* Norway.

**Hexagonia gunnii** Berk. (xx) **trunk rot**

A poroid wound parasite with hexagonal pores on living broad-leaved trees. Distributed in New South Wales and South Australia.
*Grevillea robusta:* Australia, New South Wales.

**Hexagonia sulcata** Berk. (xx) **trunk rot**

A poroid parasite with hexagonal pores in large open wounds on trunks of broad-leaved trees. Known in India and the Philippines.
*Boswellia serrata:* India.
*Shorea robusta:* India.

**Hexagonia tenuis** Fr. (xx) **trunk rot**

A poroid parasite with hexagonal pores in large open wounds on trunks of broad-leaved trees in tropical regions. Distributed in Brazil, Venezuela, and New South Wales.
*Grevillea robusta:* Australia, New South Wales.

**Hyalopsora** **fir-fern rust**

There are about 70 species of these rusts in the three genera *Hyalopsora*, *Milesia*, and *Uredinopsis*, all with one stage of their life cycle so far as known, on needles of *Abies* and an alternate one on the fronds of various ferns. Many species cannot be distinguished from each other in the fir stage, but the fern stages show differences by which they can be identified. A considerable number of the fern rusts have not been connected with their fir stages. They occur practically throughout the range of *Abies*. Damage caused is not important.

**Hyalopsora aculeata** Kamei (xxx) **rust**

See general description under *Hyalopsora*. Forms tubular rust fruiting bodies on needles of *Abies sachalinensis* in spring and alternate rust pustules on leaves of *Blechnum* in Japan.
*Abies sachalinensis:* Japan.

**Hyalopsora aspidiotus** Magn. (xxx) **rust**

See general description under *Hyalopsora*. Forms tubular rust bodies on needles of *Abies* and the alternate stage on leaves of *Dryopteris*. Distributed in North America, Europe, Kamchatka, and Japan.
*Abies alba:* Scotland.

**Hydnum cirrhatum** Fr. (xx) **trunk rot**

A fungus with pendant spines, 5 to 10 cm. long, white, light yellowish to rufescent, hemispherical, with sterile fibers or spines above; spines cream color, 10 to 15 mm. long. On trunks of hardwoods and conifers. Distributed in North America and Europe.
*Abies* sp.: Great Britain.
*Betula* sp.: Great Britain.
*Fagus sylvatica:* Germany.
*Quercus* sp.: Great Britain.

**Hydnum obrutans** Burt (xx) **heart rot**

Conk large, resupinate, effused, white, up to 2.5 cm. thick by fusion of older spines; teeth white, cylindric, free portion 1 to 2 mm. long; 3 to 4 teeth per mm. Causing heart rot of living trunks of *Quercus*.

*Quercus* sp.: Java.

**Hymenochaete mougeoti** (Fr.) Cke. (xx) **butt rot**

Forms a crustlike, dark, blood-red fungus fruiting body on numerous broad-leaved and coniferous trees. The hymenium is cracked, uneven, and covered with pointed bristles. Distributed in Europe, Siberia, India, Ceylon, Indonesia, and Australia.

*Acer* sp.: Australia.
*Agathis australis:* Australia.
*Araucaria cunninghamii:* Australia.
*Cupressus lusitanica:* Australia.

**Hymenochaete rubiginosa** (Fr.) Lév. (xxx) **white pocket rot**

Conk 3 to 15 cm. across, effused, reflexed, brownish rust color with ochraceous tawny margin, nearly or entirely resupinate, concentrically sulcate, velvety, becoming smooth and date brown. On broad-leaved trees causing a white pocket rot of heartwood. Distributed in North and South America, Europe, South Africa, Siberia, India, Indonesia, Bonin Islands, Borneo, Australia, and Tasmania.

*Quercus* sp.: France, Great Britain, India.
*Shorea robusta:* India.

**Hypoderma desmazierii** Duby (xxx) **pine needle cast**

Needle casts of cedars, firs, larches, pines, and spruces are widely and generally distributed in North America, Europe, and Asia. The fungi causing them are numerous and resemble each other superficially in forming black, swollen spots or streaks mostly on the outer surfaces of the needles.

*Hypoderma desmazierii* spore cases are in a continuous row on the outer surface of the needles of *Pinus*. Each perithecium is a black, elliptical, swollen mass about 1½ times as long as wide with a slit through which the spores escape; it is scarcely half the width of the affected needle. Affected needles turn red to brown, finally gray, and usually fall soon after. Usually only one or two in a leaf bundle are diseased. Young seedlings are injured most, many being killed. The disease is known practically wherever pines grow in North America and Europe.

*Pinus cembra:* Poland.
*P. griffithii:* France, Germany, Ireland.
*P. parviflora:* Russia.
*P. peuce:* Yugoslavia.
*P. sylvestris:* Germany.

**Hypoderma mexicanum** Wolf (xxx) **needle cast**

See *Hypoderma desmazierii* for general appearance of this pathogen. Forms small shiny-black fungus pustules on discolored lesions on needles of *Pinus*. Known in Mexico.

*Pinus leiophylla:* Mexico.

**Hypoderma robustum** Tub. (xxx) **fir needle cast**

See needle cast under *Hypoderma desmazierii.* In Oregon this causes the most destructive needle disease of *Abies.* It apparently is limited to North America but probably was carried to Germany in infected needles.

*Abies concolor:* Germany.

**Hypodermella conjuncta** Darker (xx) **needle cast**

See needle cast under *Hypoderma desmazierii.* Known on *Pinus sylvestris* in Scotland.

*Pinus sylvestris:* Scotland.

**Hypodermella hiratsukae** Darker (xxx) **leaf cast**

See leaf cast under *Hypoderma desmazierii.* Forms a row of elliptical, shiny, black, fungus spore cases on infected needles of *Pinus* in Japan.

*Pinus pumila:* Japan.

**Hypodermella laricis** Tub. (xxx) **larch leaf cast**

See leaf cast under *Hypoderma desmazierii.* Forms a linear series of short elliptical black fungus pustules on larch needles. Diseased needles turn yellow and die, remaining on their spur shoots over winter and spreading infection from the lower branches upward in the developing new needles. Extensive outbreaks have occurred in Idaho and in Europe. The spur shoots are killed making the disease a serious menace. Distributed in North America, Europe, and Siberia.

*Larix decidua:* Austria, Germany, Switzerland.
*L. gmelinii:* Siberia (Yakutsk).
*L. sibirica:* Siberia.

**Hypodermella lirelliformis** Darker (xxx) **leaf cast**

See leaf cast under *Hypoderma desmazierii.* Forms brownish-black fungus spore cases on straw-colored needles of *Abies* in Austria and Germany.

*Abies alba:* Austria.

**Hypodermella nervisequia** (Fr.) Lager. (xxx) **fir leaf cast**

See leaf cast under *Hypoderma desmazierii.* Forms brownish-black fungus spore cases along the middle of infected needles of *Abies.* Distributed in Europe, China, and Japan; not in North America.

*Abies alba:* Czechoslovakia, Denmark, France, Germany, Hungary, Italy, Poland, Sweden, Switzerland.
*A. cephalonica:* Germany.
*A. fabri:* China.
*A. mariesii:* Japan.
*A. pinsapo:* Germany.

**Hypodermella sulcigena** (Rostr.) Tub. (xxx) **leaf cast**

See leaf cast under *Hypoderma desmazierii.* Forms elliptical to elongate fungus spore cases on discolored areas, often on living green needles of *Pinus.* This is a destructive European parasite. Distributed in Scotland, Denmark, Norway, Sweden, Finland, Russia, and Central Europe.

*Pinus* sp.: Finland, Russia.
*P. mugo:* Czechoslovakia, Denmark, Germany, Norway, Scotland.
*P. mugo* var. *rostrata:* Norway.
*P. nigra:* Norway.
*P. sylvestris:* Czechoslovakia, Denmark, England, Finland, Germany, Norway, Scotland, Sweden.

**Hyponectria buxi** (Desm.) Sacc. (x) **box blight**

Associated with blight of *Buxus* in the United States and Europe.

*Buxus* sp.: Sweden.
*B. sempervirens:* British Isles, Portugal.

**Hypoxylon fragiforme** (Fr.) Kickx (xx) **beech red heart**

Forms pulvinate to hemispheric fungus bodies on dead bark of cankered areas on various hardwood trees. Associated with red heart of *Fagus* in Macedonia. Distributed in North America, Europe, and India.

*Fagus moesiaca:* Yugoslavia (Macedonia).

**Hypoxylon mediterraneum** (de N.) J. H. Miller (xx) **canker**

See *Hypoxylon fragiforme* for general description. A wound parasite on numerous broad-leaved trees in the United States, Europe, and Morocco.

*Castanea sativa:* France.
*Eucalyptus camaldulensis:* Morocco.
*E. gomphocephala:* Morocco.
*E. robusta:* Morocco.
*Fagus sylvatica:* France.
*Populus tremula:* France.
*Quercus faginea:* Morocco.
*Q. ilex:* France, Morocco.
*Q. suber:* France, Morocco.

**Hypoxylon sertatum** Dur. & Mont. (xx) **dieback**

See *Hypoxylon fragiforme* for general description. A wound parasite of *Quercus* in Morocco and Algeria, and on *Eucalyptus* in Morocco.

*Eucalyptus robusta:* Morocco.
*Quercus suber:* Morocco, Algeria.

**Hysterium thujopsidis** Saw. (xxx) **leaf cast**

See *Hypoderma desmazierii* for general description. Associated with leaf cast of *Thujopsis* and *Cryptomeria* in Japan.

*Cryptomeria japonica:* Japan.
*Thujopsis dolobrata:* Japan.

**Hysterographium fraxini** (Fr.) de N. (xx) **canker**

Causes circular depressed spots in the bark of young stems and branches of hardwoods and conifers. The fungus forms small, black, oblong blisters with furrowed openings, scattered over the dead bark. The affected parts often die. A severe outbreak in an ash plantation, 2.5 to 3 meters tall, occurred in Denmark. The fungus is well known in North America and Europe. It is usually saprophytic but occasionally can become aggressively pathogenic.

*Alnus viridis:* Switzerland.
*Betula* sp.: Switzerland.
*Fagus sylvatica:* Switzerland.
*Fraxinus excelsior:* Denmark, Switzerland.
*F. ornus:* Switzerland.
*Larix decidua:* Switzerland.
*Picea abies:* Switzerland.
*Quercus* sp.: Switzerland.

**Irene alchorneae** F. L. Stevens & Tehon (xxx) **black mildew**

Forms diffuse, small, black mildew colonies on the upper surface of leaves in British Guiana.

*Alchornea cordata:* British Guiana.

**Irene cubitorum** F. L. Stevens & Tehon (xxx) **black mildew**

Forms fungus colonies 0.5 cm. or more in diameter on the leaves of *Dimorphandra* in British Guiana.

*Dimorphandra latifolia:* British Guiana.

**Irene glabroides** (F. L. Stevens) Toro (xxx) **black mildew**

Forms black mildew spots on leaves of *Nectandra* and other broadleaves in British Guiana and Puerto Rico.

*Nectandra* sp.: British Guiana.
*N. patens:* Puerto Rico.
*Simaba* sp.: British Guiana.

**Irene melastomacearum** (Speg.) Toro (xxx) **black mildew**

Forms black mildew on surface of leaves of *Miconia* in Puerto Rico.

*Miconia impetiolaris:* Puerto Rico.
*M. laevigata:* Puerto Rico.
*M. prasina:* Puerto Rico.
*M. racemosa:* Puerto Rico.

**Irenina arachnoidea** (Speg.) F. L. Stevens (xxx) **black mildew**

Forms small, black mildew spots on leaves of *Crescentia* in Venezuela and Brazil.

*Crescentia cujete:* Venezuela.

**Irenina castanopsidis** Hansf. (xxx) **black mildew**

Forms black mildew areas on leaves in China.

*Castanopsis tibetana:* China.

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**Irenina glabra** (Berk. & Curt.) F. L. Stevens (xxx) **black mildew**

Forms black mildew on leaves of *Randia.* Distributed in Cuba, Colombia, and Brazil.

*Randia* sp.: Colombia.

**Irenina quercina** Hansf. (xxx) **black mildew**

Forms black mildew spots on leaves in China.

*Quercus* sp.: China.

**Irenina wrightii** (Berk. & Curt.) F. L. Stevens (xxx) **black mildew**

Forms black mildew on leaves of *Cupania.* Distributed in Cuba and Colombia.

*Cupania* sp.: Colombia.

**Irenopsis guianensis** (F. L. Stevens & Dow.) F. L. Stevens (xxx) **black mildew**

Forms black mildew on leaves of *Theobroma* in Venezuela.

*Theobroma cacao:* Venezuela.

**Irpex hirsutus** Kalchbr. (xx) **trunk rot**

Fruiting body resupinate with shallow tubes becoming torn or toothed, yellowish, never white. Rare. A wound parasite on hardwood trees occasionally causing a trunk rot. Reported from Iowa; also in Hungary and Siberia.

*Betula pendula:* Siberia.

**Irpex obliquus** Fr. (xx) **trunk rot**

Fruiting body white, yellowish, or wood color, effused, resupinate, teeth at first porelike then torn or splitting. Usually on dead wood, but is a wound parasite in living hardwood trees. Distributed in North America, Europe, Siberia, and Australia.

*Eucalyptus regnans:* Australia, (Victoria).

*Quercus* sp.: Great Britain.

**Irpex tabacinoides** Yasuda (xx) **wood rot**

Forms sessile, effuse-reflexed, yellowish-brown fruiting body with overlapping teeth, on branches of *Lithocarpus* in Japan.

*Lithocarpus cuspidata:* Japan.

**Irpex zonatus** Berk. (xx) **white spongy rot**

A wound parasite of *Olearia.* Pileus, corky, rigid, zonate, margin lobate, teeth compressed basally. Causes a white spongy rot. Known in Ceylon and Australia.

*Olearia argophylla:* Australia (Victoria).

**Kernella lauricola** (Thirum.) Thirum. (xxx) **rust**

Forms hypertrophied cushions on the lower surface of leaves, and rarely on tender shoots and petioles of *Litsea* and *Phoebe.* The cushions develop cupulate sori within which, 10 to 15 mm. long, brownish-black spore columns develop. Distributed in India.

*Litsea* sp.: India.

*Phoebe paniculata:* India.

*P. wightii:* India.

**Kuehneola moricola** P. Henn. (xxx) **rust**

Forms rust pustules on leaves.
*Morus alba:* China.

**Lagenulopsis bispora** (Fitzp.) Fitzp. (xxx) **tar spot**

Forms small black stromata on the lower leaf surface of *Podocarpus*. Known only in the type locality in Central and East Africa.
*Podocarpus milanjianus:* Uganda.

**Lateropeltis bambusarum** Shanor (xx) **leaf spot**

Associated with the imperfect fungus *Ciliciochorella bambusarum* Shanor on dark, oval lesions on leaves of *Arthrostylidium*. Known in Mexico, Costa Rica, El Salvador, and Canal Zone.
*Arthrostylidium racemiflorum:* El Salvador, Canal Zone.

**Lembosia melastomatum** Mont. (xxx) **black mildew**

Forms black mildew on leaves of *Miconia*. Known in Puerto Rico, Brazil, and Peru.
*Miconia* sp.: Puerto Rico.

**Lembosia miconiicola** Arn. (xxx) **black mildew**

Forms black spots 2 to 3 mm. across on the upper surface of leaves of *Miconia*. Known in Peru and Venezuela.
*Miconia stenostachya:* Venezuela.

**Lembosia tenella** Lév. (xxx) **black mildew**

Forms black mildew on leaves of *Coccoloba* in Florida and Puerto Rico.
*Coccoloba uvifera:* Puerto Rico.

**Lentinus kaufmanii** A. H. Sm. (xx) **brown pocket heart rot**

Causes a serious brown pocket rot of heartwood in living trees of *Picea*. The fungus is an agaric with vertical gills beneath the pileus. It fruits only on logs and trees broken so as to expose the brown rot pockets to the open air. Distributed along the Pacific Coast in North America from California to the Queen Charlotte Islands in British Columbia; also in Japan.
*Picea jezoensis:* Japan.

**Lentinus tigrinus** Fr. (xx) **white trunk rot**

A small agaric with central or eccentric stem, fleshy to leathery texture, whitish with dark scales. A wound parasite on living hardwood trees. Fire scars are especially apt to become infected and lead to breaking-over of the entire tree. Distributed in North America, Europe, Formosa, India, Japan, and Australia.
*Salix* sp.: Yugoslavia.

**Lenzites betulina** Fr. (xx) **white stringy rot**

A small conk, sessile, semicircular, whitish, rigid, corky, tomentose; gills white, straight, simple. A wound parasite of hardwoods and rarely of conifers causing a white, stringy rot. Distributed in North America southward to Panama; also in Europe, Asia, and South Africa.
*Celtis kraussiana:* Union of South Africa.

**Leptosphaeria coniothyrium** (Fckl.) Sacc. (xx) **willow canker**

Forms erumpent subepidermal perithecia. Associated with canker of basket willow rods. Probably a wound parasite. Distributed in North America and Europe.

*Salix* sp.: Great Britain.

**Leptosphaeria heveae** Saccas (xxx) **leaf spot**

Occurs on isolated, irregularly shaped leaf spots, grayish with wide purple-brown margins. Known in French Equatorial Africa.

*Hevea brasiliensis:* French Equatorial Africa.

**Leptosphaeria sorbi** Jacz. (xxx) **leaf spot**

Perithecia form on gray leaf spots on *Sorbus* in Siberia.

*Sorbus* sp.: Siberia.

**Leptosphaerulina japonica** Kasai (xxx) **needle blight**

Occurs on blighted needles of old trees of *Cryptomeria* in Japan. A serious disease.

*Cryptomeria japonica:* Japan.

**Leveillula taurica** (Lév.) Arn. (xxx) **powdery mildew**

Causes powdery mildew of broad-leaved trees. Distributed in Texas, Mexico, Europe, Asia, and North Africa.

*Acacia seyal:* Anglo-Egyptian Sudan.

*Laburnum anagyroides:* Iran (Karadj).

**Linospora populina** (Fr.) Schroet. (xxx) **leaf spot**

Subepidermal perithecia form on spots on leaves of *Populus*. Distributed in Alaska, northern Europe, Siberia, and India.

*Populus tremula:* Russia (Kazan), Siberia.

**Loculistroma bambusae** Patterson & Charles (xxx) **bamboo witches'-broom**

Forms sessile blackish fruiting bodies at the stem nodes. Shortening of internodes of diseased branches causes a witchs'-broom effect. Known only on *Phyllostachys* in China.

*Phyllostachys* sp.: China.

**Lophodermium acacicolum** Tehon (xxx) **black spot**

Forms small, dull black, erumpent masses, each opening with an elongate slit, and scattered over oval, yellowish spots on leaves of *Acacia* in Hawaii.

*Acacia koa:* Hawaii (Wahiawa, Oahu).

**Lophodermium aleuritis** Rehm (xxx) **black spot**

Forms small, shiny-black fungus fruiting bodies with slit openings on large, light yellowish spots on leaves of *Aleurites* and *Planchonia* in the Philippines.

*Aleurites moluccana:* Philippines.

*Planchonia spectabilis:* Philippines.

**Lophodermium cedrinum** Maire (xxx) **tar speck**

Occurs as small, shiny-black, erumpent masses with slit openings, scattered on needles of *Cedrus* in Algeria.

*Cedrus atlantica:* Algeria, French Mauretania.

**Lophodermium chamaecyparisii** Shirai & Hara (xxx) **needle cast**

Occurs as scattered, black, raised, elliptical bodies on needles in Japan.

*Chamaecyparis obtusa:* Japan.

**Lophodermium hysterioides** (Fr.) Sacc. (xxx) **leaf blight**

Associated with light-colored spots on leaves of *Amelanchier*, *Sorbus*, and *Crataegus*. Known in North America and Europe.

*Amelanchier ovalis:* Austria, Germany.
*Crataegus intricata:* England, Germany.
*C. monogyna:* France.
*Sorbus aucuparia:* Norway.

**Lophodermium juniperinum** (Fr.) de N. (x) **leaf cast**

Forms shiny-black, small fruiting bodies on needles of *Juniperus*. Distributed in temperate North America and Europe.

*Juniperus communis:* Austria, Belgium, Czechoslovakia, Denmark, England, France, Germany, Italy, Norway, Scotland, Switzerland.
*J. oxycedrus:* Austria.
*J. sabina:* Denmark, France, Norway, Poland, Switzerland.
*J. squamata:* Denmark.

**Lophodermium laricinum** Duby (xxx) **larch leaf cast**

Forms scattered, elliptical, shiny-black, erumpent fruiting bodies on needles of *Larix*. Distributed in eastern Canada, central Europe, and Japan.

*Larix* sp.: Japan.
*L. decidua:* Austria, Germany, Italy, Switzerland.

**Lophodermium macrosporum** (Hartig) Rehm (xxx) **spruce leaf cast**

Forms shiny-black, elliptical to elongate, fruiting bodies on needles of *Picea*. Distributed in Europe.

*Picea* sp.: Belgium.
*P. abies:* Czechoslovakia, Denmark, Estonia, France, Germany, Norway, Poland, Romania, Russia, Scotland, Sweden, Switzerland.
*P. omorika:* Balkans.

**Lophodermium nitens** Darker (xxx) **pine needle cast**

Fruiting bodies subcuticular, shiny-black, on outer faces of needles, single, in pairs, or in small colonies. Limited to *Pinus*. Distributed in North America and Europe.

*Pinus cembra:* Austria, France.
*P. halepensis:* Austria, France.
*P. mugo:* Austria, Germany.

**Lophodermium piceae** (Fckl.) Hoehn. (xxx) **needle cast**

Forms shiny-black, scattered elliptical fruiting bodies on the needles of *Abies* and *Picea*. Said to be next to *Fomes annosus* in importance as a disease of spruce in Denmark. Distributed in eastern and western North America, Europe, and India.

*Abies alba:* Denmark, Germany.
*A. pinsapo:* Spain.
*Picea abies:* India, Denmark, Germany, Norway, Romania.
*P. smithiana:* Denmark.

**Lophodermium pinastri** (Fr.) Chev. (xxx) **pine needle cast**

Fruiting bodies scattered, amphigenous, elliptical, black, 0.90 to 1.50 x 0.32 to 0.70 mm., subepidermal on needles of *Pinus*. Distributed widely in North America, West Indies, Europe, India, Japan, and Siberia.

*Pinus* sp.: Estonia.
*P. cembra:* Denmark, Germany, Norway, Siberia, Switzerland.
*P. cembra* var. *sibirica:* Siberia.
*P. densiflora:* Japan.
*P. griffithii:* India.
*P. halepensis:* Greece.
*P. koraiensis:* Yugoslavia.
*P. mugo:* Czechoslovakia, Denmark, Germany, Norway.
*P. mugo* var. *rostrata:* Norway, Russia.
*P. mugo* var. *rotundata:* Denmark.
*P. nigra:* Austria, Czechoslovakia, Denmark, France, Germany, Italy, Hungary, Norway, Portugal, Spain.
*P. nigra* var. *cebennensis:* Denmark.
*P. nigra* var. *poiretiana:* Denmark, Germany.
*P. occidentalis:* Dominican Republic.
*P. pinaster:* Denmark, France, Portugal, Spain.
*P. roxburghii:* India.
*P. sylvestris:* Belgium, Czechoslovakia, Denmark, Finland, France, Germany, Great Britain, Hungary, Ireland, Latvia, Norway, Poland, Russia, Sweden, Switzerland.
*P. thunbergii:* Japan.

**Lophodermium punctiforme** (Fr.) Fckl. (xxx) **black spot**

Forms small, shiny-black, erumpent, elliptical to nearly linear fungus fruiting bodies seated on yellowish spots on petioles, veins, and blades of leaves of broad-leaved trees. Distributed in the United States, Europe, and Siberia.

*Castanea sativa:* Austria, Czechoslovakia.
*Quercus mongolica:* Siberia.
*Q. petraea:* Czechoslovakia, Denmark.
*Q. pubescens:* Austria.
*Q. robur:* Denmark, Germany.
*Q. rubra:* France, Germany, Czechoslovakia.
*Sorbus aucuparia:* Norway.

**Lophodermium tumidum** (Fr.) Rehm (xx) **leaf spot**

Associated with straw-yellow spots on leaves of *Sorbus* in New Brunswick, Europe, and Siberia.

*Sorbus aucuparia:* Austria, Siberia, Switzerland.

**Lophodermium versicolor** (Fr.) Rehm (xxx) **tar speck**

Occurs as small, shiny-black, erumpent masses on light yellowish spots on leaves of *Salix*. Known in Colorado, Pennsylvania, and Europe.

*Salix formosa:* Europe.
*S. glauca:* Europe.
*S. hastata:* Europe.
*S. herbacea:* Europe.
*S. retusa:* Europe, Germany.

**Macrophoma pinsaponis** Neger (x) **fir needle blight**

Forms pimplelike pycnidia exuding numerous conidia. Associated with dying of needles of *Abies* in Spain. Possibly poor site conditions lead to attacks by the fungus.

*Abies pinsapo:* Spain.

**Macrophoma salicis** Dearn. & Barth. (xx) **leaf cast**

Forms pimplelike pycnidia on diseased leaves and causes reddish-brown discoloration of tips of leaves of *Salix* and premature shedding of affected leaves in New Zealand.

*Salix fragilis:* New Zealand.

**Macrophoma shoreae** Bagchee (xx) **branch canker**

Hail injuries apparently give entry to this wound parasite, resulting in cankers with numerous witches'-brooms. Inoculations in wounds were successful and the fungus was recovered from artificially wounded twigs. Known only in India.

*Shorea robusta:* India.

**Macrophoma sinensis** Pass. (xx) **twig blight**

Pimplelike pycnidia are associated with leaf spot and twig blight of *Cunninghamia*. Known in Italy and Mauritius.

*Cunninghamia lanceolata:* Mauritius.

**Macrophoma sugi** Hara (xxx) **needle blight**

Pimplelike pycnidia form on blighted needles of *Cryptomeria* in Japan. Inoculations in wounds succeeded; also similar ones on unwounded very young needles. This is one of numerous disease fungi which inflict heavy losses in Japanese nurseries.

*Cryptomeria japonica:* Japan.

**Macrophomina phaseoli** (Maubl.) Ashby (xx) **rhizoctonia root rot**

Causes root and stem rot of many broad-leaved trees in the Tropics, a rot which has been known under several different names according to its varied growth stages. The most common form is a sterile *Rhizoctonia*. Distributed in Africa and Asia.

*Acacia decurrens:* Ceylon.
*A. elata:* Ceylon.
*A. melanoxylon:* Kenya.
*Albizia falcata:* Sumatra.
*A. moluccana:* Ceylon, Uganda.

*A. stipulata:* Uganda.
*Amherstia nobilis:* Ceylon.
*Areca cathecu:* Ceylon.
*Bixa orellana:* Uganda.
*Borassus flabellifer:* Ceylon.
*Casuarina equisetifolia:* Uganda.
*Cocos nucifera:* Ceylon.
*Coffea arabica:* Kenya, Tanganyika, Uganda.
*C. canephora* var. *robusta:* Ceylon, Uganda.
*Cupressus lusitanica* var. *benthamii:* Uganda.
*Erythrina indica:* Uganda.
*E. lithosperma:* Ceylon.
*E. mitis:* Uganda.
*E. velutina:* Uganda.
*Eucalyptus globulus:* Uganda.
*E. robusta:* Ceylon.
*Garcinia mangostana:* Ceylon.
*Grevillea robusta:* Uganda, Ceylon.
*Hevea brasiliensis:* Ceylon, Java, India, Malaya, Uganda.
*Morus alba:* India.
*Ochroma pyramidale:* Ceylon.
*Persea americana:* Ceylon.
*Theobroma cacao:* Ceylon, Uganda.

**Mainsia pterocarpi** Thirum. (xxx) **rust**

Forms powdery, yellow rust pustules on leaves of *Pterocarpus* intermixed with minute, waxy telial crusts. Causes severe defoliation. Known in India and Pakistan.

*Pterocarpus marsupium:* Pakistan, India.

**Marasmius equicrinis** F. Muell. (xx) **white thread blight**

Forms white strands of fungus tissue on branches, twigs, and leaves of many broad-leaved trees. These often form pads or cushions of tissue at the base of a petiole or branch. Dead leaves hang by white threads. Distributed in the West Indies, Brazil, Scotland, Gold Coast, Australia, East Indies, New Hebrides, India, and the Philippines.

*Dalbergia sissoo:* India.
*Heritiera minor:* India.
*Hevea brasiliensis:* East Indies, Brazil.
*Theobroma cacao:* Gold Coast, New Hebrides, West Indies.

**Marasmius perniciosus** Stahel (xxx) **cacao witches'-broom**

Causes witches'-brooms on *Theobroma* in tropical regions of the New World. Causes heavy damage and is believed to be native to South America. Distributed in Grenada, northern South America southward to Bolivia, and in Java. It is noted that Singer has transferred this species to *Crinipellis*.

*Theobroma bicolor:* Java, Surinam.
*T. cacao:* Brazil, British Guiana, Grenada, Java, Peru, Surinam, Trinidad, Venezuela.
*T. grandiflora:* Brazil.
*T. pentagona:* Surinam.

**Marasmius scandens** Mass. (xxx) **white thread blight**

Causes white thread blight on leaves of *Cola* and *Theobroma.* Known in the Gold Coast and Sierra Leone.

*Cola acuminata:* Gold Coast, Sierra Leone.
*C. vera:* Sierra Leone.
*Funtumia africana:* Sierra Leone.
*Theobroma cacao:* Gold Coast, Sierra Leone.

**Maravalia pterocarpi** (Thirum.) Thirum. (xxx) **rust**

Forms rust pustules on leaves and stems of *Dalbergia* and *Pterocarpus* in India.

*Dalbergia paniculata:* India.
*Pterocarpus marsupium:* India.

**Marssonina acerina** (West.) Bres. (xxx) **anthracnose**

Forms small, irregular, conidial pustules on maple leaf spots, scattered thickly on the leaf, brown with a yellow border. Distributed in North America and Europe.

*Acer campestre:* Denmark.
*A. orientale:* Denmark.
*A. pseudoplatanus:* Denmark.
*A. rufinerve:* Denmark.

**Marssonina betulae** (Lib.) Magn. (xx) **birch anthracnose**

Occurs on anthracnose leaf spots as olive to fuscous-black pustules on the upper side of dying *Betula* leaves. Distributed in Europe.

*Betula* sp.: Germany, Great Britain, Norway.
*B. pendula:* Denmark, Great Britain, Norway, Russia.

**Marssonina castagnei** (Desm. & Mont.) Magn. (xxx) **poplar leaf spot**

Forms small subcuticular pycnidia associated with round, brown spots on leaves of *Populus.* Distributed in North America and Europe.

*Populus* ×*canadensis:* Italy.
*P.* ×*canadensis* var. *serotina:* Great Britain.
*P. deltoides:* Netherlands.
*P. nigra:* Great Britain.
*P. nigra* var. *italica:* Great Britain.
*P. tremula:* Norway.

**Marssonina decolorans** Kab. & Bub. (xxx) **maple leaf spot**

Associated with leaf spots of *Acer* in Europe.

*Acer campestre:* Europe.
*A. negundo:* Czechoslovakia, Denmark, Great Britain.
*A. pseudoplatanus:* Europe.

**Marssonina kriegeriana** (Bres.) Magn. (xxx) **willow leaf spot**

Occurs on minute black spots on leaves of *Salix* as small subcuticular pustules exuding white conidia. Known in North America, Europe, Egypt, and Japan.

*Salix cinerea:* Great Britain.
*S.* ×*rubra:* Japan.
*S. tetrasperma:* Egypt.

**Marssonina martini** (Sacc. & Ell.) Magn. (xxx) **oak leaf spot**

Occurs on leaf spots of *Quercus*. Distributed in North America and Europe; also China.

*Quercus glandulifera:* China.

**Marssonina populi** Magn. (xxx) **poplar leaf rust**

Forms pustules with white spore tendrils on spots, rounded, brown, usually with black borders, on leaves of *Populus*. Distributed in North America and Europe.

*Populus* sp.: Germany.
*P. alba:* Great Britain, Norway.
*P.* ×*canescens:* Great Britain.
*P. deltoides:* Denmark.
*P. laurifolia:* Norway.
*P. nigra:* Great Britain, Norway.

**Marssonina salicicola** (Bres.) P. Magn. (xxx) **willow leaf spot**

Forms white pustules associated with indefinite spots on leaves of *Salix*. Distributed in Great Britain, Argentina, and New Zealand.

*Salix alba* var. *calva:* Argentina.
*S. babylonica:* Argentina, New Zealand.
*S. fragilis:* New Zealand.
*S. purpurea:* Great Britain.

**Marssonina truncatula** (Sacc.) Magn. (xxx) **maple leaf spot**

Occurs on brown to ochraceous spots on leaves of *Acer*. Distributed in Europe.

*Acer campestre:* Germany, Great Britain.
*A. negundo:* Germany, Denmark.
*A. saccharinum:* Denmark.

**Masseeëlla breyniae** Thirum. (xxx) **rust**

Forms brown rust pustules on leaves of *Breynia* in India.

*Breynia rhamnoides:* India.

**Masseeëlla fluggeae** Syd. (xxx) **rust**

Forms dark rust pustules on leaves of *Fluggea*. Known in Burma and the Philippines.

*Fluggea microcarpa:* Burma.
*F. virosa:* Philippines.

**Mauginiella scaettae** Cav. (xxx) **date palm blight**

Causes blight of inflorescences of *Phoenix dactylifera* destroying the entire fruit crop. Known in Tunis, Libya, and Iraq.

*Phoenix dactylifera:* Iraq, Libya, Tunis.

**Mehtamyces stereospermi** (Mund.) Mund. & Thirum. (xxx) **rust**

Forms sparse pale yellowish-brown rust pustules followed by black ones on leaves of *Stereospermum*. Known in India.

*Stereospermum suaveolens:* India.

**Melampsora abieti-capraearum** Tub. (xxx) **fir-willow rust**

Forms yellow, pulverulent rust pustules on new needles of *Abies* followed by a yellow powdery stage on leaves of *Salix;* and still later on *Salix* by brown, subepidermal, crusty mats of closely packed overwintering spores. Distributed in southern Canada, the United States, Mexico, Central America, South America, and western Europe.

*Abies alba:* Denmark, Germany, Norway, Switzerland.
*Salix caprea:* Denmark, Switzerland, Germany.
*S. cinerea:* Switzerland.
*S. humboldtiana:* El Salvador, Argentina, Guatemala, Peru.
*S. purpurea:* Switzerland.
*S. taxifolia:* Guatemala.
*S. viminalis:* Switzerland.

**Melampsora albertensis** Arth. (xxx) **Douglas-fir rust**

Forms tubules, up to 1 mm. long, in two rows one on either side of the midrib of needles of *Pseudotsuga.* These contain powdery yellow spores which infect leaves of *Populus.* The early stage of the rust on *Populus* is in powdery, yellow pustules on the lower leaf surface. Later, waxy orange-brown mats form under the epidermis, where the parasite overwinters to infect young needles of Douglas-fir the next spring. Distributed from Colorado and Wyoming to British Columbia and Oregon; also in Lower California and Argentina.

*Populus* × *canadensis:* Argentina.

**Melampsora allii-fragilis** Kleb. (xxx) **willow rust**

Causes yellow spots up to 1.5 cm. across on both surfaces of leaves of *Salix* and the alternate herbaceous *Allium.* Distributed in Austria, Hungary, Germany, Switzerland, Bulgaria, Spain, and Russia.

*Salix fragilis:* Denmark, Germany, Great Britain, Hungary, Poland, Switzerland.
*S. pentandra:* Great Britain.

**Melampsora allii-populina** Kleb. (xxx) **poplar rust**

Similar to the preceding but with *Populus* instead of *Salix* as tree hosts. Distributed in Europe and Morocco.

*Populus* sp.: Greece, Netherlands.
*P. balsamifera:* Germany.
*P.* × *canadensis:* Germany, Italy.
*P. nigra:* Germany, Great Britain, Morocco, Switzerland.

**Melampsora amygdalinae** Kleb. (xxx) **willow rust**

Autoecious. Forms orange-yellow rust pustules on leaves and branches of *Salix*, followed by yellowish-brown ones in late summer. Known in Europe.

*Salix amygdalina:* Denmark, Finland, Germany, Great Britain, Hungary, Switzerland.

**Melampsora arctica** Rostr. (xxx) **willow-saxifrage rust**

Forms rust pustules on leaves of *Salix* with alternate stage on the herbaceous *Saxifraga.* Distributed in boreal regions: Alberta, Alaska, Mount Washington, Pikes Peak, Greenland, Guatemala, Novaya Zemlya, Europe, and Japan.

*Salix arctica:* Novaya Zemlya (Russian Island).

*S. herbacea:* Norway, Scotland, Sweden.
*S. polaris:* Norway, Novaya Zemlya.
*S. reinii:* Japan.
*S. reptans:* Novaya Zemlya.
*S. reticulata:* Norway, Italy, Scotland.
*S. retusa:* Italy.
*S. rotundifolia:* Novaya Zemlya.
*S. taxifolia* var. *microphylla:* Guatemala.

**Melampsora capraearum** (DC.) Thuem. (xxx) **larch-willow rust**

Forms yellow rust pustules on leaves of *Salix* where the parasite overwinters. The overwintered spores infect newly formed needles of *Larix*. This rust can survive indefinitely from year to year on *Salix* without *Larix* anywhere near. Distributed in Europe, Siberia, China, and Japan.

*Salix aurita:* Austria, Germany.
*S. caprea:* Austria, Germany, Japan, Siberia.
*S. cinerea:* Austria.
*S. phlomoides:* Siberia.
*S. repens:* Austria.
*S. repens* var. *rosmarinifolia:* Austria.
*S. reticulata:* Austria.
*S. wilsonii:* China.

**Melampsora chelidonii-pierotii** T. Matsu. (xxx) **rust**

Forms rust pustules on leaves of the herbaceous *Chelidonium* and *Corydalis* with an alternate stage on *Salix* in Japan.

*Salix amygdalina* var. *glaucophylla:* Japan.
*S. pierotii:* Japan.

**Melampsora ciliata** Barcl. (xxx) **rust**

Forms abundant minute, bright-yellow rust pustules on leaves of *Populus* followed by brown, compact, palisade subepidermal overwintering mats. Known in India.

*Populus ciliata:* India.

**Melampsora coleosporioides** Diet. (xxx) **willow rust**

Forms rust pustules, yellow to yellowish-brown on leaves of *Salix*, followed by brown, compact, subepidermal, small fungus mats. Distributed in Japan and China.

*Salix babylonica:* China, Japan.
*S.* ×*heteromera:* China.
*S. matsudana:* China.
*S. mesneyi:* China.

**Melampsora epiphylla** Diet. (xxx) **rust**

Forms yellow to brown rust pustules on leaves of *Salix* in Japan.

*Salix shikokiana:* Japan.

**Melampsora epitea** Thuem. (xxx) **fir-willow rust**

The most common rust of *Salix in* North America, but uncommon in Europe. On *Salix* an early stage of the rust is pulverulent and orange colored. A later stage is reddish brown, subepidermal, and waxy in appearance. The fungus overwinters in this stage, infecting young *Abies* needles the next spring. Here it forms powdery, orange-colored pustules. These spores infect willow leaves, completing the life cycle of the pathogen. Distributed widely in North America from Alaska and Greenland southward into Mexico, Central America, and South America in Peru and Argentina; also in Europe from Spitzbergen and Novaya Zemlya southward to southern Europe, India, Kamchatka, and Japan.

*Abies alba:* Norway.
*A. sibirica:* Norway.
*Salix acutifolia:* Austria, Denmark, Germany (Bradenburg).
*S. alba:* Austria, Great Britain.
*S. amygdalina:* Norway.
*S. arctica:* Kamchatka.
*S. atrocinerea:* Great Britain.
*S. aurita:* Great Britain, Norway.
*S. babylonica:* Japan.
*S. caprea:* Great Britain, Norway.
*S. cuneata:* Kamchatka.
*S. daphnoides:* Austria, India.
*S. elaeagnos:* Austria.
*S. formosa:* Norway.
*S. fuscescens* × *sachalinensis:* Kamchatka.
*S. glauca:* Norway.
*S. glauca* × *myrsinites:* Norway.
*S. hastata:* Norway.
*S. herbacea:* Great Britain, Norway.
*S. hultenii:* Kamchatka.
*S. lanata:* Norway.
*S. lapponum:* Norway.
*S. macrolepis:* Kamchatka.
*S.* × *mollissima:* Great Britain.
*S. myrsinifolia:* Austria, Great Britain, Norway.
*S. myrsinites:* Norway.
*S. myrtilloides:* Norway.
*S. parallelinervis:* Kamchatka.
*S. parallelinervis* × *sachalinensis:* Kamchatka.
*S. phylicifolia:* Great Britain, Norway.
*S. polaris:* Norway.
*S. pseudopolaris:* Kamchatka.
*S. purpurea:* Austria, Great Britain, Norway.
*S. repens:* Great Britain.
*S. reticulata*: Great Britian, Norway.
*S. reticulata* var. *subrotunda:* Kamchatka.
*S. rubra:* Austria.
*S. sachalinensis:* Kamchatka.
*S.* × *smithiana:* Great Britain, Norway.
*S. viminalis:* Austria, Great Britain, Norway.
*S. xerophila:* Norway.

**Melampsora evonymi-caprearum** Kleb. (xxx) **willow rust**

Forms yellow to brown rust pustules on sunken yellow spots on leaves of *Salix* in Europe and Japan.

*Salix atrocinerea:* Great Britain.
*S. caprea:* Germany, Great Britain, Italy.
*S. cinerea:* Great Britain.

**Melampsora evonymi-incanae** O. Schneid. (xxx) **willow rust**

Forms rust pustules on leaves of *Euonymus* and the alternate stage on *Salix* in Switzerland.

*Salix elaeagnos:* Switzerland.

**Melampsora humilis** Diet. (xxx) **willow rust**

Forms yellow to brown rust pustules on *Salix* in Japan.

*Salix integra:* Japan.
*S. purpurea:* Japan.

**Melampsora lapponum** Lindf. (xxx) **willow rust**

Forms rust pustules on leaves of *Salix* with an alternate stage on the herbaceous *Viola epipsila*. Known in Norway and Sweden.

*Salix lapponum:* Norway.

**Melampsora larici-capraearum** Kleb. (xxx) **larch-willow rust**

Forms yellow rust pustules on leaves of *Larix* and *Salix*. Distributed in Europe, India, and Japan.

*Larix decidua:* Germany, Great Britain, Norway, Switzerland.
*L. leptolepis:* Great Britain, Scotland.
*L. sibirica:* Norway.
*Salix atrocinerea:* Great Britain.
*S. aurita:* Great Britain, Norway.
*S. bakko:* Japan.
*S. caprea:* France, Germany, Great Britain, Norway, Switzerland.
*S. cinerea:* Scotland.
*S. daphnoides:* India.
*S.* × *smithiana:* Norway.
*S. tetrasperma:* India.

**Melampsora larici-epitea** Kleb. (xxx) **larch-willow rust**

Forms rust pustules on leaves of *Larix* and *Salix*. Distributed in Europe, Siberia, India, China, Kashmir, Formosa, Ceylon, Japan, and Manchuria.

*Larix decidua:* Germany, Great Britain, Norway, Switzerland.
*Salix aurita:* Scotland, Switzerland.
*S. caprea:* Scotland, Poland.
*S. cinerea:* Scotland, Switzerland.
*S. daphnoides:* Germany, Switzerland.
*S. delavayana:* China.
*S. hastata:* India, Kashmir.
*S. latifolia:* Norway.
*S. longiflora:* China.
*S. miyabeana:* Japan.

*S.* ×*mollissima:* Scotland.
*S. myrsinifolia:* Scotland.
*S. oxycarpa:* India, Kashmir.
*S. psilostigma:* China.
*S. purpurea:* Formosa, Scotland.
*S. sachalinensis:* Japan.
*S. viminalis:* Manchuria, Scotland, Switzerland.

**Melampsora larici-pentandrae** Kleb. (xxx) **larch-willow rust**

Forms yellow to brown rust pustules on leaves of *Larix* and *Salix*. Known in Europe, South Siberia, Kamchatka, and Uruguay.

*Larix decidua:* Great Britain, Norway, Scotland, Switzerland.
*Salix pentandra:* Great Britain, Norway, Scotland, Switzerland.
*S. pentandra* var. *pseudopentandra:* Kamchatka.

**Melampsora larici-populina** Kleb. (xxx) **larch-poplar rust**

Forms rust pustules on leaves of *Larix* and *Populus*. Distributed in Argentina, Colombia, Chile, Europe, China, Japan, and Kamchatka. The Argentine infection is probably due to hybrid poplar stock imported from Italy.

*Larix decidua:* Germany, Great Britain, Norway.
*L. leptolepis:* Great Britain.
*L. sibirica:* Norway.
*Populus balsamifera:* Argentina, Europe, Japan, Netherlands.
*P. balsamifera* var. *subcordata:* Denmark.
*P.* ×*canadensis:* Argentina, Germany, Great Britain, Italy, Norway, Poland.
*P.* ×*canadensis* var. *eugenei:* Argentina, Europe, Japan, Netherlands.
*P.* ×*canadensis* f. *gelrica:* Netherlands.
*P.* ×*canadensis* var. *marilandica:* Argentina, Europe, Japan.
*P.* ×*canadensis* var. *regenerata:* Argentina, Europe, Japan, Netherlands.
*P.* ×*canadensis* var. *serotina:* Argentina, Europe, Japan.
*P. deltoides:* Norway.
*P.* ×*generosa:* Argentina, Europe, Japan, Scotland.
*P. lasiocarpa:* Norway.
*P. laurifolia:* Great Britain, Norway.
*P. nigra:* Germany, Great Britain, Norway.
*P. nigra* var. *italica:* Argentina, Chile, China, Colombia, Great Britain, Japan, Norway.
*P.* ×*robusta:* Argentina, Europe, Great Britain, Japan, Norway.
*P. simonii:* China.
*P. yunnanensis:* China.

**Melampsora larici-tremulae** Kleb. (xxx) **larch-poplar rust**

Forms yellow rust pustules on leaves of *Larix* and *Populus* in early summer, and later subepidermal brown crusty mats overwintering on *Populus* leaves. Known in Europe, Japan, and Kamchatka.

*Larix decidua:* Denmark, Germany, Great Britain, Norway, Sweden, Switzerland.
*L. gmelinii:* Kamchatka.
*L. laricina:* Denmark.

*L. leptolepis:* Germany, Norway.
*L. sibirica:* Norway, Sweden.
*Populus alba:* Germany, Great Britain, Norway.
*P. balsamifera:* Great Britain.
*P. tremula:* Germany, Great Britain, Norway, Switzerland.

**Melampsora magnusiana** G. Wagner (xxx) **rust**

Forms rust pustules on leaves of *Populus* and of the herbaceous alternate hosts *Chelidonium* and *Corydalis.* Distributed in Europe, Siberia, China, Manchuria, and Japan.
*Populus nigra:* Greece.
*P. sieboldii:* Japan.
*P. tremula:* Denmark.
*P. tremula* var. *davidiana:* Manchuria.

**Melampsora mercurialis-tremulae** Kleb. (xxx) **rust**

Forms yellow rust pustules and dark-brown telia on leaves of *Populus* with *Mercurialis* as the alternate host. Known in Germany and the Netherlands.
*Populus alba:* Germany, Netherlands.
*P. balsamifera:* Germany.
*P.* ×*canadensis:* Germany.
*P. nigra:* Germany.
*P. tremula:* Germany, Netherlands.

**Melampsora microsora** Diet. (xxx) **rust**

Forms yellow to brown rust pustules on leaves of *Salix* in Japan.
*Salix amygdalina* var. *glaucophylla:* Japan.

**Melampsora oblonga** Bagchee (xxx) **pine needle rust**

Autoecious. Forms pinkish-red, later amber-brown, waxy, subepidermal fungus mats on needles of *Pinus* in India.
*Pinus griffithii:* India.

**Melampsora paradoxa** Diet. & Holw. (xxx) **larch-willow rust**

Forms round, pulverulent, yellow rust pustules on leaves of *Larix* and *Salix.* Distributed in temperate North America on both, also in Guatemala on *Salix.*
*Salix bonplandiana:* Guatemala.
*S. humboldtiana* var. *stipulacea:* Guatemala.

**Melampsora pinitorqua** (Braun) Rostr. (xxx) **pine-poplar rust**

Forms erumpent rust pustules on leaves of *Populus* and on needles and young shoots of *Pinus.* Sometimes damages young pines. Distributed in Europe.
*Pinus* sp.: Cyprus.
*P. mugo:* Denmark, Norway.
*P. mugo* var. *rostrata:* Norway.
*P. pinaster:* France, Italy.
*P. pinea:* Italy.
*P. sylvestris:* Belgium, Denmark, England (Sussex, Kent), Finland, France, Germany, Italy, Latvia, Norway, Poland, Russia, Sweden, Switzerland.

*Populus* sp.: Yugoslavia.
*P. alba:* Sweden.
*P. balsamifera:* Denmark.
*P.* ×*canescens:* Denmark, Italy, Sweden.
*P. tremula:* Belgium, Denmark, England (Sussex, Kent), Germany, Italy, Norway, Poland, Sweden, Switzerland.
*P. tremuloides:* Sweden.

**Melampsora populnea** (Pers.) Karst. (xxx) **poplar rust**

Apparently can be autoecious on *Populus* by overwintering as spores between bud scales. Early infections are small; later ones large, very pulverulent, and yellow. Apparently is also heteroecious on *Larix* and *Pinus*. Distributed from Washington to California, in Colorado and Rhode Island; also in Argentina, Europe, Siberia, Kamchatka, India, Pakistan, and South Africa.

*Larix decidua:* Germany, Great Britain, Norway, Switzerland.
*L. sibirica:* Norway.
*Pinus mugo:* Norway.
*P. sylvestris:* Belgium, Great Britain, Norway.
*Populus* sp.: Union of South Africa.
*P. alba:* Argentina, Denmark, Great Britain, India, Norway, Pakistan, Russia.
*P. balsamifera:* Germany.
*P.* ×*canadensis* var. *serotina:* Germany.
*P.* ×*canescens:* Denmark.
*P. ciliata:* Pakistan.
*P. deltoides:* Denmark.
*P. laurifolia:* Siberia.
*P. nigra:* Denmark, Switzerland.
*P. nigra* var. *italica:* Denmark.
*P. suaveolens:* Siberia.
*P. tremula:* Belgium, Denmark, Germany, Great Britain, Japan, Kamchatka, Norway, Siberia.

**Melampsora pruinosae** Tranz. (xxx) **poplar rust**

Forms pale yellow to red-brown rust pustules on leaves of *Populus* in Siberia and Turkmenistan.

*Populus pruinosa:* Russia (Turkmenistan).

**Melampsora pulcherrima** (Bub.) R. Maire (xxx) **rust**

Forms rust pustules on leaves of *Populus*. Distributed in Spain, Algeria, and Morocco.

*Populus alba* f. *nivea:* Algeria.
*P. hickeliana:* Morocco.

**Melampsora repentis** Plowr. (xxx) **rust**

Causes pale yellow spots 1 to 2 cm. long on lower side of leaves of Orchidaceae with *Salix* as alternate hosts. Distributed in Europe and British Guiana.

*Salix* ×*ambigua:* Denmark.
*S. repens:* Denmark, Scotland.
*S. repens* var. *rosmarinifolia:* Denmark.

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**Melampsora ribesii-purpureae** Kleb. (xxx) **rust**

Forms yellow rust pustules on the lower surface of leaves of *Ribes*. These spores infect leaves of *Salix* forming yellow uredospores, soon followed by tiny subepidermal mats of closely crowded telia, which overwinter in the dead leaves. In the spring these produce very small sporidia, blown about by the lightest breeze to infect *Ribes*, and start anew the life cycle of the uninvited guest. Defoliation of both hosts may result from heavy rust attacks. Distributed in North America from Yukon to New Mexico and California. Also in Guatemala, Europe, Siberia, China, and Japan.

*Salix bonplandiana:* Guatemala.
*S. latifolia:* Norway.
*S. purpurea:* China, Great Britain.
*S. wilsonii:* China.

**Melampsora ribesii-viminalis** Kleb. (xxx) **rust**

Forms golden to brown rust pustules on leaves of *Salix* and *Ribes* in Europe.

*Salix viminalis:* Denmark, Great Britain, Italy, Scotland.

**Melampsora rostrupii** G. Wagner (xxx) **rust**

Forms yellow and dark-brown rust pustules on leaves of *Populus* and herbaceous *Mercurialis* in Europe, India, and China.

*Populus alba:* China, Denmark, India, Scotland.
*P. rotundifolia:* China.
*P. tremula:* China, Denmark, Poland, Scotland.

**Melampsora salicina** Lév. (xxx) **rust**

Forms black rust fungus masses on leaves of *Salix* in Europe and Siberia.

*Salix acutifolia:* Germany.
*S. caprea:* Denmark, Estonia.
*S. cinerea:* Estonia.
*S. daphnoides:* Germany.
*S. daphnoides* var. *pomeranica:* Germany.
*S. hastata:* Siberia.
*S.* ×*mollissima:* Denmark.
*S. pentandra:* Siberia.
*S. purpurea:* Denmark.
*S. undulata:* Denmark.

**Melampsora salicis-albae** Kleb. (xxx) **rust**

Forms yellow and brown rust pustules on leaves and twigs of *Salix* with herbaceous *Allium* as alternate hosts. Distributed in Europe, India, Pakistan, and China.

*Salix* sp.: China.
*S. alba:* Great Britain, India, Pakistan.
*S. alba* var. *vitellina:* Great Britain, Norway.
*S. rubens:* Norway.

**Melampsora vitellinae** (DC.) Thuem. (xxx) **rust**

Forms minute, round, yellowish-red rust pustules on leaves of *Salix* followed with small, dark-brown, crusty, subepidermal fungus mats. Distributed in Europe, Siberia, and Japan.

*Salix alba* var. *vitellina:* Austria.
*S. amygdalina:* Germany, Austria.
*S. fragilis:* Austria, Germany.
*S.* ×*multinervis:* Japan.

**Melampsora yezoensis** Miyabe & Matsu. (xxx) **rust**

Forms rust sporophores on leaves of *Salix* in China. The herbaceous *Corydalis* is its alternate host.

*Salix longiflora:* China.

**Melampsorella caryophyllacearum** Schroet. (xxx) **fir witches'-broom**

Forms witches'-brooms by systemic infection of *Abies*. The needles on the brooms are annual instead of perennial, and bear rust pustules on each new annual generation of needles. Occasionally an infection causes lesion of a large stem with a distinct burl. Alternate hosts of this rust are herbaceous *Cerastium* and *Stellaria* species. Distribution is holarctic in *Abies* forests, southward to northern New Mexico and in Mexico in North America; also in Europe, Siberia, China, and Japan.

*Abies* sp.: Germany, Turkey, Yugoslavia.
*A. alba:* Austria, Belgium, Czechoslovakia, Denmark, France, Germany, Great Britain, Ireland, Latvia, Poland, Switzerland, Yugoslavia.
*A. cephalonica:* Germany.
*A. concolor:* Germany.
*A. firma:* Japan.
*A. forrestii:* China.
*A. nordmanniana:* France, Germany, Great Britain.
*A. pinsapo:* France, Germany.
*A. sachalinensis:* Japan.
*A. sibirica:* Siberia.

**Melampsoridium alni** (Thuem.) Diet. (xxx) **larch-alder rust**

Forms yellow to brown rust pustules on leaves of *Alnus* in Great Britain and Siberia (?) and on needles of *Larix* in Great Britain. Not the same as *Melampsoridium hiratsukanum* Ito of America and Japan. [In view of recent findings, the identity of the Siberian fungus is uncertain. See: Cummins, G. B., and Stevenson, J. A. A check list of North American rust fungi (Uredinales). Plant Dis. Rptr., Supp. 240, p. 130, 1956.]

*Alnus fruticosa:* Siberia.
*A. glutinosa:* Great Britain.
*A. incana:* Great Britain.
*A. viridis:* Siberia.
*Larix decidua:* Great Britain (Scotland).

**Melampsoridium betulinum** (Fr.) Kleb. (xxx) **larch-birch rust**

Forms subcylindric tubules containing reddish-orange spores on *Larix* leaves. These infect *Betula* leaves, forming an early reddish-yellow powdery stage followed by slightly raised subepidermal crusts, waxy-yellow to brown or black. The latter is the overwintering stage which infects the *Larix* leaves the next spring, starting a new life cycle of the pathogen. Some damage may occur by defoliation of young birches. Distributed in North America from Newfoundland to Alaska and southward to New Jersey and Indiana to the east; to Montana and Washington in the west; also in Europe, Russia, Siberia, Japan, Kamchatka, and New Zealand.

*Betula* sp.: Austria, Belgium, Czechoslovakia, Finland, France, Germany, Great Britain, Hungary, Ireland, Italy, Netherlands, Norway, Siberia, Switzerland.
*B. celtiberica:* Portugal.
*B. ermanii:* Japan, Kamchatka.
*B. ermanii* var. *communis:* Japan.
*B. fruticosa:* Denmark.
*B. lenta:* Norway.
*B. maximowicziana:* Japan.
*B. nana:* Norway.
*B. pendula:* Denmark, Germany, Great Britain, Norway, Poland, Russia (Kazan), Siberia, Switzerland.
*B. platyphylla:* Kamchatka.
*B. platyphylla* var. *japonica:* Japan.
*B. pubescens:* Denmark, Great Britain, Norway.
*Larix* sp.: Poland, Scotland.
*L. decidua:* Germany, Great Britain, Ireland, Switzerland.
*L. leptolepis:* Great Britain.

**Melampsoridium carpini** (Fckl.) Diet. (xxx) **hornbeam rust**

Forms yellow spore pustules on leaves of *Carpinus* and *Ostrya*. The overwintering stage later forms yellow to yellowish-brown, small, prismatic subepidermal mats of overwintering spores. No alternate host is known. Distributed in one locality in the Adirondack Mountains of New York and in Guatemala; also in Europe, China, and Japan.

*Carpinus* sp.: China.
*C. betulus:* Germany, Italy, Switzerland.
*C. laxiflora:* Japan.
*C. tschonoskii:* Japan.
*Ostrya virginiana* var. *guatemalensis:* Guatemala.

**Melampsoridium hiratsukanum** Ito ex Hirat. (xxx) **rust**

Forms yellow to brown rust pustules on the lower surface of leaves of *Alnus*. Distributed in California, Mexico, Guatemala, Ecuador, China, and Japan. Not *Melampsoridium alni* (Thuem.) Diet. of Europe. [See note under *Melampsoridium alni*.]

*Alnus acuminata:* Guatemala.
*A. arguta:* Guatemala.
*A. cremastogyne:* China.
*A. hirsuta:* China, Japan.
*A. jorullensis:* Ecuador, Guatemala.

*A. jorullensis* var. *mirbelii:* Ecuador.
*A. maximowiczii:* Japan.
*A. pendula:* Japan.
*A. sinuata:* Japan.
*A. viridis:* Japan.

**Melanconis juglandis** (Ell. & Ev.) Graves (xx) **walnut dieback**

Forms black, pustulelike, conidial acervuli breaking through the epidermis of dead bark. It causes slow dieback of *Juglans*. Affected trees usually decline slowly and finally die when the fungus reaches the main trunk, even of large trees. Distributed generally in North America wherever *Juglans* grows. Also widely distributed in Europe where it has been known as *Melanconium oblongum* Berk., the name of the ascigerous stage.

*Juglans regia:* Norway.

**Melanconis stilbostoma** (Fr.) Tul. (xxx) **birch blight**

Forms numerous pustulate swellings, 1 to 2 cm. in diameter, breaking through the epidermis of dead and dying birch twigs. About 1900, a serious outbreak of disease on birch trees of London, England, and its suburbs, was described. The infected trees died quickly and in large numbers in 1 or 2 years. Similar diseases have been reported in continental Europe. The pathogen is widely distributed in North America and Europe.

*Betula* sp.: England.

**Melanophora sorbi** (Rostr.) v. Arx (xxx) **anthracnose**

Anthracnose lesions on *Sorbus* leaves, ashen in color, bear conidial pustules. Known in Denmark and Finland.

*Sorbus* ×*hybrida:* Denmark.

**Meliola alchorneae** F. L. Stevens & Tehon (xxx) **black mildew**

Forms fungus colonies on lower leaf surfaces, round, diffuse, with black spherical perithecia seated on loose mycelia. On leaves of *Alchornea* in British Guiana.

*Alchornea* sp.: British Guiana.

**Meliola alstoniae** Koord. (xxx) **black mildew**

Forms hypophyllous colonies, effused, black, with sparse, globular perithecia on loose mycelium. On leaves of *Alstonia* in Java.

*Alstonia scholaris:* Java.

**Meliola amaniensis** Hansf. (xxx) **black mildew**

Forms black mildew on leaves of *Pittosporum* in Tanganyika.

*Pittosporum undulatum:* Tanganyika.

**Meliola antioquensis** Orejuela (xxx) **black mildew**

Forms epiphyllous colonies, black, making large patches on leaves of *Persea* in Colombia.

*Persea petiolaris:* Colombia.

**Meliola buettneriae** Stevenson (xxx) **black mildew**

Forms colonies, amphigenous, 2 to 3 mm. in diameter, compact, on definite brown spots on the host. On *Buettneria* living leaves and twigs in Brazil.

*Buettneria ramosissima:* Brazil.

**Meliola byrsonimicola** F. L. Stevens & Tehon (xxx) **black mildew**

Forms amphigenous colonies, small, often confluent and large. Perithecia globose, black, 105 to 180 microns in diameter. On *Byrsonima* in British Guiana.

*Byrsonima* sp.: British Guiana.

**Meliola castanopsidis** Hansf. (xxx) **black mildew**

Forms black mildew on leaves of *Castanopsis* in China.

*Castanopsis tibetana:* China.

**Meliola cinnamodendri** Stevenson (xxx) **black mildew**

Forms dense colonies, small but coalescing to form a uniform "sooty, mold-like" covering on the leaf blades. Perithecia scattered through the colonies, globose, 150 to 200 $\mu$ in diameter. On living leaves of *Cinnamodendron* in Brazil.

*Cinnamodendron axillare:* Brazil.

**Meliola clerodendricola** P. Henn. (xxx) **black mildew**

Forms colonies, epiphyllous, widely effused, confluent, crusty, black, with black perithecia; subglobose to cupulate, 90 to 200 $\mu$ in diameter. On leaves of *Clerodendrum* in Central Africa and Pakistan.

*Clerodendrum capitatum:* Africa (Bongoland).

*C. infortunatum:* Pakistan.

**Meliola clusiae** F. L. Stevens (xxx) **black mildew**

Forms brown colonies, hypophyllous, diffuse, 3 to 5 mm. in diameter, on leaves in Puerto Rico.

*Clusia gundlachii:* Puerto Rico.

**Meliola condaliae** Stevenson (xxx) **black mildew**

Forms amphigenous colonies, 2 to 3 mm. in diameter, sometimes coalescing to cover the entire leaf surface, occasionally on smaller twigs, dark brown. On living leaves and twigs of *Condalia* in Texas and Mexico.

*Condalia obovata:* Mexico.

**Meliola conigera** F. L. Stevens & Tehon (xxx) **black mildew**

Forms colonies covering about half the surface of the pinnae. Perithecia flat and radiate, becoming globular, 225 $\mu$ in diameter. On pinnae of *Pentaclethra* in British Guiana.

*Pentaclethra macroloba:* British Guiana.

**Meliola diplochaete** Syd. & P. Syd. (xxx) **black mildew**

Forms discoid black spots 1 to 2 cm. wide with globose perithecia, collapsed when dry, black, 90 to 140 $\mu$, rough. On leaves of *Talauma* in the Philippines.

*Talauma villariana:* Philippines.

**Meliola dracaenicola** Pat. (xxx) **black mildew**

Forms black tomentose spots with black, globose perithecia 300 $\mu$ across, on leaves of *Dracaena* in French Equatorial Africa and Gold Coast.

*Dracaena* sp.: French Equatorial Africa (Brazzaville).

**Meliola fagraeae** Syd. (xxx) **black mildew**

Forms dark rounded spots 0.5 to 1.5 cm. in diameter with sparse perithecia, globular, 130 to 150 $\mu$ in diameter. On leaves of *Fagraea* in the Philippines and Moluccas.

*Fagraea speciosa:* Moluccas.

**Meliola gnathonella** F. L. Stevens & Tehon (xxx) **black mildew**

Forms black mildew on leaves of *Jacaranda* in British Guiana.

*Jacaranda* sp.: British Guiana.

**Meliola guianensis** F. L. Stevens & Dowell (xxx) **black mildew**

Forms black fungus patches on brown spots 3 to 10 mm. in diameter on leaves of *Theobroma* in British Guiana.

*Theobroma cacao:* British Guiana.

**Meliola gymnanthicola** F. L. Stevens (xxx) **black mildew**

Forms fungus webs of black mildew on leaves of *Gymnanthes* in Puerto Rico.

*Gymnanthes lucida:* Puerto Rico.

**Meliola indica** Syd. (xxx) **black mildew**

Forms black mildew colonies 2 to 6 mm. across on leaves of *Barringtonia.* Distributed in India, Pakistan, and Philippines.

*Barringtonia acutangula:* Pakistan.

**Meliola lonchocarpicola** F. L. Stevens (xxx) **black mildew**

Forms black mildew colonies on the leaves of *Lonchocarpus* in Venezuela and Panama.

*Lonchocarpus* sp.: Venezuela.

**Meliola mangiferae** Earle (xxx) **black mildew**

Forms black, superficial fungus patches on leaves of *Mangifera.* Distributed in Jamaica, Puerto Rico, Dominican Republic, Venezuela, Colombia, Peru, Malaya, Philippines, and the Moluccas.

*Mangifera indica:* Colombia, Jamaica, Moluccas, Puerto Rico, Venezuela.

**Meliola paulliniae** F. L. Stevens (xxx) **black mildew**

Forms dark fungus patches on leaves of *Casearia*, *Paullinia*, etc. Known in Puerto Rico, Venezuela, and Gold Coast.

*Casearia aculeata:* Puerto Rico.
*C. arborea:* Puerto Rico.
*C. guianensis:* Puerto Rico, Venezuela.
*C. sylvestris:* Puerto Rico.
*Mammea americana:* Puerto Rico.

**Meliola theobromae** Faber (xxx) **black mildew**

Forms superficial, black fungus patches on leaves of *Theobroma* in the Cameroons.

*Theobroma cacao:* Africa (Cameroons).

**Meliolinella palmicola** (F. L. Stevens) Hansford (xxx) **black mildew**

Forms small, blackish fungus plaques on leaves of *Elaeis* in French West Africa.

*Elaeis guineensis:* French West Africa.

**Meria laricis** Vuill. (xxx) **larch leaf blight**

Causes browning and shedding of leaves of *Larix;* only young trees, 10 years or less in age, are damaged. Distributed in Europe; also reported in Idaho.

*Larix decidua:* Austria, Czechoslovakia, Denmark, France, Germany, Great Britain, Ireland, Italy, Netherlands, Norway, Sweden.

*L. gmelinii:* Great Britain.

*L. leptolepis:* Great Britain, Norway.

**Micronegeria fagi** Diet. & Neger (xxx) **rust**

Forms yellow to rufous rust pustules on leaves of *Nothofagus* in Chile.

*Nothofagus obliqua:* Chile.

*N. procera:* Chile.

**Micropeltella mulleri** Stevenson (xx) ———

Forms perithecia scattered over the lower surface of *Coffea* leaves; circular, raised in the center, 500 to 800 $\mu$ in diameter. Distributed in Brazil.

*Coffea arabica:* Brazil.

**Micropeltis applanata** Mont. (xxx) **fly-speck**

Forms dimidiate, round perithecia with central pores, on leaves of species of Lauraceae and other broad-leaved trees. Distributed widely in El Salvador, Cuba, French Guiana, Peru, Brazil, Ceylon, and the Philippines.

*Coffea arabica:* El Salvador.

**Microsphaera alni** DC. ex Wint. (xxx) **powdery mildew**

Forms a white to gray, powdery fungus coating on leaves of numerous broad-leaved trees. Distributed in North America, Chile, Europe, India, China, and Japan.

*Alnus glutinosa:* Denmark, Germany.

*A. incana:* Denmark, Japan, Norway.

*Betula pendula:* Germany.

*B. pubescens:* Germany, Norway.

*Castanea crenata:* Japan.

*C. mollissima:* China.

*C. sativa:* Japan.

*Corylus colurna:* India.

*C. cornuta:* Japan.

*C. heterophylla:* Japan, China.
*C. heterophylla* var. *japonica:* Japan.
*C. sieboldiana:* Japan.
*C. sieboldiana* var. *mandshurica:* Japan.
*Hovenia dulcis:* Japan.
*Juglans regia:* Italy.
*Lindera umbellata:* Japan.
*Picrasma quassioides:* China, Japan.
*Quercus* sp.: France, Germany.
*Q. acutissima:* China.
*Q. aliena:* China.
*Q. dentata:* Japan.
*Q. glandulifera:* China, Japan.
*Q. mongolica* var. *grosseserrata:* Japan.
*Q. pubescens:* Greece.
*Styrax japonica:* Japan.

**Microsphaera alni** var. **extensa** (Cke. & Pk.) Salmon (xxx)
**oak powdery mildew**

Forms a white, powdery coating mostly on leaves and shoots of *Quercus*. In late summer tiny, black, globular perithecia form on the white coating. About 50 years ago a very severe outbreak of the conidial stage appeared in Europe and caused much damage. Finally, ascogenous fruiting bodies were found and were apparently the same as the long-known North American *Microsphaera alni* var. *extensa*. It has been called *M. quercina* (Schw.) Burr. and *M. alphitoides* Griff. & Maubl. also. In North America it has caused no serious trouble, but in Europe it has been disastrous to Old World oak species, especially coppice and nursery stock. Older trees previously defoliated by insects were killed over large areas. Distributed in North America, Brazil, Chile, Europe, Siberia, China, India, and Japan.

*Castanea sativa:* Europe.
*Fagus sylvatica:* Denmark, Great Britain, Norway.
*Quercus* sp.: Algeria, Argentina, Belgium, Corsica, Czechoslovakia, England, France, Germany, Hungary, Italy, Madagascar, Netherlands, Norway, Portugal, Rhodesia, Russia, Switzerland, Spain, Tanganyika.
*Q. acutissima:* Japan.
*Q. brutia:* France.
*Q. cerris:* Austria, France, Italy, Scotland, Yugoslavia.
*Q. coccifera:* Austria, France.
*Q. coccinea:* Denmark.
*Q. dentata:* France, Japan.
*Q. frainetto:* Austria, France, Scotland, Yugoslavia.
*Q. glandulifera:* Japan.
*Q. ilex:* Austria, Italy.
*Q. lusitanica:* Austria.
*Q. mongolica:* Siberia.
*Q. mongolica* var. *grosseserrata:* Europe, Japan.
*Q. petraea:* Austria, Denmark, France, Germany, Great Britain, Italy, Poland, Rumania, Switzerland, Yugoslavia.
*Q. pubescens:* Austria, Corsica, France, Great Britain, Yugoslavia.

*Q. pyrenaica:* Austria, France, Switzerland.
*Q. repanda:* Argentina, Europe, Madagascar, Rhodesia.
*Q. robur:* Austria, Brazil, Denmark, England, France, Germany, Italy, Norway, Poland, Rumania, Russia, Scotland, Switzerland, Wales, Yugoslavia.
*Q. suber:* Austria.

**Microsphaera dentata** Liou (xxx) **powdery mildew**

Forms powdery mildew on leaves of *Quercus* in China.
*Quercus* sp.: China.

**Microsphaera yamadae** (Salm.) Syd. (xxx) **powdery mildew**

Forms powdery mildew on *Juglans* and *Hovenia* in Japan.
*Hovenia dulcis* var. *tomentella:* Japan.
*Juglans ailantifolia:* Japan.

**Microstroma album** Sacc. var. **japonicum** P. Henn. (xxx) **powdery leaf spot**

Forms white, powdery conidial spots on the lower surface of leaves of *Quercus*. Distributed in Japan.
*Quercus glandulifera:* Japan.
*Q. glauca:* Japan.
*Q. mongolica* var. *grosseserrata:* Japan.

**Microstroma ingaicola** Lamkey (xxx) **witches'-broom**

Forms white, powdery conidial pustules on the lower leaf surfaces of *Inga*. Causes large witches'-brooms. Known in Puerto Rico.
*Inga laurina:* Puerto Rico.
*I. vera:* Puerto Rico.

**Microstroma juglandis** (Bereng.) Sacc. (xxx) **powdery leaf spot**

Forms powdery, white, conidial fungus pustules on leaves of *Juglans* and *Carya*. Also causes formation of witches'-brooms on *Carya*. Distributed in North America, Europe, and India.
*Juglans regia:* Bulgaria, Denmark, Germany, India, Italy, Russia.

**Microstroma pithecolobii** Lamkey (xxx) **white leaf spot**

Forms white conidial fungus pustules on leaves of *Pithecellobium*. Distributed in Puerto Rico, El Salvador, and Venezuela. Evidently imported into Puerto Rico not long before it was found there.
*Pithecellobium dulce:* El Salvador.
*P. saman:* Puerto Rico, Venezuela.

**Microstroma platani** Eddel. & Engelke (xxx) **white leaf spot**

Forms small, white spots bearing conidia on leaves of *Platanus* in Germany and Sweden.
*Platanus occidentalis:* Germany.

**Milesia blechni** (Syd.) Syd. (xxx) **fir-fern rust**

See general account of this fungus under *Hyalopsora*. *Milesia blechni* is distributed in Europe on *Abies alba*.
*Abies alba:* Great Britain.

**Milesia itoana** (Kamei) Faull (xxx) **fir-fern rust**

See general account under *Hyalopsora.* Known on *Abies* in Japan.
*Abies sachalinensis:* Japan.

**Milesia jezoensis** (Kamei & Hirat.) Faull (xxx) **fir-fern rust**

See description under *Hyalopsora.* Known on *Abies* in Japan.
*Abies sachalinensis:* Japan.

**Milesia kriegeriana** (Magn.) Arth. (xxx) **rust**

See description under *Hyalopsora.* Forms rust aecia on the lower surface of current-year needles of *Abies* and alternate uredinia and telia on leaves of ferns. Distributed in Europe, but not in America. It has been confused with a similar American rust that is entirely distinct.
*Abies alba:* Great Britain, Switzerland.
*A. cephalonica:* Great Britain, Switzerland.
*A. nordmanniana:* Great Britain, Switzerland.
*A. pinsapo:* Switzerland.

**Milesia polypodii** B. White (xxx) **rust**

See description under *Hyalopsora.* Generally distributed on *Abies* in Europe.
*Abies alba:* Great Britain, Switzerland.
*A. cephalonica:* Switzerland.
*A. nordmanniana:* Switzerland.
*A. pinsapo:* Switzerland.

**Milesia scolopendrii** (Fckl.) Arth. (xxx) **rust**

See description under *Hyalopsora.* Distributed widely on *Abies* in Europe eastward to the Caucasus.
*Abies alba:* Great Britain, Switzerland.
*A. cephalonica:* Switzerland.
*A. nordmanniana:* Switzerland.
*A. pinsapo:* Switzerland.

**Milesia vogesiaca** (Syd.) Faull (xxx) **rust**

See general description under *Hyalopsora.* Distributed on *Abies* in British Columbia, Oregon, Europe, Algeria, and Japan.
*Abies alba:* Great Britain, Switzerland.
*A. cephalonica:* Switzerland.
*A. firma:* Japan.
*A. nordmanniana:* Switzerland.
*A. pinsapo:* Switzerland.
*A. sachalinensis:* Japan.

**Mollisia grisleae** (Syd.) J. H. Miller & Burton (xx) ———

A minute leaf pathogen forming flattened discs 150 to 300$\mu$ across on the upper surface of leaves of *Combretum* in Venezuela.
*Combretum secundum:* Venezuela.

**Mollisia ravida** Syd. (xx) ———

Forms small fungus discs on effuse, pale, indefinite spots on leaves of *Lagerstroemia* in the Philippines.

*Lagerstroemia speciosa:* Philippines.

**Monochaetia desmazierii** Sacc. (xxx) **leaf spot**

Forms large spots, 2.5 to 7 cm. across, on leaves of *Castanea*, *Quercus*, and *Carya*, and bearing small, erumpent, subepidermal pustules. Widely distributed in North America; especially destructive in the Southeastern United States. Usually severe only in late summer when damage is not important. It is reported in Japan on *Castanea*.

*Castanea crenata:* Japan.

**Monochaetia unicornis** (Cke. & Ell.) Sacc. (xx) **cypress canker**

A wound parasite of *Cupressus* and related species, causing woody cankers often at branch crotches and hail wounds. It forms erumpent pustules on diseased bark and wood. Distributed in Eastern United States, Kenya, Tanganyika, New South Wales, and New Zealand.

*Chamaecyparis lawsoniana:* New Zealand.
*Cupressus duclouxiana:* Kenya.
*C. lusitanica:* Kenya, Tanganyika.
*C. lusitanica* var. *benthamii:* Kenya.
*C. macrocarpa:* New Zealand.
*C. sempervirens:* Kenya, New South Wales.
*C. sempervirens* f. *stricta:* Kenya.
*Juniperus procera:* Kenya.

**Monostichella robergei** (Desm.) Hoehn. (xx) **anthracnose**

Conidial pustules occur on *Carpinus* leaf spots, umber to subochraceous, without a distinct border line, 3 to 5 mm. across. On living or dying leaves. Known in North America and western Europe.

*Carpinus betulus:* Great Britain.

**Monostichella salicis** (West.) v. Arx (xxx) **willow anthracnose**

Forms conidial pustules on anthracnose leaf spots of *Salix*. Distributed in North America and Europe.

*Salix alba:* Austria, Denmark, Great Britain.
*S. caprea:* Great Britain.
*S. fragilis:* Great Britain, Denmark.
*S. rubens:* Denmark.

**Mycena citricolor** (Berk. & Curt.) Sacc. (xxx) **thread blight**

Also known as *Omphalia flavida* Maubl. & Rangel. A mushroom, small, yellow, rarely fully developed. The fungus forms threadlike strands of mycelium running over the surface of leaves and twigs of coffee and many other broad-leaved trees. Strands crossing each other often form sterile, light-colored pinlike masses in heavy shade. Conidia are produced by them in great numbers. Distributed widely in the West Indies and Central America, and in South America where coffee is grown.

*Andira inermis:* Puerto Rico.
*Coffea abeokutae:* Puerto Rico.

*C. arabica:* Colombia, Puerto Rico, Venezuela, West Indies.
*C. canephora:* Puerto Rico.
*C. canephora* var. *laurentii:* Puerto Rico.
*C. canephora* var. *robusta:* Trinidad.
*C. liberica:* Puerto Rico.
*Erythroxylon coca:* Peru.
*Inga vera:* Puerto Rico.
*Mangifera indica:* Puerto Rico.

**Mycosphaerella bambusifolia** Miyake & Hara (xx) **bamboo leaf spot**

Forms small perithecia on fuscous, often coalescent, leaf spots on *Phyllostachys* in Japan.
*Phyllostachys bambusoides:* Japan.
*P. nigra* var. *henonis:* Japan.

**Mycosphaerella caryophyllata** Bour. & Heim (xx) **leaf spot**

Associated with leaf spot of *Eugenia* in Madagascar.
*Eugenia caryophyllata:* Madagascar.

**Mycosphaerella castanicola** Kleb. (xx) **chestnut leaf spot**

Forms small rounded conidial pustules with pores emitting white tendrils of conidia; causes numerous yellow and brown spots on leaves of *Castanea* in Europe.
*Castanea sativa:* France, Germany, Great Britain.

**Mycosphaerella castillae** Stevenson & A. J. Wats. (xx) **leaf spot**

Associated with irregular, vein-limited, leaf spots, white with narrow brown borders on the upper surface and reddish brown below. On *Castilla* in Costa Rica.
*Castilla costaricana:* Costa Rica.

**Mycosphaerella coffeae** Noack (xx) **coffee leaf spot**

Associated with leaf spot of *Coffea* in Brazil and the Congo.
*Coffea arabica* var. *myrtifolia:* Congo.

**Mycosphaerella coffeicola** Cke. (xxx) **coffee leaf spot**

On rounded, brown leaf spots with narrow gray margins on *Coffea.* Distributed in Jamaica, El Salvador, Ecuador, Venezuela, Brazil, Congo, Uganda, Cameroons, Mauritius, and India.
*Coffea arabica:* El Salvador, Jamaica.

**Mycosphaerella cryptomeriae** Shirai & Hara (xx) **needle blight**

Causes needle blight of *Cryptomeria* seedlings, cuttings, and old trees. It is a wound parasite doing considerable damage. Known in Japan.
*Cryptomeria japonica:* Japan.

**Mycosphaerella elaeidis** (Beeli) Hendrickx (xx) **leaf spot**

Occurs on large, irregular, gray leaf spots on *Elaeis.* Known in the Congo.
*Elaeis guineensis:* Congo.

**Mycosphaerella gastonis** (Sacc.) Lindau (xx) **leaf spot**

Occurs on leaf spots, gray with slightly raised, reddish-brown edges on *Cocos*. Distributed in Samoa, Tahiti, Ceylon, Philippines, Madagascar, and Comoro Islands.

*Cocos nucifera:* Comoro Islands, Madagascar, Philippines.

**Mycosphaerella heimii** Bour. (xx) **leaf blight**

Occurs on blighted *Eucalyptus* leaves in Madagascar.

*Eucalyptus obliqua:* Madagascar.

**Mycosphaerella heveae** Petch (xx) **leaf spot**

Occurs on small, yellow leaf spots on *Hevea* which become purple or purplish brown and confluent. Known in Ceylon and Andaman Islands.

*Hevea brasiliensis:* Andaman Islands.

**Mycosphaerella heveicola** Saccas (xx) **leaf spot**

Occurs on yellow to grayish-brown spots with narrow dark edges and 0.5 to 1 cm. across. On *Hevea* in French Equatorial Africa.

*Hevea brasiliensis:* French Equatorial Africa.

**Mycosphaerella laricina** Hartig (xx) **larch needle spot**

Forms perithecia on brown spots on needles of *Larix* causing premature leaf fall. Known in Germany and Sweden.

*Larix decidua:* Germany, Sweden.
*L. leptolepis:* Germany.

**Mycosphaerella maculiformis** (Fr.) Schroet. (xx) **leaf spot**

Occurs on small, black, angular spots limited by veins on leaves of numerous broad-leaved temperate-zone trees. Has caused severe general defoliation in years of prolonged wet weather. Distributed in North America and Europe.

*Acer platanoides:* Denmark.
*Betula* sp.: Yugoslavia.
*Castanea* sp.: Denmark.
*C. sativa:* Italy.
*Inga vera:* Puerto Rico.
*Quercus* sp.: Denmark.
*Tilia* sp.: Denmark.
*Ulmus* sp.: Denmark.

**Mycosphaerella molleriana** Thuem. (xxx) **leaf spot**

Forms perithecia on brown spots with narrow, darker borders on leaves of *Eucalyptus*. Known in California, Portugal, and Tanganyika.

*Eucalyptus globulus:* Tanganyika.

**Mycosphaerella mori** (Fckl.) Lindau (xx) **leaf and fruit spot**

Develops perithecia on irregular pale-brown blotches on leaves and fruit spots on *Morus*. Distributed in the United States, Canada, South America, Europe, Uganda, Iran, India, and Japan.

*Morus* sp.: Austria, Brazil, France, Germany, Italy, Russia, Union of South Africa.
*M. alba:* China, India, Iran, Germany, Venezuela.
*M. indica:* Tanganyika.
*M. nigra:* Australia, Bulgaria, Denmark, Germany.

**Mycosphaerella nothofagi** (Speg.) comb. nov. Spaulding (xxx) **false beech leaf spot**

[Syn.: *Sphaerella nothofagi* Speg.]

Occurs on leaves of *Nothofagus* in Argentina.
*Nothofagus obliqua:* Argentina (Nahuel Huapi Lake).
*N. procera:* Argentina (Nahuel Huapi Lake).

**Mycosphaerella paulowniae** Shirai & Hara (xx) **leaf spot**

Occurs on leaf spots of *Paulownia* in Japan.
*Paulownia tomentosa:* Japan.

**Mycosphaerella perseae** Miles (xx) **avocado leaf spot**

Develops perithecia on large leaf spots, ashen above and brown beneath on *Persea* in Puerto Rico and Mexico.
*Persea americana:* Puerto Rico, Mexico.

**Mycosphaerella pinifolia** Ducom. (xxx) **needle blight**

The mycelium is mostly superficial and brown on needles of *Pinus* in France.
*Pinus pinaster:* France.

**Mycosphaerella platanifolia** Cke. (xxx) **leaf blight**

Causes a leaf blight of *Platanus* locally much like that due to *Gnomonia veneta.* The pathogen is known in the United States and Japan.
*Platanus* × *acerifolia:* Japan.
*P. orientalis:* Japan.

**Mycosphaerella populi** (Auers.) Schroet. (xxx) **leaf spot**

Develops perithecia on leaves of *Populus* in Europe and Argentina. Also reported in Alaska.
*Populus* × *canadensis:* Italy.
*P.* × *canadensis* var. *serotina:* Great Britain (Kew).
*P. nigra:* Germany, Great Britain, Italy, Russia.
*P. nigra* var. *italica:* Argentina.
*P. tremula:* Germany, Italy.

**Mycosphaerella populicola** G. E. Thompson (xxx) **leaf spot**

Forms spots 1 to 8 mm. across, reddish to dark brown with yellow borders on leaves of *Populus.* Distributed from Vermont to Michigan, Nebraska, Idaho, and Ontario; also reported in Italy.
*Populus* × *canadensis:* Italy.

**Mycosphaerella populorum** Thompson (xxx) **canker**

Causes spots 1 to 15 mm. across, reddish to dark brown with yellow edges on leaves and cankers on branches of *Populus*. The imperfect stage proved to be *Septoria musiva* Pk. It is widespread and indigenous in the United States and Canada on native poplars as a leaf spot, but is not known to form cankers on the native poplars. It is known in France and Argentina.

*Populus laurifolia:* Argentina.
*P. nigra* var. *italica:* Argentina.
*P. simonii:* Argentina.

**Mycosphaerella tabebuiae** Miles (xx) **leaf spot**

Associated with amphigenous, small, white, transparent spots with brown-purple borders on leaves of *Tabebuia* in Puerto Rico.

*Tabebuia haemantha:* Puerto Rico.

**Mycosphaerella togashiana** Ito & Kobayashi (xx) **leaf spot**

Occurs on leaves of *Populus* causing defoliation. Known in Japan.

*Populus alba:* Japan.
*P. simonii:* Japan.

**Mycosphaerella ulmi** Kleb. (xx) **leaf spot**

Forms perithecia on leaves of *Ulmus*. Widespread in North America and Europe.

*Ulmus* sp.: Germany, Norway.
*U. glabra:* Germany, Denmark.
*U. laevis:* Denmark.

**Mycosphaerella websteri** Wiehe (xxx) **leaf spot**

Causes round leaf spots, brown with gray centers. Defoliation often results. On *Aleurites* in Nyasaland.

*Aleurites montana:* Nyasaland.

**Mycosphaerella woronowii** Jacz. (xxx) **leaf blight**

Occurs on ochraceous spots with dark edges on leaves of *Juglans* in the Caucasus.

*Juglans regia:* Caucasus.

**Myrothecium roridum** Fr. (xxx) **coffee canker**

Causes stem canker, wilt, and leaf spot on *Coffea*. Distributed in the United States, Colombia, Europe, and Gold Coast.

*Coffea arabica:* Colombia.
*C. canephora* var. *robusta:* Colombia.
*C. liberica:* Colombia.

**Myxofusicoccum salicis** Died. (xxx) **willow dieback**

Causes anthracnose and dieback of *Salix* in the Netherlands.

*Salix alba:* Netherlands.

**Myxosporella schini** Carranza **canker**

Causes bark cankers on twigs and branches of *Schinus*, depressed, 1 to 2 mm. long, developing into white to pinkish cankers 0.5 cm. by 3 to 4 mm. The entire twig may die. The leaves show round, light brown spots 1 to 3 mm. Cankers form on petioles and midribs, similar to, but smaller than, those on twigs, and kill the leaves. Known in Argentina.

*Schinus molle:* Argentina.

**Myxosporium abietinum** Rostr. (xx) **root crown canker**

Associated with girdling at the root crown of conifers, and death of young trees. Known in Great Britain, Denmark, and Germany.

*Larix* sp.: Denmark.

**Myxosporium devastans** Rostr. (xxx) **dieback**

Causes dieback of *Betula* and *Acer* in Denmark and Iceland.

*Acer pseudoplatanus:* Denmark.
*Betula* sp.: Denmark, Iceland.
*B. pendula:* Denmark.

**Myxosporium hoheriae** J. D. Atk. (xx) **dieback**

Causes wilt and dieback induced by lesions under the bark. Proved a wound parasite on *Hoheria* and *Plagianthus* in New Zealand.

*Hoheria populnea:* New Zealand.
*H. sexstylosa:* New Zealand.
*Plagianthus betulinus:* New Zealand.

**Naemacyclus niveus** (Fr.) Sacc. (xxx) **pine needle cast**

Associated with needle cast of conifers, chiefly *Pinus* spp. Apothecia numerous, at first waxy and dark brown, later fading to the color of the deadened needles; bursting the epidermis along the stomatal lines. The fruiting discs are yellowish. Distributed in North America, western Europe, and north and central Africa.

*Abies pinsapo:* Spain.
*Pinus halepensis:* Africa (Tunis).
*P. mugo:* Denmark, Italy.
*P. nigra:* Czechoslovakia, Denmark, Germany, Italy.
*P. nigra* var. *poiretiana:* Germany.
*P. pinaster:* Belgium, France, Germany, Italy.
*P. pinea:* Germany.
*P. sylvestris:* England, France, Scotland.

**Napicladium celtidis** Cav. (xx) **leaf spot**

Forms conidial pustules on rounded to angular olivaceous spots on living leaves of *Celtis* in Italy.

*Celtis latifolia:* Italy (Catania).

**Nectria cinnabarina** Fr. (xx) **hardwoods wilt, dieback**

An active wound parasite of hardwoods with strains varying from saprophytic to aggressively parasitic. It has two growth stages; an early conidial form breaking through the epidermis as pustules exuding

586625—61——12

abundant pinkish spores; and a later ascogenous form with groups of tiny globular, cinnabar-red bodies crowded closely together on the surface of diseased bark or wood. It attacks numerous hardwoods in many countries. It is distributed generally in North America and Europe and is known in Brazil, Siberia, Ceylon, India, Japan, and New Zealand.

*Acer campestre:* Netherlands.
*A. cappadocicum* f. *rubrum:* Netherlands.
*A. lobelii:* Netherlands.
*A. palmatum:* Japan.
*A. palmatum* f. *atropurpureum:* Netherlands.
*A. palmatum* f. *sessilifolium:* Netherlands.
*A. platanoides:* Germany, Netherlands.
*A. platanoides* f. *schwedleri:* Netherlands.
*A. pseudoplatanus:* Germany, Great Britain, Netherlands.
*A. pseudoplatanus* f. *worleei:* Netherlands.
*Aesculus hippocastanum:* Denmark, Germany, Great Britain, Netherlands.
*Ailanthus altissima:* Belgium.
*Albizia julibrissin:* Japan.
*Carpinus betulus:* Netherlands.
*Fagus sylvatica:* Denmark.
*Fraxinus excelsior:* Germany.
*Juglans* sp.: Belgium, Czechoslovakia.
*Magnolia* sp.: Germany (Hamburg).
*Morus* sp.: France.
*M. alba:* Japan.
*Populus* ×*canadensis:* Italy.
*Quercus robur:* Germany.
*Tilia* ×*europaea:* Denmark.
*T. platyphyllos:* Germany (Hamburg).
*Ulmus carpinifolia:* Netherlands.
*U. carpinifolia* f. *sarniensis:* Netherlands.
*U. carpinifolia* var. *umbraculifera:* Netherlands.
*U.* ×*hollandica:* Netherlands.
*U. pumila:* Netherlands.

**Nectria coccinea** Fr. (xx) **hardwoods annual stem canker**

Causes annual bark lesions on stems of various hardwood trees. Distributed sparsely over North America, northern and central Europe, and is known in Brazil, Siberia, South Africa, Indonesia, and Tasmania.

*Acer negundo:* Denmark.
*Alnus glutinosa:* Denmark.
*Fagus sylvatica:* Denmark, Germany, Switzerland.
*Laburnum anagyroides:* Denmark.
*Populus balsamifera:* Netherlands.
*P.* ×*berolinensis:* Netherlands.
*P.* ×*canadensis* f. *erecta:* Netherlands.
*P.* ×*canadensis* var. *eugenei:* Netherlands.
*P.* ×*canadensis* f. *gelrica:* Netherlands.
*P.* ×*canadensis* var. *marilandica:* Netherlands.
*P.* ×*canadensis* var. *regenerata:* Netherlands.

*P.* ×*canadensis* var. *serotina:* Netherlands.
*P. deltoides:* Netherlands.
*P. fremontii:* Netherlands.
*P. fremontii* var. *wislizenii:* Netherlands.
*P. laurifolia:* Netherlands.
*P. maximowiczii:* Netherlands.
*P. nigra:* Netherlands.
*P. nigra* var. *betulifolia:* Netherlands.
*P. nigra* var. *elegans:* Netherlands.
*P. nigra* var. *italica:* Netherlands.
*P.* ×*robusta:* Netherlands.
*P. suaveolens:* Netherlands.
*P. trichocarpa:* Netherlands.
*P. tristis:* Netherlands.
*Tilia* ×*europaea:* Denmark.
*Ulmus* sp.: Netherlands.

**Nectria cucurbitula** Fr. (xx) **conifer dieback**

Dieback of firs, spruces, and pines originates in an injury to the bark giving entry of the fungus spores to the inner bark tissues. Apparently it is more prevalent in Europe than in North America. Wounds made by hail and insect feeding are especially favorable for fungus development. An area of bark is killed and enlarged until the stem is girdled and the tip killed back. Conifer dieback seems to be limited to North America and Europe.

*Abies alba:* Denmark, Norway, Scotland.
*A. nordmanniana:* Norway.
*Larix decidua:* Germany.
*Picea abies:* Czechoslovakia, Denmark, Germany, Great Britain.
*Pinus cembra:* Germany.
*P. mugo:* Denmark.
*P. sylvestris:* Norway, Sweden.

**Nectria ditissima** Tul. (xx) **hardwoods perennial canker**

Many hardwoods are affected by the large perennial canker with greatly swollen, irregular, callused edges; in North America and Europe generally. This canker is known in Brazil, South Africa, Madagascar, and Japan. It is severe on apple and has been called "European apple canker." There is uncertainty, both in Europe and America, as to the correct name for this pathogen.

*Acer pseudoplatanus:* Denmark.
*Aesculus hippocastanum:* Denmark.
*Albizia lebbek:* Madagascar.
*Alnus* sp.: Norway.
*A. glutinosa:* Denmark.
*Betula* sp.: Czechoslovakia.
*B. pubescens:* Norway.
*Carpinus* sp.: Czechoslovakia.
*C. betulus:* Belgium, Denmark.
*Corylus avellana:* Denmark.
*Fagus sylvatica:* Belgium, Czechoslovakia, Denmark, Germany, Great Britain, Hungary, Ireland, Japan, Sweden.
*Fraxinus* sp.: Great Britain, Ireland.
*F. excelsior:* Denmark, Great Britain.

*Juglans* sp.: Norway.
*Laburnum anagyroides:* Denmark.
*Platanus orientalis:* Denmark.
*Populus* sp.: Ireland.
*P. alba:* Denmark.
*P. balsamifera:* Denmark.
*P.* ×*canadensis:* Belgium, Italy.
*P. tremula:* Czechoslovakia.
*Quercus* sp.: Czechoslovakia.
*Q. robur:* Denmark.
*Salix alba:* Denmark.
*S. alba* var. *vitellina:* Denmark.
*Sorbus aucuparia:* Denmark.
*Tilia* sp.: Czechoslovakia.
*T. cordata:* Denmark.
*Ulmus glabra:* Denmark.

**Nectria dodgeii** Heiser (xx) **coffee canker**

A wound parasite of *Coffea* causing canker of stems where the bark was injured by rubbing to remove algae and lichens. It results in dieback of the distal tips. Known in Guatemala and El Salvador.

*Coffea arabica* var. *maragogipes:* Guatemala.

**Nectria galligena** Bres. (xx) **hardwoods perennial canker**

See discussion under *Nectria ditissima.* Possibly identical with that species. Distributed in North America, Europe, and Japan.

*Acer palmatum:* Japan.
*A. pseudoplatanus:* Germany.
*Alnus* sp.: Germany.
*Betula* sp.: Germany.
*B. pubescens:* Norway.
*Carpinus* sp.: Germany.
*C. betulus:* Japan.
*Crataegus oxyacantha:* Germany.
*Fagus sylvatica:* Belgium, Denmark, Germany, Japan.
*Fraxinus* sp.: Great Britain, Norway.
*F. bungeana:* Japan.
*F. excelsior:* Netherlands.
*Populus* ×*canadensis:* Germany, Netherlands.
*P. nigra:* Germany.
*Quercus glandulifera:* Japan.
*Q. rubra:* France.
*Salix* sp.: Germany, Netherlands.
*S. alba:* Netherlands.
*S. amygdalina:* Netherlands.
*S. purpurea:* Great Britain, Japan.
*Sorbus aria:* Germany.
*Tilia* sp.: Netherlands.

**Nectria haematococcus** (Berk. & Br.) Wr. (xx) **canker**

Associated with stem cankers of young trees of *Tectona* and *Pterospermum.* Distributed in India, Ceylon, Borneo, Mauritius, and Indonesia.

*Pterospermum acerifolium:* Mauritius.
*Tectona grandis:* India.

**Neopeckia coulteri** (Pk.) Sacc. (xx) **pine brown-felt blight**

A snow-mold fungus much like *Herpotrichia nigra*, which see for unusual conditions of occurrence and the general effect on the trees. *Neopeckia coulteri* seems to be limited to pines. The fungus forms a dense, felty growth of brown to blackish mycelium, on which small, black, globular perithecia are scattered. Microscopic examination is needed to distinguish the two fungi. *N. coulteri* is widely distributed in higher mountains in North America, Poland, and Romania.

*Pinus mugo* var. *pumilio:* Poland, Romania.

**Nothoravenelia japonica** Diet. (xxx) **rust**

Forms brown rust pustules on leaves of *Securinega* in China, Japan, and Manchuria.

*Securinega suffruticosa:* China, Japan, Manchuria.

**Nummularia regia** (de N.) Sacc. (xx) **canker**

A wound parasite forming large, black, thickened crusts under the epidermis of wounded bark on larger stems and branches of hardwoods. Distributed in Portugal.

*Castanea* sp.: Portugal.
*Fagus sylvatica:* Portugal.
*Platanus* sp.: Portugal.
*Quercus suber:* Portugal.

**Nyssopsora cedrelae** (Hori) Diet. (xxx) **rust**

Forms rust pustules on leaves of *Spondias* and *Toona* in China, India, and Japan.

*Toona serrata:* India.
*T. sinensis:* China, Japan.

**Ocellaria ocellata** (Fr.) Schroet. (xx) ———

Apparently a weak parasite accompanying and following the active parasite *Fusicladium saliciperda* Tub. on willow leaves and shoots. Distributed in the United States, Denmark, Norway, Finland, Austria, France, and Germany.

*Salix myrsinifolia:* Norway.

**Ochropsora ariae** (Fckl.) H. & P. Syd. (xxx) **rust**

Heteroecious. Forms minute, pale yellow rust pustules followed later by brown crustlike fungus mats in the leaves of *Sorbus*. Has the herb, *Anemone nemorosa*, as an alternate host. Distributed in Europe and Formosa.

*Sorbus aria:* Germany.
*S. aucuparia:* Denmark, Germany, Norway.
*S. torminalis:* Germany.

**Oidium ceratoniae** Comes (xxx) **powdery mildew**

Forms powdery mildew on leaves of *Ceratonia* that may fall prematurely and may weaken the trees. Known in France.

*Ceratonia siliqua:* France.

**Oidium eucalypti** Rostr. (xxx) **powdery mildew**

Forms powdery mildew on leaves of *Eucalyptus* seedlings. Known in Denmark and Italy.

*Eucalyptus* sp.: Denmark.
*E. camaldulensis:* Italy.

**Oidium heveae** Steinm. (xxx) **powdery mildew**

Forms powdery mildew on leaves of *Hevea.* Known in the Congo, Tanganyika, Ceylon, India, Indochina, Java, and Malaya.

*Hevea brasiliensis:* Ceylon, Congo, India, Indochina, Java, Malaya, Tanganyika.
*H. collina:* Java.
*H. guianensis:* Java.
*H. spruceana:* Java.

**Oidium japonicum** H. & P. Syd. (xxx) **oak powdery mildew**

Forms powdery mildew on leaves of *Quercus* in Japan.

*Quercus myrsinaefolia:* Japan.

**Oidium mangiferae** Arth.-Ber. (xxx) **mango powdery mildew**

Forms powdery mildew on inflorescences of *Mangifera* trees. Known in Florida, California, Jamaica, Guatemala, Tanganyika, and Mauritius; in the latter location in 1948 it was believed to be a recent introduction.

*Mangifera indica:* Guatemala, Jamaica, Mauritius, Tanganyika.

**Olivea capituliformis** Arth. (xxx) **rust**

Forms brown aecial and uredinial rust pustules on leaves of *Alchornea.* Distributed in Puerto Rico, Tortola Island, and Brazil.

*Alchornea iricurana:* Brazil.
*A. latifolia:* Puerto Rico.
*A. pycnogyne:* Brazil.

**Olivea petitiae** Arth. (xxx) **rust**

Forms brown rust pustules on leaves of *Petitia* in Puerto Rico.

*Petitia domingensis:* Puerto Rico.

**Olivea tectonae** (Rac.) Thirum. (xxx) **teak rust**

Forms brown rust pustules on leaves of *Tectona.* Causes defoliation of seedlings in India and Pakistan.

*Tectona grandis:* India, Pakistan.

**Olpidium brassicae** (Wor.) Dang. (xxx) **damping-off**

Causes damping-off of young plants, usually of the cabbage family. An instance was noted where it attacked the feeder rootlets of *Populus* in Italy. Such attacks on trees may be more common than is realized.

*Populus alba:* Italy.

**Omphalia campanella** (Fr.) Quél. (xx) **root rot**

A small agaric with pileus central-stemmed, cap 1 to 2 mm. wide, convex campanulate, thin, dull orange to reddish tinged, gills narrow, rigid, yellowish. Grows in dense clusters on decayed coniferous logs

and stumps. Has been found in recent years to be associated with decay of roots and butt rot of coniferous trees. Distributed in North American coniferous forests southward from Canada to Mexico and in the West Indies; also in Europe, Siberia, and India.

*Lagerstroemia speciosa:* India.

**Ophiobolus heveae** P. Henn. (xx) **leaf spot**

Occurs on gray, circular to effuse and confluent spots on leaves of *Hevea* in Brazil.

*Hevea brasiliensis:* Brazil.

**Panellus rupicola** (Mass.) Singer (xx) **canker**

Occurs on cankers of stems of *Cedrus*, 15- to 20-year-old poles dying in groups among healthy neighbors of the same species. Perfect fruiting bodies formed in pure cultures on pine wooden blocks. Known only in India.

*Cedrus deodara:* India.

**Paracapnodium brasilense** (Speg.) Toro (xxx) **coffee black spot**

Forms black fungus masses scattered over the leaf surface of *Coffea* in Colombia.

*Coffea arabica:* Colombia.

**Parasterina miconiae** (Th.) Toro (xxx) **black spot**

Forms black fungus colonies on the upper surface of leaves of *Miconia*. Known only in Venezuela.

*Miconia aeruginosa:* Venezuela.

**Parasterina mirabilis** Toro (xxx) **black spot**

Occurs in black colonies on the upper surface of leaves of *Eugenia* in Venezuela.

*Eugenia punicaefolia:* Venezuela.

**Parasterina montagnei** Toro (xxx) **black spot**

Similar to *Parasterina miconiae*, which see. Known on *Miconia* in Venezuela.

*Miconia aeruginosa:* Venezuela.

**Parasterina venezuelana** (Syd.) Toro (xxx) **black spot**

Similar to *Parasterina miconiae*, which see. Known on *Miconia* in Venezuela.

*Miconia* sp.: Venezuela.

**Pellicularia filamentosa** (Pat.) Rogers (xxx) **web blight**

Fruiting body a pale buff to cream color; effused, cobwebby, thin perforate membrane around the host stem at the soil surface, spore surface smooth. Commonly living on dead roots and plant remains mixed with the soil. Often parasitic on roots and stems of herbaceous plants and young tree seedlings causing considerable damage. Distributed widely in Canada and the United States, West Indies,

Central and South America, Europe, Africa, India, Japan, Malaya, Philippines, and Australia.

*Abies alba:* Switzerland.
*Aleurites montana:* Indochina.
*Altingia excelsa:* Java.
*Chamaecyparis obtusa:* Japan.
*Cinchona officinalis:* Peru.
*C. pubescens:* Peru, Philippines.
*Clerodendrum speciosissimum:* Gold Coast.
*Coffea arabica:* El Salvador, Jamaica, Tanganyika.
*Cryptomeria japonica:* Japan.
*Dalbergia sissoo:* India.
*Eucalyptus* sp.: Japan.
*Hevea benthamiana:* Costa Rica.
*H. brasiliensis:* Bolivia, Brazil, Ceylon, Colombia, Costa Rica, Honduras, Peru.
*H. guianensis* var. *lutea:* Peru.
*Larix leptolepis:* Belgium, Japan.
*Lonchocarpus utilis:* Peru.
*Murraya koenigii:* India.
*Olea laurifolia:* Union of South Africa.
*Picea abies:* Belgium, Norway, Switzerland.
*P. glehnii:* Japan.
*Pinus* sp.: Argentina.
*P. densiflora:* Japan.
*P. khasya:* Philippines.
*P. nigra* var. *poiretiana:* Belgium.
*P. sylvestris:* Belgium, Great Britain, Norway.
*P. thunbergii:* Japan.
*Pseudotsuga menziesii:* Belgium.
*Quercus* sp.: Great Britain.
*Robinia pseudoacacia:* Japan.
*Theobroma cacao:* Gold Coast.

**Pellicularia koleroga** Cke. (xxx) **thread blight**

Causes bark lesions on branches, and leaf blight by superficial fungus strands creeping over the surface in very moist locations. Apparently limited to warmer temperate and tropical climates both East and West. Known in the southern United States, Central America, West Indies, South America, Africa, India, East Indies, New Caledonia, and New Guinea.

*Areca cathecu:* Argentina.
*Canthium praviflorum:* India.
*Cinchona officinalis:* Guatemala, Peru.
*Coffea arabica:* Colombia, Costa Rica, Guatemala, India, Ivory Coast, Jamaica, Madagascar, New Caledonia, Peru, Puerto Rico, Venezuela.
*Cola nitida:* Ivory Coast.
*Dendrocalamus* sp.: India.
*Eugenia cumini:* Brazil.
*Garcinia mangostana:* Argentina.
*Hevea brasiliensis:* Argentina, East Indies.
*Ilex paraguariensis:* Argentina.

*Lawsonia inermis:* India.
*Mangifera indica:* Brazil.
*Theobroma cacao:* Brazil, Congo, Ivory Coast.

**Pellicularia rolfsii** (Curzi) West (xxx) **seedling blight**

Causes root-crown rot of many kinds of seedling trees in warmer climates. Distributed in southern United States, Mexico, El Salvador, Argentina, Brazil, Peru, Italy, Congo, Gold Cast, Mauritius, Senegal, Uganda, China, Ceylon, India, Japan, Philippines, Malaya and Australia.

*Aleurites montana:* Ceylon.
*Artocarpus heterophyllus:* Ceylon.
*Barringtonia speciosa:* Philippines.
*Bauhinia variegata* var. *candida:* Gold Coast.
*Berrya cordifolia:* Philippines.
*Brachychiton populneum:* Argentina.
*Cananga odorata:* Philippines.
*Casuarina equisetifolia:* Philippines.
*Cinchona officinalis:* Peru.
*Hevea brasiliensis:* East Indies.
*Persea americana:* El Salvador.
*Pterocarpus indicus:* Philippines.
*Sindora supa:* Philippines.
*Spathodea campanulata:* Philippines.
*Swietenia mahagoni:* Philippines.
*Terminalia catappa:* Philippines.

**Pericladium grewiae** Pass. (xxx) **smut**

Forms crowded cinnamon-brown fungus pustules appearing like mustard seed enclosed by a hard woody covering, 1 to 2 mm. in diameter, forming a long crack with 2 or 3 locules and setting free a brown-black powdery sporemass. On petioles and stems of *Grewia*. Known in India and Abyssinia; also in South Africa on *Piper* under the name *Xylosorium piperii* Zundel.

*Grewia villosa:* Abyssinia, India.

**Pericladium tiliacearum** Mundk. & Thirum. (xxx) **smut**

A second smut attacking woody plants. See description under *Pericladium grewiae*. Known in India on *Grewia*.

*Grewia rotundifolia:* India.
*G. tiliaefolia:* India.

**Periconia heveae** Stevenson & Imle (xxx) **blight**

Forms fungus pustules and causes severe spotting of leaves, petioles, and twigs of *Hevea* leading to defoliation. Known in Mexico, Costa Rica, and Brazil.

*Hevea benthamiana:* Costa Rica.
*H. brasiliensis:* Brazil, Costa Rica, Mexico.
*H. guianensis:* Costa Rica.
*H. spruceana:* Costa Rica.

**Peridermium cedri** (Barcl.) Sacc. (xxx) **needle rust**

Autoecious. Forms golden-yellow rust pustules on needles of *Cedrus*. Produces witches'-brooms and probably lives over winter in perennial leaves. Considerable damage is caused, even to death of some trees. Known in India and Pakistan.

*Cedrus deodara:* India, Pakistan.

**Peridermium guatemalense** Arth. & Kern (xxx) **pine needle rust**

Forms numerous amphigenous rust pustules on needles of *Pinus*, erumpent in longitudinal slits. Distributed in central Florida, southern Mexico, and Guatemala.

*Pinus montezumae:* Guatemala.

**Peridermium kurilense** Diet. (xxx) **blister rust**

Occurs on fusoid swellings of twigs of *Pinus* in Kurile Islands.

*Pinus pumila:* Kurile Islands.

**Peridermium mexicanum** Arth. & Kern (xxx) **pine gall rust**

Forms rounded, woody, 3 to 7 cm. galls on stems, with pale yellow blisters containing powdery yellowish spores breaking out of the bark. On *Pinus* in Mexico.

*Pinus oocarpa:* Mexico.

*P. patula:* Mexico.

**Peridermium montezumae** Cumm. (xxx) **pine needle rust**

Forms needle rust on *Pinus* in Guatemala and Honduras.

*Pinus montezumae:* Guatemala.

**Peridermium piceae-hondoensis** Diet. (xxx) **spruce leaf rust**

Forms rust on needles of *Picea* in Japan.

*Picea jezoensis* var. *hondoensis:* Japan.

**Peridermium pini-thunbergii** Diet. (xxx) **pine leaf rust**

Forms powdery yellow rust pustules on needles of *Pinus* in Japan.

*Pinus thunbergii:* Japan.

**Peridermium praelongum** Syd. (xxx) **pine leaf rust**

Forms rust pustules on needles of *Pinus* in Japan.

*Pinus thunbergii:* Japan.

**Peridermium thomsoni** Berk. (xxx) **spruce leaf rust**

Forms rust pustules on needles of *Picea* in India and Pakistan.

*Picea smithiana:* India, Pakistan.

**Pestalotia banksiana** Cav. (x) **leaf blight**

Forms conidial pustules in clusters of hyphae, usually gray in color. The conidia are fusiform with 3 or more septa and 2 or more setae on the apical cell. Associated with leaf blight of *Grevillea* in India.

*Grevillea robusta:* India.

**Pestalotia chamaecyparidis** Saw. (xx) **seedling blight**

See *Pestalotia banksiana* for general appearance. A wound parasite on young seedlings of *Chamaecyparis* causing blight. Known in Japan.

*Chamaecyparis obtusa:* Japan.

**Pestalotia clavispora** Atk. (xx) **oak leaf blight**

Forms fungus pustules on leaves of *Quercus*. Conidia 5-celled with 3 to 4 setae on the apical cell. Distributed in Alabama and India.

*Quercus leucotrichophora:* India.

**Pestalotia dichaeta** Speg. (xx) **leaf blight**

Occurs on spots on leaves of *Aleurites*. Causes premature defoliation in severe attacks. Conidia 5-celled with 2 apical setae. Known in French Equatorial Africa and Argentina.

*Aleurites fordii:* French Equatorial Africa.
*A. montana:* French Equatorial Africa.

**Pestalotia funerea** Desm. (xx) **blight**

See general account under *Pestalotia banksiana*. Associated with blight of leaves of various conifers and hardwoods. Spores 5-celled with 3 to 5 setae. Either there are numerous misidentifications of this fungus or there are strains varying considerably in their ability to attack living plants. High humidity seems necessary for successful inoculations to be made. Distributed very widely over the world. Specifically in North America, West Indies, Europe, Kenya, Union of South Africa, India, Japan, Philippines, and New Zealand.

*Casuarina leptoclada:* Union of South Africa.
*Chamaecyparis obtusa:* Japan.
*C. pisifera* f. *plumosa:* Denmark.
*C. pisifera* f. *squarrosa:* Denmark.
*Chrysobalanus icaco:* Puerto Rico.
*Clusia rosea:* Puerto Rico.
*Cryptomeria japonica:* Denmark.
*Cunninghamia lanceolata:* India.
*Cupressus lusitanica:* Union of South Africa.
*C. macrocarpa:* Kenya.
*C. sempervirens:* India.
*Ginkgo biloba:* Germany.
*Inga vera:* Puerto Rico.
*Juniperus bermudiana:* Bermuda.
*J. squamata:* Denmark.
*Mangifera indica:* Jamaica.
*Pinus canariensis:* Union of South Africa.
*P. massoniana:* Union of South Africa.
*P. pinaster:* Union of South Africa.
*P. roxburghii:* Union of South Africa.
*Pithecellobium unguis-cati:* Puerto Rico.
*Podocarpus falcatus:* Jamaica.
*Thuja orientalis:* Denmark.
*T. standishii:* Germany.

**Pestalotia hartigii** Tub. (x) **stem girdle**

See general account under *Pestalotia banksiana.* Found usually on nursery plants, the stems being girdled near the ground but continuing to grow above the constrictions. Apparently no successful inoculations have been made. It has been suggested that stem girdle is primarily due to high surface soil temperatures, but this is disputed where mulch was used for winter protection. The spores are 4-celled with 2 to 3 setae. Affects both conifers and hardwoods. Distributed in Oregon, most of Europe, and reported doubtfully in South Africa. Said to have caused much damage in Germany to natural beech reproduction, but the initial injury evidently was sunscald.

*Abies alba:* Denmark, Germany, Poland.
*Fagus sylvatica:* Belgium, Denmark, France, Germany, Poland.
*Fraxinus excelsior:* Germany.
*Olea laurifolia:* Union of South Africa.
*Picea abies:* Denmark, Germany, Norway, Poland.
*P. glauca:* Denmark.
*Pinus mugo:* Denmark.
*P. sylvestris:* Norway, Poland, Sweden.

**Pestalotia japonica** Syd. (xx) **blight**

See general account under *Pestalotia banksiana.* Conidia 5-celled with 3 to 4 setae. Occurs on dead brown marginal areas on living leaves of *Toona* in Japan.

*Toona sinensis:* Japan.

**Pestalotia lawsoniae** Mund. & Kheswalla (xx) **leaf blight**

Occurs on numerous circular spots, some coalescing into whitish to light brown patches. Spore pustules black, subepidermal, erumpent, minute. Conidia 5-celled, fusoid, constricted at the septa, three median cells olivaceous, setae 2 and widely divergent. On leaves of *Lawsonia* in India.

*Lawsonia inermis:* India.

**Pestalotia lucumae** Tehon (x) **leaf blight**

Associated with black leaf spots, 2 to 5 mm. across. Forms fungus pustules, erumpent, white to gray, 0.5 to 2 mm. in diameter. Conidia 4-septate, slightly constricted. On leaves of *Pouteria* in Puerto Rico.

*Pouteria multiflora:* Puerto Rico.

**Pestalotia micheneri** Guba (x) **leaf spot**

Forms fungus pustules on leaves of *Araucaria.* Conidia 5-celled, narrowly fusoid, tapering at both ends, median cells dilutely olivaceous, with 3 erect setae. Distributed in Pennsylvania and in India.

*Araucaria* sp.: India.

**Pestalotia molleriana** Thuem. (xx) **leaf spot**

Forms fungus pustules on spots 1 to 2 cm. across, chestnut colored with red edges, on *Eucalyptus* leaves. Conidia fusiform, 4-septate, with 2 to 3 setae. Distributed in Portugal, France, and Uruguay.

*Eucalyptus obliqua:* Uruguay.

**Pestalotia palmarum** Cke. (xx) **palm leaf spot**

Associated with pale, dead patches with definite reddish-brown edges, on leaves of numerous palms. Conidia fusiform, 5-celled, with 2 or 3 apical setae, often knobbed. A wound parasite that has been found causing infection also through the stomata. Distributed in Pennsylvania and Florida, West Indies, Central America, Colombia, Italy, widely in Africa, Asia, and Pacific Islands.

*Acrocomia aculeata:* Puerto Rico.
*Areca cathecu:* India, Puerto Rico.
*Borassus flabellifer:* India, Pakistan.
*Cocos nucifera:* Andaman Islands, Ceylon, Colombia, East Indies, El Salvador, Gold Coast, India, Indochina, Jamaica, Malaya, Mauritius, Mozambique, New Guinea, Puerto Rico, Seychelles, Siam, Tanganyika.
*Elaeis guineensis:* Congo.
*Phoenix canariensis:* Italy.
*P. reclinata:* Puerto Rico.
*P. sylvestris:* India.

**Pestalotia populi-nigrae** Saw. & Ito (xx) **shoot blight**

Associated with severe wilt of current-year shoots of *Populus nigra* planted as windbreaks and shelterbelts. Well-defined brown lesions form on shoots and leaves on the diseased bark die. The disease spreads rapidly in infected stems, often girdling and killing them. Losses may be quite heavy. Inoculations made with wounds were successful, but not without wounds. Distributed in Japan.

*Populus maximowiczii:* Japan.
*P. nigra:* Japan.
*P. simonii:* Japan.

**Pestalotia shiraiana** P. Henn. (xx) **needle blight**

A wound parasite entering wounded needles and causing needle blight of seedlings, cuttings, and old trees of *Cryptomeria.* Known in Japan.

*Cryptomeria japonica:* Japan.

**Pezicula carpinea** (Fr.) Tul. (xx) **canker**

A tiny, yellowish, shallow, cuplike fungus growing in crowded groups on diseased bark of *Carpinus.* It has been proved to be an active wound parasite on trees of all ages. Distributed in eastern North America and in Europe where it is reported destructive to 70- and 80-year-old trees.

*Carpinus betulus:* Germany.

**Pezicula livida** (Berk. & Br.) Rehm (xx) **canker**

A small, cuplike fungus growing on diseased bark of *Abies*, *Picea*, and *Pinus* weakened by drought, frost, etc. Distributed in North America and Europe.

*Abies alba:* Germany.
*Picea abies:* Germany.
*P. sitchensis:* Great Britain.

**Phacidiopycnis pseudotsugae** (M. Wils.) Hahn (xx) **conifer canker**

Forms abundant fungus pustules on dead areas of bark of numerous conifers. Saprophytic and parasitic in Northeastern United States, Western Europe, and New Zealand. The ascogenous fungus *Phacidiella coniferarum* Hahn, known only in Maine, has been connected culturally with this imperfect fungus. In the absence of the perfect stage in foreign countries, it is believed best to use the name *Phacidiopycnis pseudotsugae* to avoid confusion until the ascogenous stage is discovered there.

It has been proved that the two species *Phomopsis pseudotsugae* Wilson and *P. strobi* Syd. are synonymous with *Phacidiopycnis pseudotsugae*.

*Abies alba:* Great Britain to Czechoslovakia.
*Cedrus atlantica:* Great Britain to Czechoslovakia.
*C. deodara:* Great Britain to Czechoslovakia.
*C. libanensis:* Great Britain, Europe.
*Larix decidua:* Great Britain to Czechoslovakia.
*L. leptolepis:* Czechoslovakia, Germany, Great Britain, Netherlands, Norway, Sweden.
*L. sibirica:* Great Britain to Czechoslovakia.
*Picea abies:* Sweden.
*Pinus canariensis:* New Zealand.
*P. mugo:* Europe.
*P. muricata:* New Zealand.
*P. radiata:* New Zealand.
*Pseudolarix amabilis:* Europe.
*Tsuga sieboldii:* Great Britain to Czechoslovakia.

**Phacidium infestans** Karst. (x) **conifer snow blight**

Form small, subepidermal, discoid, black perithecia on the lower side of needles of conifers. These are followed by small, black sclerotia. Needles of all ages may be infected under snow covering them late in spring and leading to high humidity and cool but not freezing temperatures under the snow. Distributed in North America and Europe.

*Juniperus sabina:* Sweden.
*Picea abies:* Sweden.
*Pinus cembra:* Sweden.
*P. mugo* var. *rostrata:* Norway.
*P. nigra:* Sweden.
*P. sylvestris:* Finland, Norway, Sweden.

**Phaeocryptopus nudus** (Pk.) Petr. (xx) **fir leaf cast**

Associated with needle cast on *Abies*. Distributed in North America from New Brunswick and Ontario southward to North Carolina. Also in the British Isles, Russia, Switzerland, and Siberia.

*Abies alba:* Great Britain, Switzerland.
*A. sibirica:* Russia, Siberia.

**Phaeosaccardinula seaveriana** Toro (x) **black mildew**

Forms effuse, cinereous-olive fungus webs over the entire upper surface of leaves of *Erythrina* in Puerto Rico.

*Erythrina glauca:* Puerto Rico.

**Phakopsora cheoana** Cumm. (xxx) **rust**

Forms brown rust pustules on leaves of *Toona* in China.
*Toona sinensis:* China.

**Phakopsora malloti** Cumm. (xxx) **rust**

Forms brown rust pustules on leaves of *Mallotus* in China.
*Mallotus* sp.: China.

**Phleospora aceris** (Lib.) Sacc. (x) **maple leaf spot**

Associated with spots of leaves and cotyledons of seedlings of *Acer*. Destructive to young seedlings. Distributed in North America and Europe.
*Acer campestre:* Great Britain.
*A. pseudoplatanus:* Great Britain.

**Phleospora multimaculans** Heald & Wolf (xxx) **leaf spot**

Forms minute chestnut-colored spots on leaves of *Juglans* often over the entire leaf surface. In nurseries it causes much defoliation. Known in Texas and Argentina.
*Juglans nigra:* Argentina.

**Phleospora parcissima** Hoehn. (xxx) **leaf spot**

Associated with rounded brown spots on leaves of *Aesculus*. Known in Austria and Germany.
*Aesculus hippocastanum:* Austria.

**Phleospora platanoidis** Kab. & Bub. (xx) **maple leaf spot**

Occurs on small, roundish, ochraceous spots, about 2 mm. wide on leaves of *Acer* in Europe.
*Acer platanoides:* Great Britain.
*A. platanoides* f. *rubrum:* Czechoslovakia.

**Phleospora pseudoplatani** Bub. (xx) **leaf spot**

Occurs on very small red or brown spots, on leaves and cotyledons of *Acer*. Distributed in North America and Europe.
*Acer platanoides:* Denmark.
*A. pseudoplatanus:* Czechoslovakia.

**Phlyctaena cinchonae** Vincens (xx) **leaf spot**

Conidial pustules are associated with roughened, cankered areas on bark of *Cinchona* branches in Indochina.
*Cinchona officinalis:* Indochina.
*C. pubescens:* Indochina.

**Pholiota adiposa** (Fr.) Quél. (xx) **trunk rot**

Forms umbrella-shaped fruiting bodies, yellow, viscid, 3 to 12 cm. across, with ferruginous scales above, fleshy, with a yellow ring on the stem and ferruginous spores. A wound parasite entering the trunk through frost cracks and dead branch stubs, and causing a brown mottled heart rot of the white-rot type in broad-leaved and coniferous trees. Distributed in North America, Europe, Japan, and New Zealand.
*Abies alba:* Germany.
*Fagus sylvatica:* Germany.

**Pholiota aegerita** (Brig.) Quél. (xx) **heart rot**

Associated with root rot of *Populus* in Europe. See *Pholiota adiposa* for shape, size, and general appearance. A wound parasite infecting wood and pith. Known in the Great Lakes States of North America and in France and Italy.

*Populus deltoides:* Italy.

**Pholiota aurivella** (Fr.) Quél. (xx) **heart rot**

See *Pholiota adiposa* for general appearance. A wound parasite causing serious decay of wood in living trees, both deciduous and coniferous. Distributed in Canada, the United States, Europe, and India.

*Abies alba:* Yugoslavia.
*Fagus sylvatica:* Yugoslavia.
*Fraxinus* sp.: Yugoslavia.

**Pholiota destruens** (Brond.) Gill. (xx) **heart rot**

A wound parasite of the common agaric shape, pallid to wood-brown, with large, white, floccose patches and fibrillose scales. On *Populus*, *Betula*, *Fagus*, *Salix*, and *Larix* causing heart rot. Distributed in Canada, United States of America, and Europe.

*Betula* sp.: Great Britain.
*Larix gmelinii:* Russia.
*Populus* sp.: Great Britain, Netherlands.
*Salix* sp.: Great Britain.

**Phoma cinchonae** Vincens (xx) **leaf spot**

Forms erumpent subepidermal pustules associated with dying of young plants of *Cinchona* in Indochina.

*Cinchona officinalis:* Indochina.
*C. pubescens:* Indochina.

**Phoma cryptomeriae** Kawamura (xx) **needle blight**

Conidial pustules are associated with needle blight of *Cryptomeria* seedlings, cuttings and old trees. It is a wound parasite. Known in Japan.

*Cryptomeria japonica:* Japan.

**Phoma strobiligena** Desm. (xx) **cone necrosis**

Conidial pustules are immersed in necrotic spots on green cones of conifers. Distributed widely in the United States and Europe.

*Pinus cembra* var. *sibirica:* Russia.
*P. griffithii:* Great Britain (Kew).
*P. sylvestris:* Great Britain (Kew).

**Phomopsis abietina** (Hartig) Wilson & Hahn (xx) **fir canker**

A fungus that causes girdling canker of *Abies* and kills branches and stems of young trees. Distributed in Europe, *not* in North America. Earlier entry concerning this fungus in Agriculture Handbook No. 100, p. 30, 1956, is in error in listing *Juniperus virginiana* and *Pseudotsuga menziesii* as hosts and in stating that this fungus is in North America.

*Abies alba:* Czechoslovakia, Denmark, France, Germany, Great Britain, Switzerland.

**Phomopsis cinerescens** (Sacc.) Trav. (xx) **canker**

Associated with large cankers on branches of *Ficus* girdling and killing them. Distributed in Maryland, Europe, and Brazil.

*Ficus* sp.: Brazil.
*F. carica:* France, Italy.

**Phomopsis heveae** (Petch) Boed. (xx) **seedling dieback**

Causes dieback of *Hevea* seedlings. Pathogenic to unthrifty plants in Java.

*Hevea brasiliensis:* Java.

**Phomopsis juniperovora** Hahn (xxx) **juniper and cypress blight**

Blight of junipers and cypress species in seed and transplant beds is serious from the Middle West to the Atlantic coast in the United States. Losses may be very high. Resinous cankers of the stems cause death of affected branches and trees. It is also reported but not confirmed in New Zealand, Mozambique, Netherlands, France, and Denmark.

*Cryptomeria japonica:* Mozambique.
*Juniperus* sp.: Netherlands.
*Thuja* sp.: Netherlands.

**Phomopsis oncostoma** (Thuem.) Hoehn. (x) **bark necrosis**

Associated with necrosis of bark and cambium, and wilting of leaves of *Robinia*. Inoculations showed pathologic action, more intense on weakened trees than on vigorous ones. Distributed in Eastern United States and in Europe.

*Robinia pseudoacacia:* Italy.

**Phomopsis salicina** (Westd.) Died. (xx) ———

Associated with death of stems and branches of *Salix* in the United States and Europe.

*Salix alba:* Great Britain.
*S. caprea:* Great Britain.
*S. viminalis:* Great Britain.

**Phragmidiella africana** Cumm. (xxx) **rust**

Forms cinnamon-brown, minute, powdery rust pustules on the lower surface of leaves of *Stereospermum* in Sierra Leone and Uganda.

*Stereospermum acuminatissimum:* Sierra Leone.
*S. junthianum:* Uganda.

**Phragmidiella heterophragmae** Mund & Thirum. (xxx) **rust**

Forms rust pustules on leaves of *Heterophragma* in India.

*Heterophragma roxburghii:* India.

**Phragmidiella markhamiae** P. Henn. (xxx) **rust**

Forms brown rust pustules on leaves of *Markhamia* in Tanganyika.

*Markhamia sansibarica:* Tanganyika (Usambara).

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**Phragmocauma kolowratiae** Syd. (xx) **black spot**

Forms black somewhat convex fungoid spots on leaves of *Kolowratia* in the Philippines.

*Kolowratia elegans:* Philippines.

**Phyllachora aberiae** P. Henn. (xxx) **black spot**

Forms black cushionlike fungus masses about 1 mm. in diameter on both sides of leaves of *Dovyalis* in the Transvaal.

*Dovyalis caffra:* Transvaal.

**Phyllachora acaciae** P. Henn. (xxx) **black spot**

Forms small, circular, shiny-black spots on both sides of leaves of *Acacia.* Distributed in Mexico, West Indies, Ecuador, and Venezuela.

*Acacia acuifera:* Bahamas.
*A. amentacea:* Mexico.
*A. choriophylla:* Bahamas.
*A. farnesiana:* Puerto Rico, Cuba, Ecuador.
*A. macracantha:* Venezuela.
*A. unijuga:* Mexico.

**Phyllachora afzeliae** Syd. (xxx) **black spot**

Forms shining, black, convex spots on leaves of *Intsia* on Guam and in the Philippines.

*Intsia bijuga:* Guam, Philippines.

**Phyllachora balansae** Speg. (xxx) **black spot**

Forms small, shiny-black, fungus cushions on leaf spots 0.5 to 2 cm. across on *Cedrela.* Distributed in Argentina, Brazil, Venezuela, and Puerto Rico.

*Cedrela mexicana:* Brazil, Puerto Rico, Venezuela.

**Phyllachora biareolata** Speg. (xxx) **black spot**

Forms black cushionlike fungus masses on circular brown leaf spots on *Eugenia.* Distributed in Argentina, Brazil, and St. Croix Island.

*Eugenia rhombea:* Virgin Islands (St. Croix).

**Phyllachora canarii** P. Henn. (xxx) **black spot**

Forms fungus mats, black, rounded, 1.5 to 2.5 mm. across, on both sides of *Canarium* leaves in the Philippines.

*Canarium laciniatum:* Philippines.
*C. luzonicum:* Philippines.
*C. perkinsiae:* Philippines.
*C. villosum:* Philippines.

**Phyllachora catervaria** (Berk.) Sacc. (xxx) **black spot**

Forms round, black, cushionlike fungus masses on leaves of *Ficus.* Distributed in India, Pakistan, Philippines, Java, and Amboina.

*Ficus hispida:* Pakistan, India.
*F. merrillii:* Philippines.

**Phyllachora elmeri** Syd. (xxx) **black spot**

Forms black fungus masses on *Ficus* leaves in the Philippines.
*Ficus blepharostoma:* Philippines.
*F. manilensis:* Philippines.
*F. minahassae:* Philippines.
*F. ulmifolia:* Philippines.

**Phyllachora eugeniae** Chardon (xxx) **black spot**

Forms black fungus bodies on both sides of leaves of *Eugenia* in Puerto Rico.
*Eugenia rhombea:* Puerto Rico.

**Phyllachora genipae** F. L. Stevens & Dalbey (xxx) **black spot**

Forms black spots on *Genipa* leaves in Puerto Rico.
*Genipa americana:* Puerto Rico.

**Phyllachora gratissima** Rehm (xxx) **black spot**

Forms black fungus bodies on red-brown leaf spots on *Persea*. Sometimes causes defoliation. Distributed in Costa Rica, Guatemala, West Indies, Colombia, Ecuador, and Venezuela.
*Persea americana:* Colombia, Dominican Republic, Guatemala, Jamaica, Puerto Rico, Venezuela.

**Phyllachora hakeae** P. Henn. (xxx) **black spot**

Forms black fungus bodies on both leaf surfaces of *Hakea* in Australia.
*Hakea myrtioides:* Australia.

**Phyllachora inclusa** (Berk. & Curt.) Sacc. (xxx) **black spot**

Forms small black cushionlike fungus bodies on both sides of leaves of *Jacquinia*. Distributed in Puerto Rico, Guatemala, Nicaragua, and Paraguay.
*Jacquinia berterii:* Puerto Rico.

**Phyllachora lactea** Th. & Syd. (xxx) **black spot**

Forms black fungus bodies on red-brown spots on *Dalbergia* leaves in Tanganyika and the Gold Coast.
*Dalbergia saxatilis:* Gold Coast.

**Phyllachora laurinearum** Rac. (xxx) **black spot**

Forms rounded, black, fungus masses on leaves of *Litsea* in Java.
*Litsea chrysocoma:* Java.
*L. tetranthera:* Java.

**Phyllachora lepida** Syd. (xxx) **black spot**

Forms black fungus bodies on leaves of *Litsea* in the Philippines.
*Litsea tayabensis:* Philippines.

**Phyllachora litseae** Koord. (xxx) **black spot**

Forms black cushionlike fungus bodies on indefinite yellowish spots on leaves of *Litsea* and *Nectandra* in Java and Colombia.
*Litsea polyantha:* Java.
*Nectandra glabrescens:* Colombia.

**Phyllachora machaeriicola** (P. Henn.) Th. & Syd. (xxx) **black spot**

Forms tar spot of leaves of *Machaerium.* Known in Colombia and Venezuela.

*Machaerium humboldtianum:* Colombia, Venezuela.
*M. moritzianum:* Venezuela.
*M. robiniaefolium:* Venezuela.

**Phyllachora maprouneae** P. Henn. (xxx) **black spot**

Forms black tar spot on yellowish to violet leaf spots on *Maprounea* in Peru.

*Maprounea surinamensis:* Peru.

**Phyllachora miconiicola** Speg. (xxx) **black spot**

Forms tar spot on *Miconia* leaves in Costa Rica.

*Miconia* sp.: Costa Rica.

**Phyllachora mulleri** Chardon (xxx) **black spot**

Forms amphigenous shiny-black fungus colonies 1.5 to 3 mm. in diameter with numerous spore-bearing cavities on *Eugenia* in Brazil.

*Eugenia dodonaefolia:* Brazil.

**Phyllachora nectandrae** F. L. Stevens & Dalbey (xxx) **black spot**

Forms shiny, black, cushionlike fungus masses on brown spots on the upper surface of *Nectandra* leaves. Known in Puerto Rico and St. Thomas in the Virgin Islands.

*Nectandra coriacea:* Virgin Islands (St. Thomas).
*N. patens:* Puerto Rico.

**Phyllachora oblongispora** Syd. (xxx) **black spot**

Forms black spots on living leaves of *Dipterocarpus* in the Philippines.

*Dipterocarpus hasseltii:* Philippines.
*D. subalpinus:* Philippines.

**Phyllachora ocoteicola** F. L. Stevens & Dalbey (xxx) **black spot**

Forms black spots, 2 to 4 mm. across, with fungus pustules on leaves of *Ocotea* in Puerto Rico and Dominican Republic.

*Ocotea* sp.: Dominican Republic.
*O. leucoxylon:* Puerto Rico.

**Phyllachora panamensis** Chardon (xxx) **black spot**

Forms shiny black spots, convex, scattered, coalescing in groups of 3 to 5 on the lower leaf surface. On *Bauhinia* and *Rourea.* Known in Venezuela and Dominican Republic.

*Bauhinia cumanensis:* Venezuela.
*Rourea glabra:* Dominican Republic.

**Phyllachora parkiae** P. Henn. (xxx) **black spot**

Forms shiny black fungus spots on yellowish leaf spots on leaves of *Parkia* in the Philippines.

*Parkia javanica:* Philippines.

**Phyllachora perforans** (Rehm) Sacc. & Syd. (xxx) **black spot**

Forms black spots on leaves of *Abrus* and *Dalbergia*. Known in Puerto Rico and Brazil.

*Abrus praecatorius:* Puerto Rico.

**Phyllachora pseudes** Rehm (xxx) **black spot**

Forms black fungus growths with spore pustules on leaves of *Ficus* in the Philippines.

*Ficus nota:* Philippines.

**Phyllachora roystoneae** Johnston & Bruner (xxx) **black spot**

Forms conspicuous black carbonaceous fungus growths on midribs of leaves of *Roystonea* in Cuba.

*Roystonea regia:* Cuba.

**Phyllactinia fraxini** (DC.) Homma (xxx) **powdery mildew**

Macroscopically similar to *Phyllactinia guttata*, which see. The two fungi can be identified only microscopically. *P. fraxini* attacks the leaves of *Alnus*, *Fraxinus*, *Juglans*, and *Magnolia*. Known in eastern Siberia, Japan, and China.

*Alnus cremastogyne:* China.
*A. japonica:* Japan.
*Fraxinus championii:* China.
*F. chinensis:* China.
*F. mandshurica:* Siberia.
*Juglans ailantifolia:* Japan.
*Magnolia kobus:* Japan.
*M. obovata:* Japan.
*M. stellata:* Japan.

**Phyllactinia guttata** (Fr.) Lév. (xxx) **powdery mildew**

Forms a white, powdery coating with minute, globular, dark-colored perithecia scattered over the white fungus weft. On the lower leaf surface of many broadleaf trees in the North Temperate Zone, resulting in defoliation. Distributed generally in North America, Europe, and Asia. Reported also in Argentina and Madagascar.

*Ailanthus altissima:* China.
*Alangium platanifolium:* China.
*Alnus cremastogyne:* China.
*A. formosana:* Formosa.
*A. glutinosa:* Poland.
*A. incana:* Denmark, Japan, Norway, Poland.
*A. japonica:* Japan.
*A. maritima:* Japan.
*A. nepalensis:* China.
*Amelanchier asiatica:* Japan.
*Betula pendula:* Denmark, Norway, Poland.
*B. pubescens:* Denmark, Japan, Norway.
*Broussonetia kazinoki:* Japan.
*B. papyrifera:* China, Japan.
*Carpinus betulus:* Denmark.
*Castanea crenata:* Japan.

*C. mollissima:* China.
*Cedrela macrocarpa:* China.
*Corylus avellana:* Denmark, France, Norway, Poland.
*Crataegus monogyna:* Poland.
*Diospyros kaki:* China, Japan.
*D. lotus:* China.
*Fagus sylvatica:* Denmark, Germany, Norway.
*Firmiana platanifolia:* China.
*Fraxinus excelsior:* Denmark, France, Norway, Poland.
*F. mandshurica:* Japan.
*F. ornus:* Denmark.
*Gleditsia sinensis:* China.
*Hamamelis japonica:* Japan.
*Juglans regia:* India.
*Kalopanax pictus:* China.
*Lindera* sp.: China.
*Magnolia denudata:* Japan.
*M. kobus:* Japan.
*Melia azedarach:* China.
*Morus* sp.: Indochina.
*M. alba:* China, India, Japan, Pakistan, Russia.
*M. australis:* China.
*Paulownia tomentosa:* Japan.
*Picrasma quassioides:* Japan.
*Populus tomentosa:* China.
*Pterocarya stenoptera:* China.
*Pyracantha* sp.: China.
*Quercus aliena:* China.
*Sorbus aucuparia:* Norway.
*Tectona grandis:* India.
*Toona sinensis:* China.

**Phyllactinia moricola** (P. Henn.) Homma (xxx) **powdery mildew**

A segregate from *Phyllactinia guttata* apparently limited to *Morus* spp. as hosts. Distributed in Formosa, China, and Japan.
*Morus alba:* China.
*M. alba* var. *multicaulis:* Japan.
*M. argutidens:* Japan.
*M. australis:* China, Japan.

**Phyllactinia salmonii** Blumer (xxx) **powdery mildew**

Forms powdery mildew coating on leaves of *Actinidia* and *Paulownia* in China.
*Paulownia tomentosa:* China.

**Phyllosticta aceris** Sacc. (xxx) **maple leaf spot**

Forms pale yellow spots bearing pycnidia, on leaves of *Acer*. Distributed in France, Denmark, Great Britain, Italy, and Russia.
*Acer campestre:* Great Britain.
*A. platanoides:* Russia.

**Phyllosticta aesculana** Oud. (xxx) **leaf spot**

Forms pycnidia on leaf spots on *Aesculus* in Netherlands.
*Aesculus hippocastanum:* Netherlands.

**Phyllosticta aleuritidis** Saccas & Drouillon (xxx) **tung leaf spot**

Associated with large necrotic spots killing the leaves of *Aleurites*. Very serious damage is caused. Known in French Equatorial Africa.
*Aleurites fordii:* French Equatorial Africa.

**Phyllosticta alnea** Oud. (xxx) **alder leaf spot**

Occurs on pale rust-colored spots on leaves of *Alnus* in the Netherlands. Also reported in Alaska.
*Alnus glutinosa:* Netherlands.

**Phyllosticta alnigena** Theum. (xxx) **leaf spot**

Occurs on large, ochraceous, concentrically zoned spots on leaves of *Alnus*. Distributed in Italy, Portugal, and Estonia.
*Alnus* sp.: Estonia.

**Phyllosticta alniperda** Oud. (xxx) **leaf spot**

Associated with brown spots with black margins on leaves in the Netherlands.
*Alnus glutinosa:* Netherlands.

**Phyllosticta aquifolina** Grove (xxx) **holly leaf spot**

Occurs on small spots 1 to 3 mm. across, grayish with a dark brown border, on leaves of *Ilex* in Great Britain.
*Ilex aquifolium:* Great Britain (Kew).

**Phyllosticta arbuti** (Desm.) Sacc. (xxx ) **leaf spot**

Associated with small fuliginous spots on leaves. Known in France and Great Britain.
*Arbutus unedo:* Great Britain.

**Phyllosticta associata** Bub. (xxx) **oak leaf spot**

Forms small 0.5 to 1 mm. angular brown spots limited by veins, on leaves in Bohemia.
*Quercus robur:* Czechoslovakia.

**Phyllosticta azevinhi** Torrend (xxx) **leaf spot**

Occurs on purple-brown spots on leaves of *Ilex* on Madeira Island.
*Ilex azevinho:* Portugal (Madeira Island).

**Phyllosticta bauhiniae** Cke. (xxx) **leaf spot**

Associated with irregular brown spots on leaves of *Bauhinia* in Venezuela and India.
*Bauhinia purpurea:* India.

**Phyllosticta bauhinicola** P. Henn. (xxx) **leaf spot**

Occurs on circular dark fuscous spots on leaves of *Bauhinia* in Brazil.
*Bauhinia* sp.: Brazil (Sao Paulo).

**Phyllosticta bellunensis** Mart. (xxx) **elm leaf spot**

Associated with large brown spots on leaves of *Ulmus*. Distributed in Italy, Poland, Russia, and Great Britain.

*Ulmus* sp.: Great Britain.

*U. laevis:* Russia (Kazan).

**Phyllosticta betulina** Sacc. (xxx) **birch leaf blight**

Not associated with leaf spots, but widely scattered over the surface of living and dying leaves of *Betula*. Distributed in New York and Oklahoma; and in France, Great Britain, Germany, Italy, and Latvia.

*Betula* sp.: Great Britain.

**Phyllosticta bixina** E. Young (xxx) **leaf spot**

Occurs on pale yellow spots with purplish-black margins on leaves of *Bixa*. Known in Puerto Rico and Dominican Republic.

*Bixa orellana:* Dominican Republic, Puerto Rico.

**Phyllosticta brasiliensis** Linder (xxx) **leaf spot**

Forms black, globose, erumpent spore pustules causing serious damage to seedlings of *Araucaria* in Brazil.

*Araucaria angustifolia:* Brazil.

**Phyllosticta bresadoleana** Bud. & Kab. (xxx) **oak leaf spot**

Occurs on brown or yellow-gray spots with narrow brown-purple margins on *Quercus* in Austria.

*Quercus pubescens:* Austria (Tyrol).

**Phyllosticta buxina** Sacc. (xxx) **box leaf spot**

Occurs on pale brown spots with distinct dark purple margins on leaves of *Buxus*. Known in Italy, Netherlands, Great Britain, and Portugal.

*Buxus sempervirens:* Great Britain, Spain.

**Phyllosticta camoensis** Del. (xxx) **coffee leaf spot**

Occurs on white, thickened spots on leaves of *Coffea* in tropical Africa.

*Coffea camoensis:* Africa.

**Phyllosticta campestris** Pass. (xxx) **maple leaf spot**

Occurs on small red to red-brown spots on leaves of *Acer*. Known in France and Austria. Also reported on seedlings in England.

*Acer campestre:* Great Britain.

**Phyllosticta catalpicola** Oud. (xxx) **catalpa leaf spot**

Forms pale yellow spots on leaves of *Catalpa* in the Netherlands.

*Catalpa bignonioides:* Netherlands.

**Phyllosticta cinchonaecola** Vincens (xxx) **leaf spot**

Occurs on circular, deep brown patches with violet borders, on leaves of *Cinchona* in Indochina. Young leaves are deformed and growing shoots are involved, stunting the plants.

*Cinchona officinalis:* Indochina.

*C. pubescens:* Indochina.

**Phyllosticta cinnamomi** Del. (xxx) **leaf spot**

Occurs on dull yellow spots on leaves of *Cinnamomum* in India.
*Cinnamomum zeylanicum:* India.

**Phyllosticta cinnamomi-glanduliferi** P. Henn. (xxx) **leaf spot**

Occurs on circular, dull brown spots on leaves of *Cinnamomum* in Germany and Russia.
*Cinnamomum camphora:* Russia.
*C. glanduliferum:* Germany.

**Phyllosticta coccolobae** Ell. & Ev. (xxx) **leaf spot**

Occurs on round, purplish spots 3 to 5 mm. across on leaves of *Coccoloba* in the Bahamas and Puerto Rico.
*Coccoloba uvifera:* Bahamas, Puerto Rico.

**Phyllosticta cocos** Cke. (xxx) **palm leaf spot**

Associated with pale brown spots on leaves of *Cocos* and *Caryota.* Distributed in Italy, India, and Pakistan.
*Caryota* sp.: Pakistan.
*Cocos nucifera:* India.

**Phyllosticta coffeicola** Speg. (xxx) **coffee leaf spot**

Occurs on leaves of *Coffea* in Costa Rica, Brazil, Congo, Malaya, and India.
*Coffea arabica:* India, Congo.

**Phyllosticta cytisi** Desm. (xxx) **leaf spot**

Associated with grayish-brown spots on leaves of *Laburnum.* Distributed in France, Great Britain, Denmark, Italy, Belgium, and Austria.
*Laburnum anagyroides:* Denmark, Great Britain.

**Phyllosticta destruens** Desm. (xxx) **leaf spot**

Occurs on whitish spots on leaves of *Celtis* and *Prunus.* Distributed widely in Europe.
*Celtis australis:* Denmark.

**Phyllosticta draconis** Berk. (xxx) **leaf spot**

Associated with irregular pale brown spots with purple margins on leaves of *Dracaena* and *Cordyline.* Distributed in Great Britain, France, Finland, and Portugal.
*Dracaena cooperi:* Great Britain.
*D. draco:* Portugal.

**Phyllosticta eriodendri** Died. (xxx) **leaf spot**

Associated with leaf spots 4 to 10 mm. across, light brown with indefinite margins, on *Ceiba* in India.
*Ceiba pentandra:* India.

**Phyllosticta erythrinicola** Young (xxx) **leaf spot**

Occurs on leaf spots, small, with sordid-white centers, brown with age and falling out, on *Erythrina*. Very common in all parts of Puerto Rico, causing serious spotting of foliage. Also known in Venezuela.

*Erythrina glauca:* Venezuela.
*E. poeppigiana:* Puerto Rico.

**Phyllosticta eucalypti** Thuem. (xxx) **leaf spot**

Occurs on large, dull brown to grayish-white spots on leaves of *Eucalyptus*. Distributed in California, Russia, Denmark, Spain, Portugal, Algeria, and Australia.

*Eucalyptus gigantea:* Denmark.

**Phyllosticta fagi** Oud. (xxx) **beech leaf spot**

Occurs on pale brown spots on leaves of *Fagus* in the Netherlands.

*Fagus sylvatica:* Netherlands.

**Phyllosticta faginea** Bres. (xxx) **beech leaf spot**

Occurs on small, dull brown spots on leaves of *Fagus*. Distributed from New York to Wisconsin, Indiana, and Missouri in the United States. Also reported in Germany.

*Fagus sylvatica:* Germany.

**Phyllosticta ginkgo** Brun. (xxx) **leaf spot**

Occurs on irregular, ashy spots with dark reddish-brown edges on leaves and fruits of *Ginkgo*. Distributed in Indiana, Pennsylvania, and the District of Columbia; also in France and Russia.

*Ginkgo biloba:* Russia (Caucasus).

**Phyllosticta haynaldii** Roum. & Sacc. (xxx) **holly leaf spot**

Occurs on indefinite dull red spots on leaves of *Ilex*. Distributed in Georgia, West Virginia, France, Germany, Denmark, and Great Britain.

*Ilex aquifolium:* Denmark, Great Britain.

**Phyllosticta heveae** Zimm. (xxx) **leaf spot**

Causes marginal or apical brown patches on leaves of young trees of *Hevea*. Distributed in Java, Philippines, Malaya, India, Ceylon, Uganda, Congo, Trinidad, and Brazil.

*Hevea brasiliensis:* Brazil, Ceylon, Congo, India, Java, Malaya, Philippines, Uganda.
*H. guianensis:* Brazil, Ceylon, India, Java, Malaya.

**Phyllosticta honbaensis** Vincens (xxx) **leaf spot**

Occurs on leaves of *Cinchona* in Indochina.

*Cinchona officinalis:* Indochina.
*C. pubescens:* Indochina.

**Phyllosticta kuwacola** K. Hara (xxx) **leaf spot**

Associated with spots, minute, brown, later cinereous with concentric zones on leaves, shoots, and twigs of *Morus* in Japan. Causes considerable damage.

*Morus alba:* Japan.

**Phyllosticta laurina** Alm. (xxx) **leaf spot**

Occurs on irregular, dull brown spots with dark edges, on leaves of *Laurus* in Portugal.

*Laurus nobilis:* Portugal (Lisbon).

**Phyllosticta lentisci** (Pass.) Allesch. var. **maculicola** Bub. (xxx) **leaf spot**

Forms fungus pustules on small ashy spots on leaves of *Pistacia* in Texas, Italy, and Montenegro.

*Pistacia lentiscus:* Yugoslavia (Montenegro).

**Phyllosticta leucadendri** P. Henn. (xxx) **leaf spot**

Occurs on circular brown leaf spots on *Melaleuca* in Austrialia.

*Melaleuca leucadendron:* Australia (North Queensland).

**Phyllosticta metrosideri** Brun. (xxx) **leaf spot**

Forms fungus pustules on circular pale gray-brown spots with red-brown margins on leaves of *Metrosideros* in Tahiti.

*Metrosideros villosa:* Tahiti.

**Phyllosticta microspora** Saccas & Drouillon (xxx) **tung leaf spot**

Occurs on leaves of *Aleurites* in French Equatorial Africa.

*Aleurites fordii:* French Equatorial Africa.

*A. montana:* French Equatorial Africa.

**Phyllosticta microstegia** Syd. (xxx) **leaf spot**

Occurs on leaves of *Barringtonia* in the Philippines.

*Barringtonia racemosa:* Philippines.

**Phyllosticta negundicola** Speg. (xxx) **leaf spot**

Associated with minute ochraceous spots on leaves of *Acer* in France.

*Acer negundo:* France.

**Phyllosticta orni** Bub. (xxx) **ash leaf spot**

Forms fungus pustules on circular dull yellow spots with narrow brown margins on leaves of *Fraxinus* in Hungary.

*Fraxinus ornus:* Hungary.

**Phyllosticta paulowniae** Sacc. (xxx) **leaf spot**

Occurs on *Paulownia* on rather large leaf spots, ochraceous, rounded, with a sinuous margin and a very narrow brown border. Distributed in Alabama, District of Columbia, France, Italy, Germany, Russia, and Great Britain.

*Paulownia tomentosa:* France, Great Britain, Italy.

**Phyllosticta pithecolobii** Young (xxx) **leaf spot**

Occurs on leaf spots 5 to 10 mm. across, yellowish-brown to white in center, margin slightly raised and darker. Fungus pustules mostly along leaf veins. On *Pithecellobium.* Known in Puerto Rico, Virgin Islands, and Venezuela.

*Pithecellobium ligustrinum:* Venezuela.
*P. unguis-cati:* Puerto Rico, Virgin Islands (St. Croix).

**Phyllosticta populina** Sacc. (xxx) **poplar leaf spot**

Occurs on small spots, 2 to 3 mm. across, with yellow borders, later brown or gray with darker margins, on leaves of *Populus.* Distributed in the United States and Europe.

*Populus* sp.: Germany.
*P.* × *canadensis:* Italy.
*P.* × *canadensis* var. *serotina:* Great Britain.
*P. deltoides:* Norway.
*P. nigra:* Great Britain, Italy.
*P. nigra* var. *italica:* Denmark.

**Phyllosticta prominens** Oud. (xxx) **leaf spot**

Associated with leaf spots of *Populus* in Netherlands.

*Populus balsamifera:* Netherlands.

**Phyllosticta robiniae** Sacc. (xxx) **leaf spot**

Occurs on irregular, rufescent spots on leaves in Italy.

*Robinia pseudoacacia:* Italy (Conegliano).

**Phyllosticta rondeletiae** Tassi (xxx) **leaf spot**

Forms fungus pustules on red then ashy-white spots on leaves of *Rondeletia* in Italy.

*Rondeletia odorata:* Italy (Siena).

**Phyllosticta salicicola** Thuem. (xxx) **willow leaf spot**

Occurs on rounded grayish-white spots on leaves of *Salix.* Distributed in Connecticut, Idaho, and Wisconsin; also widely in Europe.

*Salix* sp.: Germany.
*S. amygdalina:* Denmark.
*S. cinerea:* Denmark.

**Phyllosticta salisburiae** Tassi (xxx) **ginkgo leaf spot**

Forms fungus pustules on leaf spots with dry centers and yellowish margins on *Ginkgo* in Italy.

*Ginkgo biloba:* Italy.

**Phyllosticta sapotae** Sacc. (xxx) **leaf spot**

Occurs on circular deep-brown spots with ashy-brown margins, on leaves of *Achras* in the Bahamas and Ceylon.

*Achras zapota:* Bahamas.

**Phyllosticta swietenia** Garcia (xx) **leaf spot**

Occurs on discolored areas on leaf margins; the yellow to brown areas gradually extend toward the petioles and leaves finally drop. The disease broke out among 6-month-old seedlings of *Swietenia*. Excessive moisture and dense shading favored infection. Known in Puerto Rico. The fungus is described in English without the Latin version required by the International Rules of Botanical Nomenclature.

*Swietenia mahagoni:* Puerto Rico.

**Phyllosticta talae** Speg. (xxx) **leaf spot**

Occurs on circular, ashy-colored spots on leaves of *Celtis* in Argentina.

*Celtis tala:* Argentina (Buenos Aires).

**Phyllosticta tectonae** Syd. & Butl. (xxx) **teak leaf spot**

Occurs on leaves of *Tectona* in India.

*Tectona grandis:* India.

**Phyllosticta terminaliae** P. Henn. (xxx) **leaf spot**

Occurs on rounded, dark olive spots with reddish outer edges on leaves in the Congo.

*Terminalia baumii:* Congo.

**Phyllosticta theobromae** Alm. & Camara (xxx) **cacao leaf spot**

Occurs on large, irregular spots on leaves. Distributed in Dominican Republic, Sao Tomé, Java, and Ceylon.

*Theobroma cacao:* Dominican Republic, Sao Tomé.

**Phyllosticta tiliae** Sacc. & Speg. (xxx) **linden leaf spot**

Occurs on dry, pale, ochraceous spots with dark margins, on leaves of *Tilia*. Distributed in North America from New York to Florida and westward to Wisconsin and Manitoba; also in Europe.

*Tilia* sp.: France.
*T. cordata:* Great Britain.
*T.* × *europaea:* Great Britain.
*T. platyphyllos:* Denmark.

**Phyllosticta trappenii** Oud. (xxx) **ash leaf spot**

Forms fruiting bodies on large, ochraceous, emarginate spots on leaves of *Fraxinus* in the Netherlands.

*Fraxinus americana* var. *juglandifolia:* Netherlands.

**Phyllosticta triacanthi** Sacc. (xxx) **honeylocust leaf spot**

Forms yellowish-brown, irregular spots with brown edges on leaves in Italy.

*Gleditsia triacanthos:* Italy.

**Phyllosticta ulmicola** Sacc. (xxx) **elm leaf spot**

Occurs on dry, ochraceous spots on leaves. Known in Italy and Portugal.

*Ulmus procera:* Portugal.

**Phyllosticta yerbae** Speg. (xxx) **leaf spot**

Occurs on definite, circular, dull brown spots on leaves of *Ilex* in Argentina.

*Ilex paraguariensis:* Argentina.

**Phyllosticta yersini** Vincens (xxx) **leaf spot**

Forms fungus pustules on leaves and young shoots of *Cinchona* in Indochina.

*Cinchona officinalis:* Indochina.
*C. pubescens:* Indochina.

**Phyllosticta yulan** Tassi (xxx) **leaf spot**

Associated with large pale brown spots on leaves of *Magnolia* in Italy. Called destructive.

*Magnolia denudata:* Italy.

**Phyllostictina artocarpina** (Syd. & Butl.) Syd. (xxx) **leaf spot**

Occurs on circular white spots with broad dark margins on leaves of *Artocarpus* in India.

*Artocarpus heterophyllus:* India.

**Phyllostictina murrayae** Syd. (xxx) **leaf spot**

Occurs on rounded spots 3 to 5 mm. in diameter, ochraceous brown to light tobacco brown, on leaves of *Murraya* in India.

*Murraya koenigii:* India.

**Physalospora abdita** (Berk. & Curt.) N. E. Stevens (xx) **canker**

Forms perithecia on diseased bark of affected trees. It occurs on many trees in tropical regions causing cankers, leaf blight, and root rot. Usually it lives as a saprophyte, but is able to become aggressively parasitic on wounded trees. Distributed in North America, South Africa, Australia, China, and India.

*Acacia decurrens:* Union of South Africa.
*A. decurrens* var. *mollis:* Union of South Africa (Transvaal and Natal).
*Myristica fragrans:* India.
*Pinus caribaea:* Australia (Queensland).

**Physalospora cinchonae** Vincens (xxx) **blight**

Forms perithecia on leaves in Indochina.

*Cinchona officinalis:* Indochina.
*C. pubescens:* Indochina.

**Physalospora cryptomeriae** Hara (xxx) **needle blight**

Forms perithecia on blighted leaves in Japan.

*Cryptomeria japonica:* Japan.

**Physalospora eucalyptorum** Turconi (xxx) **blight**

Associated with blight of 2- to 3-year seedlings in Italy.

*Eucalyptus citriodora:* Italy.
*E. ficifolia:* Italy.
*E. salicifolia:* Italy.

**Physalospora gregaria** Sacc. (xx) **yew canker**

Occurs on cankers of broad-leaved trees, and varieties occur on *Taxus* with leaf and tip blight. Known in the United States, Argentina, and Europe.

*Populus balsamifera:* Argentina.
*Salix amygdalina:* Scotland.
*S. viminalis:* Scotland.

**Physalospora gregaria** Sacc. var. **foliorum** Sacc. (xx) **yew canker**

Occurs on cankers of yew in Scotland. See *Physalospora gregaria* for description.

*Taxus baccata:* Scotland.

**Physalospora gregaria** Sacc. f. **taxi** Feltg. (xx) **yew canker**

See *Physalospora gregaria* for description. Associated with bark cankers of yew in Luxemburg.

*Taxus baccata:* Luxemburg.

**Physalospora juglandis** Syd. & Hara (xx) **canker**

Forms perithecia on cankered bark of branches in Japan.

*Juglans ailantifolia:* Japan.

**Physalospora miyabeana** Fukushi (xxx) **willow canker**

Forms conidial pustules on elliptical whitish-gray stem lesions 5 to 30 mm. long, with black borders, on *Salix*. Widely distributed in North America; also in Japan, Great Britain, and Poland.

*Salix alba:* Great Britain.
*S. alba* var. *vitellina:* Great Britian.
*S. amygdalina:* Great Britain.
*S. purpurea:* Great Britain, Japan.
*S. viminalis:* Great Britain.

**Physalospora mutila** N. E. Stevens (xx) **elm dieback**

A wound parasite causing dieback of branches of *Ulmus* in Italy. Inoculations in wounds succeeded.

*Ulmus glabra:* Italy.

**Physalospora perseae** Doidge (xxx) **avocado canker**

Causes cankers of twigs and branches. Known in Peru, Union of South Africa, Mozambique, and Tanganyika.

*Mangifera indica:* Union of South Africa.
*Persea americana:* Peru, Mozambique, Tanganyika, Union of South Africa.

**Physalospora populina** Maubl. (xx) **poplar canker**

Forms perithecia on stem cankers. Serious on young seedlings. Known in France and Italy.

*Populus × canadensis:* France, Italy.

**Physalospora rhodina** (Berk. & Curt.) Cke. (xx) **dieback, root rot**

Forms numerous black fungus pustules embedded in bark of diseased twigs. Associated with dieback of branches and root root. Generally distributed in the Tropics on many broad-leaved trees. Mostly saprophytic, but occasionally becomes aggressively parasitic in pruning wounds and similar injuries. Distributed in West Indies, northern South America to Brazil, Java, Sumatra, India, Ceylon, Malaya, Philippines, Fiji, and central Africa.

*Albizia falcata:* Sumatra.
*A. moluccana:* Sumatra.
*A. sumatrana:* Sumatra.
*Aleurites fordii:* India.
*A. montana:* Indochina.
*Araucaria cunninghamii:* Australia (Queensland).
*Ceiba pentandra:* India.
*Cinchona pubescens:* Madagascar.
*Cocos nucifera:* El Salvador, Jamaica.
*Cola acuminata:* Gold Coast.
*Hevea brasiliensis:* Andaman Islands, Brazil, Congo, East Indies, French Equatorial Africa, Gold Coast, India, Indochina, Malaya, Uganda.
*Inga edulis:* El Salvador.
*Mangifera indica:* Brazil, India.
*Persea americana:* Peru.
*Theobroma cacao:* Brazil, Colombia, Congo, Dominican Republic, Gold Coast, Jamaica, Ivory Coast, Peru, Samoa, Sao Tomé, Tanganyika, Trinidad, Uganda, Venezuela, West Indies (St. Lucia).

**Physalospora salicis** (Fckl.) Sacc. (xx) **willow dieback**

Occurs on dieback twigs. Distributed in Ontario and northern Europe.

*Salix* sp.: Netherlands, Norway.
*S. alba* var. *vitellina:* Germany, Netherlands.
*S. rubra:* Denmark.
*S. viminalis:* Denmark.

**Physalospora tabebuiae** Rehm (xxx) **leaf spot**

Occurs on leaf spots in Brazil.

*Tabebuia heterophylla:* Brazil.

**Phytophthora cactorum** (Leb. & Cohn) Schroet. (xxx) **seedling blight**

Known in Europe for many years, causing damping-off of young seedlings of broad-leaved trees and conifers; on cotyledons and first leaves this fungus blights the entire plant. Known in North America but not as damaging as in Europe. Older trees are girdled at the base. The disease is prevalent practically wherever trees are planted extensively in Europe, eastern Asia, Africa, and South and North America. The fungus lives in soil and usually causes root rot or bark

canker near the soil. The fungus is believed to have come to North America from the Old World many years ago.

*Abies alba:* Denmark, Germany.
*A. firma:* Japan.
*Acer* sp.: Germany.
*A. palmatum:* Japan.
*A. pseudoplatanus:* Scotland.
*Aleurites montana:* Indochina.
*Betula* sp.: Japan.
*Brachychiton populneum:* Argentina.
*Castanea crenata:* France.
*C. sativa:* France.
*Chamaecyparis obtusa:* Japan.
*Fagus sylvatica:* Belgium, Denmark, France, Germany, Great Britain, Japan, Yugoslavia.
*Fraxinus bungeana:* Japan.
*F. mandshurica:* Japan.
*Hevea brasiliensis:* Ceylon, India, Java.
*Juniperus procera:* Tanganyika.
*Larix decidua:* Germany, Great Britain.
*L. leptolepis:* Japan.
*Persea americana:* Peru.
*Picea abies:* Germany, Norway.
*P. jezoensis* var. *hondoensis:* Japan.
*Pinus* sp.: Germany, Japan.
*P. mugo:* Denmark.
*Quercus* sp.: Scotland.
*Robinia pseudoacacia:* Hungary.
*Schinus molle:* Argentina.
*Theobroma cacao:* Congo, West Indies.

**Phytophthora cambivora** (Petri) Buis. (xxx) **root rot**

Causes destructive root rot of trees, chiefly chestnut, in Europe. Known as ink disease from the black exudate from cankered roots and bases of diseased trees. Has been disastrous on Corsica and in Coruna Province, Spain, the populace having been left destitute by the extensive dying of chestnut. Distributed widely in chestnut-growing regions of Europe. Also reported in Mauritius.

*Castanea × coudercii:* Portugal.
*C. crenata:* France, Great Britain.
*C. mollissima:* France.
*C. sativa:* Corsica, France, Great Britain, Italy, Portugal, Spain.
*Casuarina equisetifolia:* Mauritius.
*Fagus sylvatica:* Great Britain.
*Juglans regia:* Italy.
*Quercus robur:* Great Britain.

**Phytophthora cinnamomi** Rands (xxx) **root rot**

Causes root rot of numerous broad-leaved and coniferous tree seedlings, and dying of bark at ground level with liquid exudation in older trees. Death often results. This disease is very widespread on all the continents.

*Betula pendula:* Portugal.

586625—61——14

*Castanea* × *coudercii:* Portugal.
*C. crenata:* Great Britain.
*C. sativa:* Argentina, England, New South Wales, Portugal, Spain.
*Chamaecyparis lawsoniana:* Netherlands.
*Cinchona officinalis:* Guatemala, India, Malaya, Peru (Tingo Maria).
*C. pubescens:* Guatemala, India, Malaya, Peru.
*Cinnamomum burmannii:* East Indies.
*C. camphora:* Sumatra.
*C. culilawan:* Sumatra.
*C. sintok:* Sumatra.
*C. zeylanicum:* Sumatra.
*Cupressus* sp.: Argentina.
*Eucalyptus* sp.: Australia.
*Fagus sylvatica:* Great Britain.
*Jacaranda* sp.: Australia.
*Juglans regia:* Portugal, Spain.
*Nectandra sinuata:* Honduras.
*Ocotea architectorum:* Peru.
*Olea* sp.: Australia.
*Persea americana:* Argentina, Australia, Costa Rica, Honduras, Mexico, Peru, Puerto Rico, Union of South Africa.
*P. schiedeana:* Mexico.
*Platanus orientalis:* Argentina.
*Quercus pyrenaica:* France.
*Q. robur:* France, Portugal.
*Q. suber:* Portugal.
*Taxus baccata:* Netherlands.
*Thuja* sp.: Argentina.

**Phytophthora citrophthora** (R.E. & E.H.Sm.) Leonian (xxx)

Parasitic on green fruits of numerous broad-leaved and *Araucaria* trees in North America and Argentina.

*Araucaria angustifolia:* Argentina.
*Bauhinia candicans:* Argentina.
*Brachychiton acerifolium:* Argentina.
*B. populneum:* Argentina.
*Celtis australis:* Argentina.
*Juglans regia:* Argentina.
*Melia azedarach:* Argentina.
*Pinus halepensis:* Argentina.
*P. pinea:* Argentina.
*Zanthoxylum coco:* Argentina.

**Phytophthora palmivora** Butl. (xxx) rot

Causes a very serious bud rot of palms and leaf rot and bark canker of cacao, *Hevea*, and other important trees of the Tropics around the world. Tremendous damage has been inflicted.

*Aleurites fordii:* India.
*Archontophoenix alexandrae:* Philippines.
*Areca cathecu:* India, Ceylon, Pakistan.
*Artocarpus altilis:* Ceylon, Dominican Republic.

*A. heterophyllus:* India.
*Borassus flabellifer:* India.
*Brachychiton populneum:* Argentina.
*Chrysalidocarpos lutescens:* Philippines.
*C. madagascariensis:* Philippines.
*Cinchona officinalis:* Philippines.
*C. pubescens:* Philippines.
*Cocos nucifera:* Andaman Islands, Brazil, Ceylon, Fiji Islands (Tonga), India, Mauritius, New Guinea, Philippines, Puerto Rico, Seychelles, Jamaica, St. Lucia.
*Elaeis guineensis:* Congo.
*Ficus* sp.: Japan.
*F. carica:* Formosa.
*F. retusa:* India.
*Hevea brasiliensis:* Andaman Islands, Borneo, Brazil, Ceylon, Congo, Costa Rica, Gold Coast, India, Indochina, Java, Liberia, Malaya, Philippines.
*Howea belmoreana:* France.
*H. forsteriana:* Italy.
*Livistona rotundifolia:* Philippines.
*Mangifera indica:* India, Philippines.
*Persea americana:* Honduras.
*Pinanga insignis:* Philippines.
*Rhopalostylis baueri:* France.
*Sabal causiarum:* Puerto Rico.
*Santalum album:* India.
*Theobroma cacao:* Belgian Congo, Brazil, British Guiana, Ceylon, Colombia, Dominican Republic, Fiji Islands, Gold Coast, Guadeloupe, Guatemala, India, Jamaica, Java, Leeward Islands (Dominica), Mexico, New Guinea, New Hebrides, Peru, Philippines, San Thomé, St. Lucia Island, Siam, Tanganyika, Tobago, Trinidad, Uganda, Venezuela, West Africa (Sao Tomé).

**Phytophthora parasitica** Dast. (xxx) **canker, blight**

Causes stem canker of seedlings and blight of branches of numerous trees including conifers. Distributed in California and Florida southward in Central America, West Indies, South America, and in Europe, Africa, and Australia.

*Araucaria excelsa:* Peru.
*Brachychiton populneum:* Argentina.
*Cinchona officinalis:* Costa Rica, Guatemala, Peru, Puerto Rico.
*C. pitayensis:* Colombia.
*C. pubescens:* Colombia, Costa Rica, Guatemala, Peru, Puerto Rico.
*Cocos nucifera:* Jamaica.
*Cryptomeria japonica:* Argentina.
*Eucalyptus citriodora:* Brazil.
*E. viminalis:* Argentina.
*Juglans regia:* Australia (Victoria).
*Melia azedarach:* Argentina.
*Pinus halepensis:* Argentina.
*Schinus molle:* Argentina.

**Phytophthora quininea** Crandall (xxx) **root rot**

Causes root and collar rot of *Cinchona*. Distributed in Central America, West Indies, Bolivia, and Peru.

*Cinchona micrantha:* Peru.
*C. officinalis:* Bolivia, Guatemala, Peru, Puerto Rico.
*C. pubescens:* Guatemala, Peru, Puerto Rico.

**Phytophthora syringae** Kleb. (xxx) **blight, dieback**

Causes leaf blight and dieback of *Castanea* and other broad-leaved trees in the United States and Europe.

*Castanea crenata:* Great Britain.
*C. sativa:* Great Britain.
*Fagus sylvatica:* Great Britain.

**Pileolaria standleyi** Cummins (xxx) **pistache rust**

Forms cinnamon-brown to chestnut-brown rust pustules on leaves, petioles, and young branches (the latter are deformed) of *Pistacia* in Guatemala.

*Pistacia mexicana:* Guatemala.

**Pileolaria terebinthi** (DC.) Cast. (xxx) **pistache rust**

Forms rust pustules on leaves of *Pistacia*. Known in China, Dalmatia, and Morocco.

*Pistacia chinensis:* China.
*P. terebinthus:* Morocco.
*P. weinmannifolia:* China.

**Placosphaeria durionis** Syd. (xxx) **black spot**

Forms dark fungus pycnidia on leaves in the Philippines.

*Durio zibethinus:* Philippines.

**Placosphaeria tiliae** Bub. (xxx) **linden leaf spot**

Occurs on brown, then yellowish, spots on leaves in Hungary.

*Tilia cordata:* Hungary.

**Pleospora erythrina** Ces. (xx) **leaf spot**

Associated with gray spots with dark borders on leaves of *Erythrina* in Italy.

*Erythrina crista-galli:* Italy.

**Pleurotus dryinus** Fr. (xx) **heart rot**

A wound parasite of hardwoods, of the mushroom type with vertical spore-bearing gills under the cap, and a lateral stem. Causes a white rot. Distributed widely in North America, Europe, India, and Philippines.

*Carpinus betulus:* Russia (Caucasus).
*Fraxinus* sp.: Great Britain.
*Quercus* sp.: Great Britain.
*Salix* sp.: Great Britain.

**Pleurotus lampas** Berk. (xx) **butt rot**

A wound parasite causing rot of trees of *Eucalyptus* at the ground level. Distributed widely in Australia and in Tasmania.

*Eucalyptus* sp.: Australia (Queensland, New South Wales, Victoria, West and South Australia), Tasmania.

**Pleurotus mitis** (Fr.) Quél. (xx) **canker**

A small wound parasite of mushroom type with vertical gills beneath, white to rufescent, stem lateral, common on coniferous stumps and occasional on living trees causing long bark cankers and splitting of the entire trunk. Distributed in North America and Europe.

*Abies alba:* Switzerland.
*Picea abies:* Switzerland.

**Pleurotus ostreatus** (Fr.) Quél. (xx) **trunk rot**

A common mushroom, usually saprophytic but occasionally a wound parasite on broad-leaved and coniferous trees. Distributed in North America, South America, Europe, Asia, North Africa, and South Australia.

*Ficus carica:* North Africa.
*Salix babylonica:* China.

**Pleurotus salignus** (Fr.) Quél. (xx) **trunk rot**

A wound parasite with vertical spore-bearing gills beneath the eccentrically stemmed cap; gills branched in the middle and dingy-fuliginous. Cap cinereous or ochraceous. Said to be "often parasitic" on hardwood trees. Distributed in North America, Europe, and India.

*Alnus* sp.: Great Britain.
*Fagus sylvatica:* Germany.
*Salix* sp.: Great Britain.

**Pleurotus ulmarius** (Fr.) Quél. (xx) **elm branch rot**

A wound parasite, large, with vertical spore-bearing gills beneath the ochraceous cap. Flesh tough, white. On hardwoods, especially *Ulmus*, often on large branches where nearly equal-sized branches have broken out years before. Distributed in North America especially on older trees of *Ulmus americana*, in Europe and the Philippines.

*Fagus sylvatica:* Germany.
*Ulmus* sp.: Great Britain.

**Podosphaera oxyacanthae** (DC.) d By. (xxx) **powdery mildew**

Forms white powdery coating, sometimes heavy on the leaves and young twigs of numerous Rosaceae. A single spore sac in each perithecium distinguishes this genus from other powdery mildews. Distributed widely in North America, Europe, Siberia, China, and Japan.

*Crataegus monogyna:* Denmark, Norway.
*C. oxyacantha:* Norway.
*C. pinnatifida:* Siberia (Ussuri).

*C. sanguinea:* Siberia.
*C. scabrifolia:* China.
*Sorbus aucuparia:* Denmark, Germany, Norway, Russia (Kazan).

**Polyporus adustus** Willd. ex Fr. (xx) **white trunk rot**

Conk sessile to effused-reflexed, corky, rigid, often overlapping, 3 to 10 cm. wide, white to smoke-gray or tan, margin thin, and sterile below; tubes 2 mm. long or less. Usually saprophytic but occasionally a wound parasite on hardwoods, and less often on conifers. Causes a white mottled rot. Distributed in North America from Newfoundland to British Columbia, the United States, Mexico, Honduras, West Indies, and Peru; also in Europe, Siberia, India, Formosa, Japan, Philippines, East Indies, Australia, New Zealand, and South Africa.

*Fagus sylvatica:* Denmark, Great Britain.
*Picea abies:* Sweden.
*Shorea robusta:* India.

**Polyporus balsameus** Pk. (xx) **butt rot**

Conk sessile or effused-reflexed, often multiple, 2 to 6 cm. across, fibrillose, whitish to light brown, tubes 1 to 3 mm. long, thin walled, 3 to 4 per mm. On conifers, rarely on hardwoods. Causes cubical brown rot. Distributed in North America from Nova Scotia and Province of Quebec to British Columbia and southward in eastern United States to Minnesota and Tennessee; reported from Sweden and Japan.

*Abies mariesii:* Japan.
*A. sachalinensis:* Japan.
*Picea glehnii:* Japan.

**Polyporus berkeleyi** Fr. (xx) **butt rot**

Conk with a stem, large, single or compounded of several broad segments, fleshy, tough, brittle when dry, 6 to 25 cm. across, whitish to yellowish, tomentose, pores angular, white, discoloring on drying, tubes 2 to 10 mm. long, 0.5 to 2 mm. in width. On or near bases of broad-leaved trees, sometimes on conifers. Causes stringy white butt rot. Distributed widely in North America; also in Russia, India, Philippines, Australia, and New Zealand.

*Abies nordmanniana:* Russia.

**Polyporus borealis** Fr. (xx) **butt rot**

Conks large, sessile, fleshy, white, with shaggy upper surface, usually in clusters, overlapping. Usually on or near the base of living conifers and less commonly on hardwoods. Causes a mottled white rot. A wound parasite in North Temperate localities, especially on *Tsuga* and *Picea*. Distributed widely in North America from Alaska southward to Tennessee and North Carolina, and eastward to Nova Scotia; also in Europe and Siberia.

*Picea abies:* France, Germany, Norway, Sweden.
*P. obovata:* Siberia.

**Polyporus croceus** Pers. (xx) **butt rot**

Conk sessile, buff or orange, reddish when older, rigid when dry, rough, azonate, pore surface orange to reddish yellow, brown to black and resinous when dried; tubes 0.5 to 2 cm. long, mouths angular, thin walled, 2 to 4 per mm. On wounds in living trees of *Castanea* and *Quercus*. Causes a piped white butt rot. Distributed in the United States, Canada, and Europe.

*Castanea sativa:* Russia (Caucasus).
*Quercus* sp.: Portugal.

**Polyporus cuticularis** Fr. (xx) **trunk rot**

Conks sessile, overlapping, spongy, watery and tough when fresh, 3 to 10 cm. across, brown, woolly-tomentose; pore surface hoary brown to rusty brown, tubes 2 to 10 mm. long, mouths angular, thin walled, 3 to 5 per mm. On wounds in broad-leaved trees. Causes a white rot. Distributed widely in North America from Alaska southward to Central America; also in Europe, Morocco, and India.

*Betula* sp.: Great Britain.
*Carpinus* sp.: Great Britain.
*Fagus sylvatica:* Germany.
*Quercus* sp.: India.
*Q. ilex:* Portugal.
*Q. suber:* Morocco, Portugal, Russia (Caucasus).
*Q. suber* var. *occidentalis:* Russia (Caucasus).

**Polyporus dryadeus** Fr. (xx) **root rot**

Conks sessile, corky-woody, very rough on top, large, 9 to 20 cm. across, whitish then brownish to reddish-brown or almost black, with a thin, easily indented crust and obtuse margin. Fluid exudes in large drops when conks are young, and leaves sunken hollows showing even in old mature specimens; pore surface brownish, tubes 0.5 to 2 cm. long, mouths angular, very thin walled, 3 to 5 per mm. Fruits at or just above the ground line. On hardwoods and occasionally on conifers. It causes a serious delignifying, white, or straw-colored wet rot of both heart and sapwood but is limited strictly to the roots. Distributed widely in oak forests of North America, south to Mexico inclusive, Europe, Siberia, China, and Australia.

*Abies georgei:* China.
*A. nordmanniana:* Russia.
*Castanea sativa:* Russia (Caucasus).
*Eucalyptus* sp.: Australia (New South Wales).
*E. obliqua:* South Australia.
*Populus tremula:* Siberia.
*Quercus* sp.: Austria, France, Germany, Great Britain, Russia.
*Q. robur:* Denmark, Poland.
*Tilia* × *europaea:* Denmark.

**Polyporus dryophilus** Berk. (xx) **trunk rot**

Conk with a hard, granular, sandstonelike core permeated with white mycelial strands; sessile, tubercular to triangular in section, 4 to 22 cm. across, whitish, early changing to brownish or almost black.

Cortex pale but more brownish next to the tubes. Pore surface cinnamon brown or darker, tubes 0.3 to 3 cm. long, mouths angular, thick walled, 2 to 3 per mm. A wound parasite of living hardwood trees, especially *Quercus*. Produces conspicuous white-piped rot of the heartwood of oaks. *Polyporus dryophilus* var. *vulpinus* produces a soft, white rot in *Populus* wood. Distributed generally in the United States and in New Brunswick, Ontario, and Europe; reported from Hawaii and Argentina as *Polyporus rheades*.

*Populus tremula:* Denmark.
*Quercus* sp.: Russia.
*Sorbus aucuparia:* Denmark.

**Polyporus eucalyptorum** Fr. (xx) **trunk rot**

Conks hoof shaped, annual, with a thin skin tinted grayish brown, white flesh, and almost canary yellow pores. Causes a very destructive brown heart rot with extensive flat white sheets of mycelium with a consistency of chamois leather. Occurs on *Eucalyptus* in Australia.

*Eucalyptus baxteri:* Australia.
*E. camaldulensis:* Australia.
*E. elaeophora:* Australia.
*E. leucoxylon:* Australia.
*E. marginata:* Australia.
*E. obliqua:* Australia.
*E. viminalis:* Australia.

**Polyporus frondosus** Fr. (xx) **butt rot**

Conks with stem compound, branching many times, and bearing numerous overlapping small pilei, the entire mass often being as much as 60 cm. across. Pilei fleshy, tough, spatulate, 2 to 7 cm. wide, pale mouse gray, fibrillose to tomentose, pore surface white to yellowish, tubes 2 to 3 mm. long, decurrent, mouths angular, 1 to 3 per mm. On hardwoods and some conifers around the bases. Produces a wet, soft, delignifying butt rot. Distributed widely in the United States and in Nova Scotia, Cuba, northern Europe, and Siberia.

*Quercus* sp.: Great Britain.

**Polyporus giganteus** Fr. (xx) **root rot**

Conk stemmed, compound, 15 to 40 cm. or more wide, with 2 or 3 to 12 or 15 fleshy-tough pilei, 6 to 15 cm. wide and less than 1 cm. thick, semicircular to spatulate, grayish, smoky brown or blackish, fibrillose, with thin margins; pores white, tubes 1 to 3 mm. long, mouths angular, 4 to 7 per mm., stems short and thick. Around the bases of hardwoods and conifers. Distributed sparsely in the United States and Europe.

*Fagus sylvatica:* Russia (Caucasus).
*Pinus sylvestris:* Sweden.
*Quercus* sp.: Sweden.
*Q. suber:* Russia (Caucasus).
*Q. suber* var. *occidentalis:* Russia (Caucasus).

**Polyporus gilvus** Fr. (xx) **trunk rot**

Conk sessile or effused-reflexed, corky, 7 to 12 cm. wide, ochraceous or bright rusty yellow to dark rusty brown, rough and zonate; pores grayish brown to dark brown, tubes 1 to 5 mm. long, rarely in 2 or

more annual layers, mouths rounded, 5 to 8 per mm. Mostly saprophytic, but occasionally weakly parasitic on hardwoods and conifers in wounds. Causes a white rot. Distributed widely in North, Central, and South America; Europe, Africa, Asia, and Australia.

*Acacia catechu:* India.
*A. scorpioides:* India.
*Albizia lebbek:* India.
*A. procera:* India.
*Cryptomeria japonica:* Japan.
*Dalbergia latifolia:* India.
*D. sissoo:* India.
*Pterocarpus marsupium:* India.
*Quercus* sp.: India.
*Shorea robusta:* India.
*Terminalia catappa:* India.

**Polyporus hispidus** Fr. (xx) **trunk rot**

Conk large, 8 to 25 cm. wide, sessile, spongy then tough, rigid on drying, yellowish brown to rusty red or almost black, densely hirsute on top; pores with angular mouths, thin walled, 2 to 4 per mm. On trunks of living broad-leaved trees; uncommon on conifers. Often emerging in large sunken lesions showing evidence of killing cambium over considerable areas. Causes soft, spongy, delignifying yellowish rot. Evidently an aggressive wound parasite of living trees. Distributed in the United States, Ontario, Europe, Siberia, India, and Pakistan.

*Acacia senegal:* France.
*Acer pseudoplatanus:* Russia (Caucasus).
*Fagus sylvatica:* Denmark.
*Fraxinus excelsior:* Belgium, Denmark, England, France, Germany, India, Italy, Norway, Pakistan, Portugal, Russia (Caucasus), Siberia (Ussuri).
*F. mandshurica:* Siberia (Ussuri).
*F. nigra:* Great Britain.
*Juglans* sp.: France, Great Britain, Portugal.
*J. regia:* Italy, Russia.
*Morus* sp.: France, India, Portugal.
*M. alba:* Germany, India.
*Pistacia khinjuk:* Pakistan.
*Platanus* sp.: France, Germany.
*P. orientalis:* Portugal.
*Populus* sp.: Portugal.
*P. tremula:* Norway.
*Quercus* sp.: Belgium, France, Portugal.
*Q. mongolica:* Siberia (Amur).
*Q. robur:* Denmark.
*Sophora* sp.: France.
*S. japonica:* Portugal.
*Sorbus* sp.: France.
*Ulmus* sp.: France, Germany, Portugal.
*U. japonica:* Siberia (Ussuri).

**Polyporus lignosus** Klotzsch (xxx) **root rot**

Conk soft, flexible, drying hard and rigid, persisting and often reviving; sessile, imbricate, 3 to 25 cm. wide, zonate red-brown alternating with yellow and orange, not incrusted; pores sometimes in 2 to 4 layers, 9 to 10 per mm., pore mouths angular to circular, orange, drying pinkish to red-brown. On roots of many tropical trees, causing a white to yellowish decay. Distributed throughout the Tropics and known by a number of different names. Very damaging to *Hevea* rubber trees.

*Hevea brasiliensis:* Mexico and French Equatorial Africa.

**Polyporus litschaueri** (Fr.) Lohwag (xx) **heart rot**

Conks annual or biennial, 4 to 15 cm. wide, sessile, shelflike to almost ungulate, spongy, drying hard-fibrous, white to yellowish or tawny, tomentose to almost glabrous, with a grayish rugose membrane; tubes 1 to 1.5 cm. long, pores very variable in size and shape. Causes a mottled rot of heartwood of hardwoods. Later the decayed wood is entirely white but limited to the heartwood. Entry is through wounds. Known in Russia and Siberia.

*Acer* sp.: Russia.
*Populus* sp.: Russia.
*Quercus mongolica:* Russia, Siberia.
*Ulmus* sp.: Russia.

**Polyporus mollis** Fr. (xx) **heart rot**

Conk 2.5 to 8 cm. wide, white turning reddish when bruised, semicircular, multiple, rugose, silky fibrillose, margin acute, tubes white, 3 to 10 mm. long; mouths of pores white, flesh-red where touched, fragile, thick; a wound parasite on conifers. Associated with brown heart rot. Distributed in Canada, the United States, and Europe.

*Picea abies:* Czechoslovakia.
*Pinus sylvestris:* Germany.

**Polyporus obtusus** Berk. (xx) **white heart rot**

Conk sessile, large, 3 to 30 cm. wide, white to yellowish, corky, hirsute; pores very large, irregular, tubes 1 to 3 cm. long, 2 to 3 mm. wide, pore surface white or yellowish to bay color, pore walls rather thick. A wound parasite of hardwoods entering burrows of wood borers and causing a stringy, white rot. Distributed widely in the United States and known in Ontario. It is apparently rare in the Old World.

*Quercus dilatata:* India.
*Q. semicarpifolia:* India.

**Polyporus orientalis** Lloyd (xx) **pine root rot**

Conk rusty brown throughout, turbinate, with a short, thick central stem. Surface smooth, soft to the touch; pores minute with colored straight setae. Causes white pocket rot in roots of *Pinus*. Widely distributed in Japan.

*Pinus densiflora:* Japan.

**Polyporus patouillardii** Rick. (xx) **white pocket rot**

Conk sessile, applanate, 2 to 3 cm. thick. Surface smooth, brown, dull. Flesh hard, brittle, with a satiny luster, dark brown. Pores small, round, 1 to 1.5 cm. deep. On broad-leaved trees. Causes white pocket rot of heartwood. Distributed in Brazil, Philippines, Japan, Australia, and South Africa.

*Lithocarpus cuspidata:* Japan.
*Quercus gilva:* Japan.
*Q. glauca:* Japan.
*Scolopia mundtii:* Union of South Africa.

**Polyporus resinosus** Fr. (xx) **trunk rot**

Conk shelflike, watery, fleshy, rigid when dry, 7 to 25 cm., brown, margin thick, exuding water drops when young, tubes 1 to 10 mm. long, 4 to 6 per mm., walls thick. Usually saprophytic but sometimes a wound parasite on hardwoods, less common on conifers. Associated with a white stringy rot. Distributed in Alaska, the United States and Canada, east and west; also Scandinavia, Siberia, and India.

*Abies sibirica:* Siberia.
*Picea abies:* Norway.

**Polyporus rubidus** Berk. (xx) **coffee root rot**

Conk brown with faint indication of stipe, on roots of *Coffea;* has rhizomorphs. Distributed in Ceylon, Java, and probably other parts of the Eastern Tropics.

*Coffea arabica:* Java.
*C. canephora* var. *robusta:* Java.

**Polyporus schweinitzii** Fr. (xxx) **root and butt rot**

The conk is large, velvety, reddish brown above, with large irregular pores beneath, greenish at first, later brown. The texture is soft, corky, and brittle. Stem varies from central, eccentric, or lacking when growing out from its host tree laterally. Attacks conifers mostly, rarely hardwoods. In North American forests probably causes more damage in living trees than any other single woodrotting fungus. Causes a cubical red-brown decay of roots and base of trunk. Distributed widely throughout the North Temperate Zone and known also in Australia.

*Abies* sp.: Japan, Russia.
*A. alba:* Italy.
*A. georgei:* China.
*A. nephrolepis:* Siberia (Ussuri).
*A. sachalinensis:* Japan.
*A. sibirica:* Siberia.
*Acacia* sp.: Portugal.
*Eucalyptus obliqua:* Australia.
*Fraxinus* sp.: Portugal.
*Larix* sp.: Japan, Russia.
*L. decidua:* Germany, Great Britain, Norway, Sweden.
*L. gmelinii:* Russia, Siberia.
*L. potaninii:* China.
*Picea* sp.: Germany, Japan, Russia.

*P. abies:* Great Britain, Norway.
*P. jezoensis:* Siberia (Ussuri).
*Pinus densiflora:* Japan.
*P. parviflora:* Japan.
*P. pinaster:* France, Great Britain, Portugal.
*P. pinea:* Portugal.
*P. sylvestris:* Germany, Great Britain, Norway, Poland, Russia.
*P. thunbergii:* Japan.
*Quercus* sp.: Norway.
*Ulmus* sp.: Portugal.

**Polyporus shoreae** Wakef. (xx) **root and trunk rot**

Conk applanate, horizontal, sessile to substipitate, 18 to 27 cm. wide, smooth, rigid, rimose. Pore surface bluish gray to rusty brown, tubes 3 mm. long, bluish gray and rigid. On living trees of *Shorea* at the base of the trunk and on roots. Causes a white pocket rot. It is very damaging. Known only in India.

*Shorea robusta:* India.

**Polyporus squamosus** Fr. (xx) **trunk rot**

Conk short stemmed, or almost sessile, single or overlapping in clusters, fleshy, tough, rigid when dry, 6 to 30 cm. wide, subcircular to reniform, white to yellowish with brownish scales; pore surface white or yellowish, tubes 2 to 8 mm. long, mouths large, angular, 1 to 2.5 mm. wide, thin walled. A wound parasite on many hardwood trees, rarely on conifers, that causes a streaked or mottled white rot. Distributed widely in North America; also in Paraguay, Europe, Siberia, Mongolia, China, India, and Australia.

*Acer platanoides:* Russia, Germany, Great Britain, Denmark.
*A. pseudoplatanus:* Denmark, Germany, Great Britain.
*Aesculus hippocastanum:* Germany, Great Britain.
*Betula* sp.: Great Britain.
*Castanea sativa:* Germany.
*Celtis* sp.: Austria.
*Fagus sylvatica:* Belgium, Denmark, Germany, Great Britain.
*Fraxinus* sp.: Germany, Great Britain, Norway.
*F. excelsior:* Denmark, Great Britain.
*Juglans* sp.: Great Britain.
*J. regia:* Denmark, Italy.
*Larix sibirica:* Siberia.
*Morus alba:* Germany.
*Platanus* sp.: Austria.
*Populus* × *canadensis:* Denmark.
*P. nigra:* Poland.
*P. tremula:* China, Norway, Siberia.
*Quercus* sp.: Germany, Great Britain, Norway, Russia.
*Salix* sp.: Germany.
*S. rubens* var. *viridis:* Denmark.
*Sorbus* sp.: Germany.
*S. aucuparia:* Germany.
*S. cuspidata:* Great Britain.
*Taxus* sp.: Great Britain.
*T. baccata:* England.

*Tilia* sp.: Austria, Germany, Great Britain.
*T.* ×*europaea:* Denmark, Great Britain.
*Ulmus* sp.: Denmark, Germany, Great Britain, Norway, Russia.
*U. glabra:* Germany, Great Britain.

**Polyporus sulphureus** Fr. (xx) **trunk rot**

Conk sessile, often in large rosettelike clusters 20 to 60 cm. broad, fleshy, drying rigid and brittle, salmon, sulphur yellow or orange, fading to almost white; pore surface sulphur yellow or fading; the tubes are 1 to 4 mm. long, the mouths angular, thin walled, 2 to 4 per mm. On trunks of numerous hardwoods and conifers. Causes cubical brown rot of heartwood. Distributed widely in North America, Europe, India, Japan, Philippines, Siberia, Union of South Africa, and Australia.

*Abies* sp.: Japan.
*A. alba:* Germany.
*A. pindrow:* India.
*A. sachalinensis:* Japan.
*Alnus* sp.: Germany, Great Britain.
*A. japonica:* Japan.
*Betula* sp.: Norway.
*Castanea* sp.: Germany, Japan.
*C. sativa:* France, Germany, Portugal, Russia.
*Eucalyptus* sp.: Union of South Africa.
*Fagus sylvatica:* Denmark, Germany.
*Fraxinus* sp.: Germany, Great Britain.
*F. excelsior:* Denmark.
*Juglans* sp.: Germany, Great Britain.
*J. ailantifolia:* Japan.
*J. regia:* Germany, Italy.
*Larix* sp.: Japan.
*L. decidua:* Germany, Great Britain, Russia, Switzerland.
*L. gmelinii:* Russia, Siberia.
*Lithocarpus sieboldii:* Japan.
*Picea* sp.: Japan.
*P. jezoensis:* Siberia (Ussuri).
*P. smithiana:* India.
*Pinus* sp.: Great Britain, Japan.
*P. khasya:* India.
*P. sylvestris:* Great Britain.
*Platanus orientalis:* Portugal.
*Populus* sp.: Germany, Great Britain, Portugal.
*P. alba:* Germany.
*P.* ×*canadensis:* Italy.
*P. tremula:* Japan, Norway.
*Quercus* sp.: France, Germany, Great Britain, India, Norway, Russia, Union of South Africa.
*Q. robur:* Denmark.
*Salix* sp.: Austria, Germany, Great Britain, Japan.
*S. alba:* Denmark, Germany.
*S. rubens:* Denmark.
*Taxus baccata:* Great Britain, Russia (Caucasus).
*Tsuga* sp.: Japan.

**Polyporus tomentosus** Fr. (xx) **root rot**

Conk with a stem or sessile, spongy to rigid when dry, pileus circular to fan shaped, 3 to 18 cm. wide, ochraceous to rusty brown, tomentose; pore surface hoary or brown, tubes 1.5 to 7 mm. long, setae straight, mouths angular to irregular, thin walled, 2 to 4 per mm. On conifers, rarely on hardwoods, causing a white pocket rot in roots and butts of trees. Known in North America and Japan.

*Abies sachalinensis:* Japan.
*Picea jezoensis:* Japan.

**Polyporus tomentosus** Fr. var. **circinatus** (Fr.) Sartory & Maire (xx) **root rot**

Conk with a stem on roots, sessile on trunks, spongy to rigid on drying, circular or semicircular, 3 to 18 cm. broad, whitish to rusty brown, soft, tomentose; pores angular, thin walled, 2 to 4 per mm. On trunk or roots. Causes a white pocket rot in the wood of coniferous trees, rarely on hardwoods. Distributed in Canada and United States, Europe, and India.

*Cedrus deodara:* India.
*Picea abies:* Norway.
*P. smithiana:* India.
*Pinus* sp.: Portugal.
*P. griffithii:* India.
*P. sylvestris:* Poland.

**Polyporus versicolor** Fr. (xx) **heart rot**

Conk small, sessile or effused-reflexed, usually overlapping, coriaceous to rigid, 2 to 10 cm. wide, variable in color, with narrow white to reddish-black zones; always zonate unless growing in shaded situations, silky villose, the alternate zones glabrous; pore surface white, yellowish, or brown, the tubes up to 2 mm. long, the mouths angular, thin walled, 3 to 5 per mm. Prevalent as a saprophyte on dead wood. Occasionally a wound parasite of broad-leaved and coniferous trees. Causes a white spongy rot. Distributed over the large land masses of the whole world where trees grow.

*Cupressus macrocarpa:* Kenya.

**Polyporus zonalis** Berk. (xx) **heart rot**

Pileus sessile, semicircular or fan shaped, 2 to 9 cm. wide, white to reddish or ochre-yellowish, multizonate; pores minute, 2 to 4 mm. long, mouths angular, thin walled, 8 to 9 per mm. A wound parasite of hardwood trees. Associated with a serious pocket rot of heartwood. Distributed in the Gulf States of the United States, Mexico, West Indies, Nicaragua, Brazil, Peru, Madagascar, Ceylon, Borneo, India, Japan, Java, Philippines, and Australia.

*Artocarpus altilis:* Brazil.
*A. heterophyllus:* Brazil.
*Bombax munguba:* Brazil.
*Calophyllum* sp.: Brazil.
*Calycophyllum spruceanum:* Brazil.
*Carapa guianensis:* Brazil.
*Cecropia* sp.: Brazil.

*Ceiba pentandra:* Brazil.
*Cocos nucifera:* Brazil.
*Coffea arabica:* Brazil.
*Ficus* sp.: Brazil.
*Hevea brasiliensis:* Brazil.
*Hura crepitans:* Brazil.
*Mallotus ricinoides:* Philippines.
*Mangifera indica:* Brazil.
*Pouteria macrocarpa:* Brazil.
*Theobroma cacao:* Brazil.
*Toona ciliata:* India.

**Polyporus zonatus** Fr. (xx) **trunk rot**

Conk pale tan color semicircular, zoned with ochraceous and gray bands. Tubes whitish, short, mouths of pores whitish to light ochraceous brown, small. Flesh whitish, corky, rather thick. Mentioned in Denmark as attacking living tree trunks in great numbers. Causes a white rot. Distributed in North America, Europe, South Africa, Sarawak, and India.

*Betula* sp.: Great Britain.
*Fagus sylvatica:* Denmark.
*Fraxinus excelsior:* Denmark.
*Picea abies:* Sweden.
*Populus* sp.: Great Britain.
*P. alba:* Denmark.
*P. tremula:* Denmark.
*Quercus robur:* Denmark.
*Sorbus* × *hybrida:* Denmark.
*Ulmus* sp.: Great Britain.

**Polystigma pusillum** Syd. (xxx) **leaf spot**

Occurs on small, circular to angular, yellowish spots on leaves of *Andira.* Known in Guatemala, El Salvador, and Venezuela.

*Andira inermis:* El Salvador, Venezuela.

**Poria ferruginosa** (Fr.) Karst. (xx) **white spongy rot**

Forms resupinate fungus mats up to 2.5 cm. thick and reddish brown; the pore surface grayish brown to reddish brown; tubes up to 3 mm. each season, the pores rounded, 4 to 5 per mm. Causes a white spongy rot in conifers and broad-leaved trees. Distributed in North America from Alaska and Canada southward through the United States and West Indies; also in Europe, Siberia, Australia, and New Zealand.

*Pinus radiata:* Australia (Victoria).

**Poria hypobrunnea** Petch (xx) **red root rot**

Associated with so-called red root disease of broad-leaved trees including *Hevea.* Stout red mycelial strands are formed on the exterior of a root and may develop into a continuous red sheet. The rhizomorphs are smooth, tough, red outside, white within, turning black with age. The rotted wood is soft, friable, and permeated with red mycelial sheets. The fruiting body is first yellowish or ochraceous,

then red brown and finally dark slate color. The fungus is known to be in the Gold Coast, Ceylon, India, and Malaya.

*Hevea* sp.: Malaya.
*Hevea brasiliensis:* Ceylon, India.
*Spathodea campanulata:* Malaya.
*Theobroma cacao:* Gold Coast.

**Poria hypolateritia** (Berk.) Cke. (xx) **root rot**

Forms effused fungus mats, hard and brittle when dry, and is white with a reddish lower surface, concolorous with the pores; pores 7 to 8 per mm., angular; pore mouths whitish, later pink, walls thin. Causes root rot of a number of tropical broad-leaved trees. Known in India, Ceylon, and Indochina.

*Aleurites montana:* Indochina.
*Hevea brasiliensis:* Ceylon, India.

**Poria monticola** Murr. (xx) **brown rot**

Conk annual, effused to 10 cm. across, soft, papery, margin white, narrow, fimbriate; pore surface dull white, tubes up to 8 mm. long, pores angular, 2 to 3 per mm. Associated with a brown cubical rot of conifers and broad-leaved trees. Distributed in Colorado, Idaho, New York, and Vermont in the United States; in British Columbia and Ontario in Canada; and in India.

*Pinus roxburghii:* India.

**Poria obliqua** (Fr.) Karst. (xx) **heart rot**

Forms annual widely effused spore-bearing fungus mats *under* the bark of dead stubs of hardwood trees. The pore surface is yellowish- or reddish-brown. Tubes are up to 2 cm. long; the pores 2 to 4 per mm., with moderately thick edges. Associated with a white heart rot of *Betula* and other northern hardwoods, where it forms externally sterile clinkerlike masses many years old on still living trees. Distributed in temperate North America, Europe, Siberia, and Japan.

*Acer campestre:* Austria.
*Alnus* sp.: Norway.
*Betula* sp.: Germany, Great Britain, Hungary, Japan, Yugoslavia.
*B. costata:* Siberia (Ussuri).
*B. ermanii* var. *communis:* Japan.
*B. grossa:* Japan.
*B. maximowicziana:* Japan.
*B. pendula:* Siberia (Omsk).
*B. pubescens:* Great Britain, Siberia (Omsk).
*Fagus sylvatica:* Austria, Germany, Denmark, Yugloslavia.
*Quercus cerris:* Hungary, Yugoslavia.
*Q. mongolica:* Siberia (Amur).
*Q. petraea:* Yugoslavia.
*Sorbus aucuparia:* Norway.

**Poria prunicola** (Murr.) Sacc. & Trott. (xx) **heart rot**

Associated with a white rot of *Prunus* and other broad-leaved species in temperate countries. Distributed in North America and Japan.

*Alnus* sp.: Japan.

**Poria rhizomorpha** Bagchee (xx) **root rot**

Conk effused, thin, brittle, white to light-pinkish cinnamon; pores 4 to 6 per mm., walls thin. Forms abundant rhizomorphic strands on the rotted roots and debris in the soil where the fungus lives as a saprophyte and becomes actively parasitic. The rhizomorphs extend to 100 feet connecting one diseased tree to another and spreading the disease. It is endemic and attacks numerous broad-leaved trees. Distributed in India and Pakistan.

*Gmelina arborea:* India, Pakistan.
*Melocanna baccifera:* India, Pakistan.

**Poria subacida** (Pk.) Sacc. (xx) **butt rot**

Forms large fungus mats, white to cream, yellow, or buff, tubes corky to rigid, cartilaginous, up to 5 mm. long, the pores 2 to 4 per mm. It is associated with a pale yellowish rot of heartwood of coniferous and hardwood trees. Distributed commonly and widely in Alaska, Canada, and United States, Costa Rica, and Japan.

*Abies veitchii:* Japan.
*Larix leptolepis:* Japan.
*Picea glehnii:* Japan.
*P. jezoensis:* Japan.
*Tsuga diversifolia:* Japan.

**Poria tsugina** (Murr.) Sacc. & Trott. (xx) **heart rot**

Conk perennial, effused up to 30 cm. or more, almost woody, up to 3 cm. thick; margin yellowish-brown, pore surface grayish to yellowish-brown, tubes up to 7 mm. long each season, layers distinct, pores 6 to 7 per mm. Believed by some American authors to be a synonym of *Fomes hartigii* and *F. robustus* of the Old World. Associated with a white heart rot of conifers and hardwoods. Distributed widely in Alaska, British Columbia, New Brunswick, and northern United States; also reported in Japan.

*Abies sachalinensis:* Japan.
*Tsuga diversifolia:* Japan.
*T. sieboldii:* Japan.

**Poria vaporaria** (Fr.) Cke. (xx) **trunk rot**

Forms annual effused fungus mats, margin pale cream, narrow, pore surface cream, tubes soft-papery, up to 2 mm. long, mouths round to sinuous, 2 per mm. On coniferous trees entering injuries exposing the wood; associated with a brown heart rot. Distributed widely in Alaska, Canada, and the United States, South America, Europe, Siberia, Japan, and Australia.

*Abies alba:* Germany.
*Picea abies:* Germany, Norway, Sweden.
*Pinus sylvestris:* Germany, Sweden.

**Poria weirii** Murr. (xx) **butt rot**

Conk resupinate, soft-corky to rigid when dry, very light in weight, 2 to 10 cm. wide, brown to black, context tawny, spongy to soft-corky, 0.3 to 1 cm. thick, pore surface gray brown to dark brown, tubes 2 to

586625—61——15

6 mm. long. Associated with laminated butt and root rot of *Thuja* and a few other conifers, especially young Douglas-fir in North America. Distributed in the Pacific Northwest, Alaska, British Columbia, and Japan.

*Picea jezoensis:* Japan.
*Tsuga diversifolia:* Japan.

**Prillieuxina cinchonae** Stevenson (xxx) **cinchona leaf spot**

Forms brown fungus pustules on spots along secondary veins from the leaf margin to midrib of *Cinchona*. Causes reddening of infected leaves which fall prematurely. Known in Costa Rica. This disease of a native forest tree may be a future threat to plantings in Costa Rica of other species from South America.

*Cinchona pubescens:* Costa Rica.

**Prospodium suppressum** Arthur (xxx) **rust**

Forms rust pustules on leaves of *Tabebuia*. Known in Trinidad.

*Tabebuia* sp.: Trinidad.

**Pseudoperonospora portoricensis** (Lamkey) Seaver & Chardon (xxx) **downy mildew**

Forms irregular, downy, diffuse, yellow areas on the lower surface of leaves of *Melia* causing premature defoliation. Known in Puerto Rico and Dominican Republic.

*Melia azedarach:* Puerto Rico, Dominican Republic.

**Pseudopeziza populi-albae** Kleb. (xx) **poplar leaf spot**

Forms erumpent pustules on leaves of *Populus* causing brown spots and premature defoliation. Known in Georgia, Iowa, and New York; also in Norway and Germany.

*Populus alba:* Germany.
*P. balsamifera:* Germany.
*P.* ×*berolinensis:* Norway.
*P. nigra:* Germany.

**Puccinia aequitatis** Cumm. (xxx) **rust**

Forms brown, pulvinate, deeply immersed telia on leaves of *Lindera* in China.

*Lindera* sp.: China.

**Puccinia bassiae** Samuel (xxx) **rust**

Forms orange or yellowish-brown to deep chestnut-brown rust pustules on leaves of *Bassia* in New South Wales and South Australia.

*Bassia decurrens:* New South Wales.
*B. obliquicuspis:* New South Wales.
*B. paradoxa:* New South Wales.
*B. uniflora:* New South Wales and South Australia.

**Puccinia bombacis** Diet. (xxx) **rust**

Forms brown rust pustules on leaves of unknown species of *Bombax*. Known in Colombia.

*Bombax* sp.: Colombia.

**Puccinia camargoi** Puttemans (xxx) **rust**

Forms rust pustules on leaves of *Melaleuca* in Brazil.
*Melaleuca leucadendron:* Brazil.

**Puccinia coprosmae** Cke. (xxx) **rust**

Forms umber rust pustules on rounded dark spots 1 cm. in diameter, on leaves of *Coprosma* in Australia and Tasmania.
*Coprosma billardieri:* Tasmania.
*C. hirtella:* Australia.

**Puccinia cordiae** Arth. (xxx) **rust**

Forms brown rust pustules on leaves and causes cankers on shoots and stems of *Cordia*, sometimes killing entire trees. Distributed in Puerto Rico, Guatemala, and Trinidad.
*Cordia alliodora:* Trinidad, Puerto Rico, Guatemala.
*C. gerascanthus:* Guatemala.

**Puccinia coronopsora** Cumm. (xxx) **rust**

Forms chestnut-brown rust pustules on leaves of *Lindera* in China.
*Lindera* sp.: China.

**Puccinia corticola** Arth. & Rorer (xxx) **rust**

Forms rust pustules on leaves, twigs, branches, and trunks of *Cordia* in Trinidad. Large lesions are formed on trunks and branches.
*Cordia gerascanthus:* Trinidad.

**Puccinia engleriana** P. Henn. (xxx) **rust**

Forms yellowish-brown, later cinnamon-brown, rust pustules on leaves of *Tabernaemontana*. Distributed in India, New Guinea, and the Philippines.
*Tabernaemontana* sp.: New Guinea.
*T. heyneana:* India.
*T. pandacaqui:* Philippines.

**Puccinia erebia** Syd. (xxx) **rust**

Forms black, powdery rust pustules on leaves of *Clerodendrum*. Distributed in the Philippines, China, and India.
*Clerodendrum inerme:* China, India, Philippines.
*C. minahassae:* Philippines.

**Puccinia filopes** Arth. & Holw. (xxx) **rust**

Forms golden-brown rust pustules on leaves of *Buettneria*. Known in Costa Rica, Guatemala, and Colombia.
*Buettneria carthaginensis:* Colombia, Costa Rica.
*B. lateralis:* Guatemala.

**Puccinia heliocarpi** Syd. (xxx) **rust**

Forms pale yellow-brown telial rust spores on leaves of *Heliocarpus* in Venezuela.
*Heliocarpus americanus:* Venezuela.

**Puccinia johnstonii** Arth. (xxx) **rust**

Forms powdery, cinnamon-brown rust pustules, followed by chestnut-brown spores on leaves of *Dipholis* and *Sideroxylon* in Cuba.

*Dipholis salicifolia:* Cuba.
*Sideroxylon foetidissimum:* Cuba.

**Puccinia kusanoi** Diet. (xx) **rust**

Forms brown to black rust pustules on *Arundinaria* and *Sasa.* It has been proved by inoculations to have *Deutzia* as an alternate host. Known in Japan.

*Semiarundinaria fastuosa:* Japan.

**Puccinia longicornis** Pat. & Har. (xxx) **bamboo rust**

Forms yellow-brown to dark-brown rust pustules on leaves of *Arundinaria*, *Phyllostachys*, *Bambusa*, and *Sasa.* Distributed in China, Indochina, and Japan.

*Bambusa arundinacea:* China.
*Phyllostachys* sp.: China.

**Puccinia phyllostachydis** Kusano (xxx) **bamboo rust**

Forms powdery rust-brown to dark-brown or black rust pustules on leaves of *Phyllostachys* in Japan and China.

*Phyllostachys bambusoides:* Japan.
*P. nigra* var. *henonis:* China.

**Puccinia psidii** Wint. (xxx) **rust**

Forms powdery, pale, brownish-yellow rust pustules on leaves of numerous broad-leaved trees. Distributed in the West Indies and in Colombia, Venezuela, Ecuador, and Brazil.

*Eucalyptus citriodora:* Brazil.
*Eugenia* sp.: Brazil.
*E. jambos:* Colombia, Cuba, Jamaica, Puerto Rico.
*Eugenia malaccensis:* Jamaica.
*Marlierea edulis:* Brazil.
*Pimenta dioica:* Jamaica.
*P. racemosa:* Jamaica.

**Puccinia spongiosa** Berk. & Br. (xxx) **rust**

Forms rust pustules on leaves of *Chomelia* and *Tarenna.* Known in Ceylon and India.

*Chomelia asiatica:* India.

**Pucciniastrum aceris** Syd. (xxx) **maple rust**

Forms rust pustules on leaves of *Acer* in India and Pakistan.

*Acer caesium:* India, Pakistan.
*A. mono* f. *marmoratum:* Pakistan.

**Pucciniastrum areolatum** (Fr.) Otth (xxx) **cherry-spruce rust**

Forms white to yellowish rust pustules on leaves of *Prunus* with a later stage in the form of black-brown crusts which overwinter on

the *Prunus* leaves and start infection on *Picea* green cones the next spring. There, swollen, large, powdery yellow rust pustules form on the cone scales where the seeds especially are attacked and rendered abortive. Heavy attacks may seriously reduce the seed crop. Adventive in Santo Domingo. Distributed in temperate Europe, Siberia, Pakistan, China, Japan, Manchuria, and Sakhalin.

*Picea abies:* Czechoslovakia, Denmark, Estonia, France, Germany, Great Britain, Norway, Sweden, Switzerland.
*P. jezoensis:* Kamchatka, Siberia.
*P. obovata:* Siberia.
*P. smithiana:* Pakistan.

**Pucciniastrum castaneae** Diet. (xxx) **chestnut rust**

Forms yellow rust pustules on leaves of *Castanea* and *Castanopsis*. Distributed in China, India, Japan, Korea, Pakistan, and the Philippines.

*Castanea crenata:* Japan, Korea.
*C. henryi:* China.
*C. mollissima:* China.
*Castanopsis* sp.: Pakistan.
*C. javanica:* India.

**Pucciniastrum coryli** Kom. (xxx) **hazel rust**

Forms ochraceous rust pustules on leaves. Distributed in Russia, China, India, Japan, Korea, and Manchuria.

*Corylus colurna:* India.
*C. heterophylla:* China, Korea, Manchuria.
*C. heterophylla* var. *japonica:* Japan.
*C. sieboldiana:* Japan.
*C. sieboldiana* var. *mandshurica:* Korea.

**Pucciniastrum epilobii** Otth (xxx) **fir-willow-weed rust**

Forms cylindric rust pustules on leaves of *Abies*. The herbaceous *Epilobium* species are alternate hosts, bearing an early powdery, orange-yellow stage, and later flat, reddish-brown to blackish-brown crusts overwintering in the leaves. Distributed in North America from Newfoundland to Northwest Territory and Alaska, southward to Tennessee, New Mexico, and California; also in Europe, Siberia, Japan, and New Zealand.

*Abies alba:* Czechoslovakia, Denmark, France, Germany, Norway, Scotland, Switzerland.
*A. grandis:* Great Britain.
*A. sibirica:* Norway.

**Pucciniastrum goeppertianum** (Kuehn) Kleb. (xxx) **fir-blueberry rust**

Heteroecious. Forms white tubules on the lower side of true fir needles containing orange, powdery spores. These infect young growing stems of *Vaccinium*, which develop small upright perennial witches'-brooms with conspicuously enlarged twigs. The fungus overwinters in the brooms, and the spores develop at the time *Abies* needles push forth and promptly infect the new needles. Witches'-brooms

with annual needles form on *Abies*. Distributed in the North Temperate Zone wherever true firs form extensive stands; in North America southward into Mexico, in Europe, Siberia, and Japan.

*Abies alba:* Denmark, Germany, Great Britain, Switzerland.
*A. nordmanniana:* Great Britain.
*A. sachalinensis:* Japan.
*A. sibirica:* Siberia.

**Pucciniastrum kusanoi** Diet. (xxx) **fir-white alder rust**

Forms rust pustules on needles of *Abies* and cinnamon-brown rust pustules on leaves of *Clethra* in Japan.

*Abies sachalinensis:* Japan.

**Pucciniastrum sparsum** (Wint.) E. Fisch. (xxx) **spruce-Ericaceae rust**

In Europe this rust has a growth stage on needles of *Picea abies* Karst. and an alternate stage on leaves of *Arbutus* and *Arctostaphylos*. In North America the rust is not known on *Picea* but is widely distributed on the alternate hosts. It is able to live and persist without spruce.

*Arbutus menziesii:* Mexico.
*A. xalapensis:* Guatemala.
*Picea abies:* Switzerland.

**Pucciniastrum styracinum** Hirat. (xxx) **rust**

Develops as rust of leaves of *Styrax* in Japan.

*Styrax japonica:* Japan.
*S. obassia:* Japan.

**Pucciniastrum tiliae** Miyabe (xxx) **linden rust**

Forms yellow to brown rust pustules on leaves of *Tilia*. Distributed in Japan, China, and Manchuria.

*Tilia amurensis:* China, Manchuria.
*T. japonica:* Japan.
*T. mandshurica:* China.
*T. tuan:* China.

**Pyrenochaeta filarszkyi** Bub. (xxx) **linden leaf spot**

Associated with yellow leaf spots on *Tilia* in Hungary.

*Tilia cordata:* Hungary.

**Pythium artotrogus** (Mont.) d By. (xxx) **damping-off**

Causes severe root rot of germinating seedlings mostly before they emerge above ground. Heavy losses may occur. Cultures are necessary to determine what fungus is causing the trouble, as several may cause similar symptoms of disease. High soil moisture favors trouble by various damping-off fungi. This *Pythium* appears to be more parasitic on conifers than most species of *Pythium*. Distributed widely in the United States and Netherlands.

*Pseudotsuga menziesii:* Netherlands.

**Pythium debaryanum** Hesse (xxx) **root rot**

This is one of two species of *Pythium* most often encountered. This species is known to attack a large number of herbaceous hosts and a considerable number of woody plants, especially seedlings. Distributed in the United States, Manitoba, New Brunswick, Nova Scotia, Prince Edward Island, Hawaii, Europe, and Asia.

*Abies alba:* Switzerland.
*Acer* sp.: Bulgaria.
*Chamaecyparis obtusa:* Japan.
*Picea abies:* Switzerland.
*Pinus khasya:* Philippines.
*P. massoniana:* Philippines.
*P. mugo* var. *rostrata:* Norway.
*P. nigra:* Italy.
*P. strobus:* Bulgaria.
*P. sylvestris:* Bulgaria, Netherlands, Norway.

**Pythium intermedium** d By. (xx) **root rot**

Chiefly parasitic on herbaceous plants and prothallia of ferns, but occasionally on *Ulmus* by inoculations. Distributed in the United States and Europe.

*Ulmus* × *hollandica* var. *belgica:* Netherlands.

**Pythium torulosum** Coker & Patterson (xx) **root rot**

Occurs in decayed roots of *Abies*, *Pinus*, and herbaceous plants. Distributed in North Carolina, Missouri, and Europe.

*Abies grandis:* Netherlands.
*Pinus sylvestris:* Netherlands.

**Pythium ultimum** Trow. (xx) **root rot**

This is perhaps the most common species of *Pythium* in the United States, and is frequently reported widely distributed over the tropical and temperate regions of the world. A number of woody plants, including conifers, are attacked, sometimes very severely.

*Cupressus* sp.: Rhodesia.
*Pinus* sp.: Argentina.

**Pythium vexans** d By. (xx) **root rot**

Like many species of *Pythium* this one lives in moist soil as a saprophyte on dead plant remains, but is quite ready to attack living roots and lower stems at the soil surface. Numerous herbaceous species and a few woody plants are known suscepts of this parasite. Distributed widely in the United States, Hawaii, Europe, Tanganyika, Union of South Africa, India, Indochina, and Malaya.

*Cinchona officinalis:* India.
*C. pubescens:* India.
*Durio zibethinus:* Malaya.
*Hevea brasiliensis:* Indochina, Malaya.

**Quaternaria persoonii** Tul. (xx)

Forms circular thickened fungus pads under the epidermis of wounded branches and stems of northern temperate hardwood trees.

Spores are expelled from tubular necks pushed through the epidermis. Lesions are produced in bark of living trees. Distributed widely in North America and Europe.

*Fagus sylvatica:* Belgium, Denmark.

**Ramularia bauhiniae** Ell. & Ev. (xxx) **leaf spot**

Develops as a powdery, white mildew on the lower side of leaves in Jamaica.

*Bauhinia divaricata:* Jamaica.

**Ramularia catappae** Rac. (xx) **leaf spot**

Associated with rounded ashen spots with dark red margins on leaves of *Terminalia* in the Philippines and Java.

*Terminalia catappa:* Java.

**Ramularia necator** Mass. (xxx) **cacao damping-off**

Forms a white mold on cotyledons and seeds of *Theobroma*, resulting in damping-off of young seedlings. Known in British West Indies.

*Theobroma cacao:* Dominica and Jamaica.

**Ramularia rosea** (Fckl.) Sacc. (xxx) **willow leaf spot**

Occurs on brownish spots on leaves of *Salix*. Distributed in Wisconsin, Colorado, Montana; also in Germany, England, Italy, and Peru.

*Salix humboldtiana:* Peru.

**Ramulaspera salicina** (Vest.) Lindr. (xx) **willow leaf spot**

Occurs on violet leaf spots on *Salix*. Distributed in Sweden, Finland, Austria, and Norway.

*Salix glauca:* Norway.
*S. hastata:* Norway.
*S. lanata:* Norway.
*S. lapponum* × *herbacea:* Norway.

**Ravenelia acaciae-farnesianae** P. Henn. (xxx) **rust**

Develops as rust pustules on petioles of leaves on young branches of *Acacia*. Known in Brazil.

*Acacia farnesiana:* Brazil.

**Ravenelia acaciae-melliferae** Bacc. (xxx) **rust**

Forms rust pustules on leaves of *Acacia* in Ethiopia.

*Acacia mellifera:* Ethiopia.

**Ravenelia acaciae-pennatulae** Diet. (xxx) **rust**

Forms powdery, cinnamon-brown to blackish-brown rust pustules on the upper surface of leaves of *Acacia*. Known in Mexico and Guatemala.

*Acacia pennatula:* Guatemala.

**Ravenelia amazonica** Syd. (xxx) **rust**

Forms rust pustules on leaves of *Pithecellobium* in Brazil.
*Pithecellobium glomeratum:* Brazil (Bonfim).

**Ravenelia armata** Syd. (xxx) **rust**

Produces brown rust pustules on *Calliandra* in Brazil.
*Calliandra* sp.: Brazil (Boraima).

**Ravenelia australis** Diet. & Neg. (xxx) **sweet acacia rust**

Develops as dark-brown rust pustules on leaves of *Acacia* in Chile. The same fungus is reported on the same host in Texas.
*Acacia cavenia:* Chile.

**Ravenelia bizonata** Arth. & Holw. (xxx) **rust**

Forms brown, powdery rust pustules on leaves of *Calliandra* in Guatemala.
*Calliandra houstoniana:* Guatemala.

**Ravenelia cebil** Speg. (xxx) **rust**

Forms rusty-brown rust pustules on *Piptadenia* in Argentina and Puerto Rico.
*Piptadenia peregrina:* Puerto Rico.

**Ravenelia dieteliana** P. Henn. (xxx) **rust**

Develops as brown rust pustules on leaves of *Calliandra* in Brazil and Formosa.
*Calliandra macrocephala:* Brazil.

**Ravenelia echinata** Lagh. & Diet. (xxx) **rust**

Forms cinnamon-brown to black rust pustules on leaves of *Calliandra.* Known in Ecuador and Venezuela.
*Calliandra caracasana:* Venezuela.

**Ravenelia ectypa** Arth. & Holw. (xxx) **rust**

Forms brown rust on leaves of *Calliandra.* Distributed in Costa Rica, Guatemala, and Bolivia.
*Calliandra chapaderoana:* Guatemala.
*C. gracilis:* Costa Rica, Guatemala.
*C. laxa:* Bolivia.

**Ravenelia evansii** H. & P. Syd. (xxx) **rust**

Develops as brown to black rust pustules on leaves of *Acacia* in the Union of South Africa.
*Acacia robusta:* Union of South Africa (Pretoria).

**Ravenelia expansa** Diet. & Holw. (xxx) **rust**

Forms cinnamon-brown to chestnut-brown rust pustules on both surfaces of *Acacia* leaves. Distributed in Mexico.
*Acacia angustissima:* Mexico.
*A. cochliacantha:* Mexico.
*A. tequilana:* Mexico.

**Ravenelia farlowiana** Diet. (xxx) **rust**

Forms chestnut-brown to dark-brown rust pustules on leaves of *Acacia* in Mexico.
*Acacia anisophylla:* Mexico.
*A. crassifolia:* Mexico.

**Ravenelia formosana** Syd. (xxx) **rust**

Develops rust pustules on leaves of *Acacia* in Formosa.
*Acacia farnesiana:* Formosa.

**Ravenelia goyazensis** P. Henn. (xxx) **rust**

Develops as dark-brown rust pustules on leaves of *Andira* in Brazil.
*Andira pisonis:* Brazil.

**Ravenelia hassleri** Speg. (xxx) **rust**

Forms rust pustules on leaves of *Enterolobium* in Paraguay.
*Enterolobium contortisiliquum:* Paraguay.

**Ravenelia henningsiana** Diet. (xxx) **rust**

Develops as yellow-brown to dark-brown rust pustules on leaves of *Piptadenia* in Brazil.
*Piptadenia* sp.: Brazil.

**Ravenelia japonica** Diet. & Syd. (xxx) **rust**

Develops as cinnamon-brown to dark-brown rust pustules on leaves and branches of *Albizia* in Japan and China.
*Albizia julibrissin:* China, Japan.
*A. kalkora:* China.

**Ravenelia lagerheimiana** Diet. (xxx) **rust**

Forms brown rust pustules on leaves of *Calliandra* in Ecuador.
*Calliandra falcata:* Ecuador.

**Ravenelia leucaenae** Long (xxx) **rust**

Forms brown, powdery rust pustules on leaves of *Leucaena* in Mexico.
*Leucaena diversifolia:* Mexico.
*L. esculenta:* Mexico.

**Ravenelia leucaenae-microphyllae** Diet. (xxx) **rust**

Develops as brown rust pustules on leaves of *Leucaena.* Distributed in Mexico, Guatemala, and Brazil.
*Acacia* sp.: Brazil.
*A. angustissima:* Guatemala.

**Ravenelia lysilomae** Arth. (xxx) **rust**

Forms yellow-brown to chestnut-brown rust pustules on leaves of *Lysiloma* in Mexico and Cuba.
*Lysiloma bahamensis:* Cuba.
*L. tergemina:* Mexico.

**Ravenelia macowaniana** Patschke (xxx) **rust**

Forms a cupulate stage of rust on deformed pods and young branches, and brown pustules on leaves of *Acacia* in Central and South Africa.

*Acacia seyal:* Congo.

**Ravenelia mexicana** Tranz. ex Diet. (xxx) **rust**

Forms brown rust pustules on leaves of *Calliandra* in Mexico.

*Calliandra grandiflora:* Mexico.

**Ravenelia minuta** Syd. (xxx) **rust**

Develops as leaf rust on *Pithecellobium* in Brazil and Peru.

*Pithecellobium* sp.: Peru.

**Ravenelia natalensis** H. & P. Syd. & Evans. (xxx) **rust**

Forms rust pustules on branches of *Acacia* in the Union of South Africa.

*Acacia hirtella:* Union of South Africa (Natal).

**Ravenelia pithecolobii** Arth. (xxx) **rust**

Produces cinnamon-brown to chestnut-brown rust pustules on leaves of *Pithecellobium*. Distributed in Florida, Cuba, Puerto Rico, Mexico, Colombia, and Venezuela.

*Pithecellobium dulce:* Mexico, Venezuela.
*P. lanceolatum:* Colombia.
*P. tortum:* Cuba.
*P. unguis-cati:* Puerto Rico.

**Ravenelia sessilis** Berk. (xxx) **albizia rust**

Forms yellow-brown to black rust pustules on leaves and pods of *Albizia*. Distributed in India, Ceylon, China, and Pakistan.

*Albizia lebbek:* India, Pakistan.

**Ravenelia sololensis** Arth. & Holw. (xxx) **rust**

Develops as powdery, dark chestnut-brown rust pustules on leaves and fruits of *Lysiloma*. Distributed in Guatemala and Mexico.

*Lysiloma acapulcensis:* Guatemala.

**Ravenelia spegazziniana** Lindquist (xxx) **rust**

Develops as rust pustules on pods of *Acacia*. Distributed in Texas and New Mexico, Hawaii, Mexico, Guatemala, Cuba, and Puerto Rico.

*Acacia farnesiana:* Cuba, Guatemala, Puerto Rico.

**Ravenelia taslimii** Mund. (xxx) **rust**

Forms amphigenous, chestnut-brown rust spore bodies on petioles and branches of *Acacia* in India and Pakistan.

*Acacia modesta:* India, Pakistan.

**Readeriella mirabilis** Syd. (xx) **leaf spot**

Occurs on rounded, sunken, dull-brown spots on leaves of *Eucalyptus* in Victoria and Mauritius.

*Eucalyptus robusta:* Mauritius.

**Rehmiellopsis abietis** (E. Rostr.) O. Rostr. (xxx) **fir tip blight**

Blights the newly formed needles of the current year on *Abies.* In severe attacks most of the new needles are killed and the shoots die back. Repeated attacks may kill entire trees. Poor site conditions appear to induce attacks. Distributed in northern Europe; a single occurrence was reported in British Columbia.

*Abies alba:* Czechoslovakia, Denmark, Great Britain, Norway.
*A. cephalonica:* Denmark, Norway, Scotland.
*A. nordmanniana:* Denmark.
*A. pindrow:* Scotland.
*A. pinsapo:* Denmark, Norway, Scotland.
*A. sibirica:* Norway.

**Rhizina undulata** Fr. (xx) **root rot**

Associated with root rot of conifers locally where fire has been a year or two before. Forms effused, undulant, brownish-black fungus bodies on the ground, brittle-fleshy, pallid, floccose below with rootlike tendrils reaching into the soil beneath and starting from roots injured by fire. Distributed in North America and Europe.

*Abies alba:* Germany.
*Castanea sativa:* Germany.
*Larix decidua:* England (Bristol), Germany.
*L. leptolepis:* England (Bristol).
*Picea abies:* Germany.
*Pinus nigra* var. *poiretiana:* England (Bristol).
*P. pinaster:* France.
*P. sylvestris:* England (Bristol), France, Germany.

**Rhizoctonia choussii** Crandall & Arillaga (xx) **root rot**

Associated with black root rot of broad-leaved woody plants killing roots, rootlets, and lower trunks. Known in El Salvador.

*Coffea arabica:* El Salvador.
*Leucaena glauca:* El Salvador.

**Rhizoctonia lamellifera** Small (xxx) **root rot**

This fungus parasite occurs as fungus strands and webs largely buried in decayed roots or on their surface, with no organized conks. Diseased trees have wilted and brown leaves, which stage is followed by staghead and final death. Blackened areas with exudate show on the lower trunk. Diseased tissues are brown and filled with gum. The rotted roots may be covered with a thin fungus layer. Numerous small black sclerotia form in rotted parts, together with sheets of black fungus tissue. It attacks many broad-leaved trees in Uganda and conifers in South Africa.

*Bixa orellana:* Uganda.
*Cupressus* sp.: Uganda.
*Grevillea robusta:* Uganda.

*Pinus echinata:* Union of South Africa.
*P. muricata:* Union of South Africa.
*P. pinaster:* Union of South Africa.
*P. radiata:* Union of South Africa.

**Rhizosphaera kalkhoffii** Bub. (xxx) **mottled leaf cast**

Usually in late summer conifer needles of the current season become mottled with yellow. The affected needles fall the next summer, leaving only those of the new current season. Repeated attacks result in the trees having but a single set of needles. Such trees decline slowly and finally die. The disease begins on the lower branches, killing them and progressing upward. The disease is known only on spruces in the Eastern United States, and in Southern Quebec mostly on *Picea pungens*, but is not known in the native range of this tree. It is known in Europe, on spruces, firs, pines, and Douglas-firs. Its original home is not known. In Great Britain it is reported as killing 14- to 20-year-old trees. Distributed in Eastern Canada and United States and in Europe.

*Picea abies:* Netherlands, Norway, Scotland.
*P. orientalis:* Scotland.
*P. schrenkiana:* Scotland.
*Pinus mugo:* Great Britain.
*P. nigra:* Great Britain.

**Rhytisma acerinum** Fr. (xxx) **maple tar spot**

Maple leaf tar spot forms black, shiny, thickened, slightly raised blotches up to 1.5 cm. in diameter, on the upper surface of *Acer* leaves. Many species of maple are attacked in North America, Europe, and Asia. Severe infection causes early leaf fall, but usually damage is not serious.

*Acer caesium:* India.
*A. campestre:* Denmark, Germany.
*A. cissifolium:* Japan.
*A. japonicum:* Japan.
*A. mono:* Japan.
*A. orientale:* Cyprus.
*A palmatum:* Japan.
*A. palmatum* var. *matsumurae:* Japan.
*A. platanoides:* Belgium: Denmark, Estonia, Germany, Norway, Russia.
*A. pseudoplatanus:* Belgium, Denmark, Great Britain, Finland, France, Germany, Italy, Norway, Sweden.

**Rhytisma eucalypti** P. Henn. (xxx) **tar spot**

Forms opaque black fungus cushions on dull brown, rounded spots on leaves of *Eucalyptus* in Australia.

*Eucalyptus diversifolia:* Australia.

**Rhytisma punctatum** Fr. (xxx) **maple tar spot**

Forms yellowish spots up to 2 cm. across on leaves of *Acer* with numerous small tar spots on each leaf spot. Distributed widely in Canada, the United States, Europe, China, and Japan.

*Acer aidzuensis:* Japan.

*A. campestre:* Denmark.
*A. caudatum* var. *prattii:* China.
*A.* ×*coriaceum:* Japan.
*A. japonicum:* Japan.
*A. nikoense:* Japan.
*A. palmatum* var. *matsumurae:* Japan.
*A. pseudoplatanus:* Denmark, Germany, Great Britain.

**Rhytisma salicinum** Fr. (xxx) **willow tar spot**

Much thickened tar spots, 0.5 to 0.7 mm. across, form on the upper surface of leaves of *Salix*. Distributed widely in North America southward to the northern Mexican border; also in Europe and Asia.
*Acer japonicum:* Japan.
*A. palmatum:* Japan.
*Salix* sp.: Great Britain, Russia.
*S. aurita:* Denmark.
*S. bakko:* Japan.
*S. caprea:* Denmark, Germany, Norway.
*S. cinerea:* Denmark, Germany.
*S. formosa:* Norway.
*S. gilgiana:* Japan.
*S. glauca:* Norway.
*S. hastata:* Denmark, Norway.
*S. herbacea:* Norway.
*S. integra:* Japan.
*S. myrsinifolia:* Denmark, Norway.
*S. myrsinites:* Norway.
*S. phlomoides:* Siberia.
*S. phylicifolia:* Norway.
*S. polaris:* Norway.
*S. purpurea:* Austria.
*S. purpurea* f. *gracilis:* Czechoslovakia.
*S. pyrolaefolia:* Siberia.
*S. reinii:* Japan.
*S. repens:* Denmark, Norway.
*S. reticulata:* Germany.
*S.* ×*smithiana:* Denmark.
*S. tetrasperma:* India.
*S. vulpina:* Japan.

**Roestelia guatemaliana** (Crowell) Cumm. (xxx) **rust**

Forms rust pustules on leaves of *Amelanchier* in Guatemala.
*Amelanchier nervosa:* Guatemala.

**Rosellinia aquila** (Fr.) de N. (xxx) **root rot**

There are a number of *Rosellinia* species that cause root rot of trees, mostly of younger ages. They look much alike, cause similar symptoms, and are apt to attack both broadleaves and conifers. All seem to be favored by wet soils. Wilting of entire plants or terminal shoots, soon followed by death of the plant, is the chief signal of trouble. Affected roots are covered with white strands of mycelium on the outside or between the bark and wood. Sclerotial fungus masses form on the strands. Finally, tiny, black, globular bodies form which con-

tain the reproduction spores. The fungus can live in the soil saprophytically on dead plant material, but is very ready to attack living roots.

*Rosellinia aquila* attacks conifers and broad-leaved trees, especially *Quercus*, from Alaska to Texas, Bermuda, and Guatemala; also in Europe and Japan.

*Betula* sp.: France.
*Coffea arabica:* Guatemala.
*Morus* sp.: France.
*Picea* sp.: Denmark.
*P. abies:* Scotland.
*Pinus mugo:* Denmark.
*Quercus* sp.: France, Japan.

**Rosellinia arcuata** Petch (xxx) **root rot**

Associated with rotting of bark at the root collar and on larger roots, forming a white mycelial layer between the bark and wood. A layer of purple-gray to black mycelium forms around the stems up to about 6 inches above ground. Numerous broad-leaved trees are attacked, wilt, and die. Distributed in Ceylon, India, Java, Sumatra, and the Gold Coast of Africa.

*Leucaena glauca:* Java, Sumatra.
*Theobroma cacao:* Gold Coast.

**Rosellinia bunodes** (Berk. & Br.) Sacc. (x) **black root rot**

Causes black root and crown rot of many diverse broad-leaved trees especially in tropical regions. The disease is prevalent and is reported to be most serious in the West Indies, much of the serious disease of woody plants in the East Indies being attributed to other root pathogens. *Rosellinia bunodes* is reported from Mexico, Jamaica, St. Lucia, Trinidad, Colombia, Peru, Brazil, Congo, India, Ceylon, Java, Sumatra, Malaya, and the Philippines.

*Artocarpus heterophyllus:* Ceylon.
*Bixa orellana:* Jamaica.
*Coffea arabica:* Colombia, Jamaica, Java, Peru.
*Dryobalanops aromatica:* Malaya.
*Erythrina* sp.: St. Lucia.
*Grevillea robusta:* India.
*Hevea brasiliensis:* Brazil, Ceylon, Java, Sumatra.
*Holigarna longifolia:* India.
*Leucaena glauca:* Java, Sumatra.
*Litsea angustifolia:* India.
*L. wightiana:* India.
*Persea americana:* Jamaica, Peru.
*Schleichera oleosa:* India.
*Theobroma cacao:* Brazil, Mexico, Jamaica, St. Lucia, Trinidad.

**Rosellinia necatrix** Prill. (xxx) **white root rot**

Forms fluffy white mycelial webs on diseased roots and bases of stems. Minute sclerotia are formed in the cortical tissues. Also black perithecia appear scattered among the fungus filaments. Many kinds

of trees and herbs are attacked. Distributed in California, Europe, Iraq, India, and Japan.

*Acer pseudoplatanus:* Italy.
*Juglans regia:* Italy.
*Morus* sp.: France, Italy, Japan.
*Pistacia vera:* Iraq.

**Rosellinia paraguayensis** Starb. (xx) **cacao root rot**

Associated with root rot in Mexico.

*Theobroma cacao:* Mexico.

**Rosellinia pepo** Pat. (xx) **white root rot**

Forms an irregular, black web over diseased roots. White strands grow out from this layer through the bark, and penetrate the wood along the medullary rays. Occurs on rotted roots of numerous tropical trees in Mexico, Central America, Brazil, Dominican Republic, Jamaica, St. Lucia, and New Guinea.

*Coffea arabica:* Jamaica.
*Theobroma cacao:* Brazil, Mexico, Dominican Republic, St. Lucia.

**Rosellinia quercina** Hartig (xx) **root rot**

Associated with root rot of young broad-leaved trees, especially *Quercus*. It forms white to brown delicate webs of mycelium on the surface of diseased roots. Black, spheroid perithecia the size of pinheads develop on the affected roots. Known in Europe and Japan.

*Acer pseudoplatanus:* Denmark.
*Fagus sylvatica:* Denmark.
*Quercus cerris:* England.
*Q. petraea:* England.
*Q. robur:* Denmark, England.

**Rosellinia radiciperda** Mass. (xx) **root rot**

Occurs on rotted roots of orchard fruit trees, *Abies*, and native trees in New Zealand. Stagnant water favors its attacks. Well-cultivated land is said to be free from this serious disease, but when the forest is newly cleared it becomes severe. It appears to be limited to New Zealand.

*Castanea sativa:* New Zealand.
*Eucalyptus* sp.: New Zealand.

**Schiffnerula monotheca** (Pat. & Gaill.) Petr. (xxx) **powdery mildew**

Powdery mildew with ascogenous stage present on *Rapanea*. Known in Colombia, Venezuela, and Brazil.

*Rapanea ferruginea:* Colombia.

**Schiffnerula robusta** Orejuela (xxx) **powdery mildew**

Fungus colonies on lower surface of leaves of *Rapanea*, 4 mm. across, black; perithecia scattered, 8-spored, ascospores septate near the middle, somewhat constricted at the septa, smoky brown and smooth. Known in Colombia.

*Rapanea* sp.: Colombia.

**Schizochora elmeri** Syd. (xx) **black spot**

Forms rounded, dull-black fungus spots on the lower surface of leaves of *Ficus*. Known in the Philippines.

*Ficus guyeri:* Philippines.

**Schizophyllum commune** Fr. (xx) ———

A small, gray, fan-shaped, leathery-textured conk, downy above, with duplex gills below, each with two distinct leaves back to back. A wound parasite causing a white sapwood rot, especially within sun-scorched bark of living trees. Distributed generally in North America, Venezuela, Europe, Asia, and Union of South Africa.

*Acacia decurrens:* Union of South Africa.
*A. decurrens* var. *mollis:* Union of South Africa.
*A. scorpioides:* India.
*Aesculus hippocastanum:* France.
*Castanea crenata:* Japan.
*Dalbergia sissoo:* India.
*Diospyros discolor:* Philippines.
*Fagus moesiaca:* Yugoslavia.
*F. sylvatica:* Germany.
*Mangifera indica:* India.
*Pterocarpus indicus:* Malaya.
*Shorea robusta:* India.

**Schizothyrium annuliforme** Syd. & Butl. (xxx) **maple leaf blotch**

Occurs on large discolored blotches on leaves of *Acer* in India.

*Acer oblongum:* India.

**Schroeteriaster ehretiae** (Hirat. f.) H. & P. Syd. & Butl. (xxx) **rust**

Forms rust pustules on leaves of *Ehretia*. Distributed in Japan, China, Formosa, India, and Pakistan.

*Ehretia* sp.: China.
*E. acuminata:* Pakistan, India, Formosa.
*E. thyrsiflora:* Japan.

**Scirrhia acicola** (Dearn.) Siggers (xx) **leaf spot**

Found apparently causing defoliation of *Pinus radiata* in Spain, the first known occurrence of this fungus in Europe. This pine is planted in numbers among other pines but is threatened by this fungus and others. *P. radiata* is the only pine severely attacked by this fungus, appearing like a new host for it. In the United States young *P. palustris* is attacked throughout its range and requires special treatment to keep this parasite under control until the seedlings begin to grow vigorously in height. Distributed in Oregon, from North Carolina to Texas, and inland in Arkansas, Tennessee, and Ohio; also in Spain.

*Pinus nigra:* Spain.
*P. radiata:* Spain.

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**Scleroderris abietina** (Lager.) Gremmen (xx) **pine dieback**

Associated with dieback of shoots and branches of *Pinus*, killing trees in severe outbreaks. Distributed in Norway, Russia, Sweden, Great Britain, Denmark, Finland, Germany, Hungary, Netherlands, and Spain. Proved pathogenic by inoculations in buds and wounds.

*Picea abies:* Denmark, Netherlands, Norway, Sweden.
*Pinus cembra:* Denmark, Great Britain, Norway.
*P. griffithii:* Denmark.
*P. mugo:* Denmark, Germany, Great Britain, Norway, Russia.
*P. mugo* var. *rostrata:* Norway.
*P. nigra:* Belgium, Denmark, Great Britain, Netherlands, Norway, Wales.
*P. nigra* var. *poiretiana:* Great Britain, Netherlands.
*P. pinaster:* Spain.
*P. radiata:* Spain.
*P. sylvestris:* Belgium, Denmark, Hungary, Great Britain, Netherlands, Norway, Russia, Spain.

**Scleroderris fuliginosa** (Fr.) Karst. (xx) **willow canker**

Occurs on branches of *Salix*, associated with dying of the distal ends. Forms tiny cups, dark brown with pallid interior, thickly crowded together on dead bark. Distributed in Colorado and Ontario in North America; also in Europe.

*Salix alba:* Denmark, Germany.
*S. amygdalina:* Germany.
*S. caprea:* Germany.
*S. daphnoides:* Denmark, Germany.
*S. fragilis:* Scotland.
*S. rubens:* Denmark.
*S.* ×*smithiana:* Denmark.
*S. undulata:* Germany.

**Sclerotinia kitajimana** Ito & Hosaka (xx) **blight**

Associated with *Botrytis cinerea* under snow melting in the spring. This fungus causes serious losses of young seedlings of *Cryptomeria* in Japan.

*Chamaecyparis obtusa:* Japan.
*Cryptomeria japonica:* Japan.
*Larix leptolepis:* Japan.
*Pinus densiflora:* Japan.

**Sclerotinia sclerotiorum** (Lib.) d By. (xxx) **wilt**

Causes dying of seedlings and shoots of older woody plants, and wilting of leaves of a great variety of plants. Much damage is caused to cultivated crops as well as wild plants. Distributed widely in the United States, Europe, Morocco, China, and Formosa.

*Morus alba:* Bulgaria.
*Sophora flavescens:* China.

**Sclerotium coffeicola** Stahel (xx) **leaf spot**

Forms small greenish-brown or orange-brown sclerotia on dark-brown concentric spots on leaves and fruits of *Coffea* and other broad-

leaf trees. Distributed in Surinam, British Guiana, and Trinidad.
*Cecropia peltata:* British Guiana.
*Coffea arabica:* British Guiana.
*C. dewevrei:* British Guiana.
*C. liberica:* British Guiana, Surinam, Trinidad.

**Sclerotium delphinii** Welch (xxx) **seedling rot**

Resembles *Sclerotium rolfsii* (sporogenous stage *Pellicularia rolfsii*) so closely that some mycologists consider them identical. Both cause root and basal stem rot of numerous plants, including a number with woody stems, in the succulent seedling stage. *S. delphinii* is credited with destroying many young mahogany and mango seedlings in the Philippines. Distributed in northern United States (while *S. rolfsii* likes higher temperatures) and the Philippines.
*Mangifera indica:* Philippines.
*Swietenia macrophylla:* Philippines.

**Scolecotrichum heveae** Vincens (xx) **leaf spot**

Associated with small brown spots on leaves of *Hevea.* The centers of the spots drop out finally. Known in Brazil.
*Hevea brasiliensis:* Brazil.

**Scopella bauhiniicola** Cumm. (xxx) **rust**

Forms yellowish, pulverulent to waxy fungus pustules on leaves of *Bauhinia.* Distributed in Cuba and Brazil.
*Bauhinia heterophylla:* Cuba, Brazil.
*B. rubiginosa:* Brazil.

**Scopella echinulata** (Niessl) Mains (xxx) **rust**

Forms chocolate-brown, later cinereous, powdery rust pustules on leaves of *Madhuca.* Distributed in Ceylon, India, and Pakistan.
*Madhuca bourdillonii:* India.
*M. indica:* India, Pakistan.
*M. longifolia:* Ceylon, India.

**Scopella fici** Mund. & Thirum. (xxx) **fig rust**

Forms amphigenous, orange-yellow, erumpent, waxy rust mats on leaves in India.
*Ficus* sp.: India.

**Scopella lucumae** (Diet.) Cumm. (xxx) **rust**

Forms amphigenous, powdery, yellowish spore pustules on leaves of *Pouteria* in Brazil.
*Pouteria caimito:* Brazil.

**Scopella palaquii** Cumm. (xxx) **rust**

Forms subepidermal, pale yellow, powdery fungus pustules on leaves in Brazil.
*Palaquium* sp.: Brazil.

**Scopella sapotae** Mains ex Cumm. (xxx) **rust**

Forms powdery, dark cinnamon-brown to pale yellowish pustules, later waxy spore mats on leaves of *Achras*. Distributed in Florida, the West Indies, British Honduras, and Venezuela.

*Achras zapota:* Bahamas, Bermuda, British Honduras, Cuba, Dominican Republic, Venezuela.

**Septogloeum elasticae** Koord. (xx) **leaf spot**

Forms subepidermal, erumpent conidial pustules on light-brown spots on leaves of *Ficus* in Java.

*Ficus elastica:* Java.

**Septogloeum hartigianum** Sacc. (xxx) **maple leaf spot**

Infects young twigs of *Acer* in early summer, but remains dormant until growth starts the next spring. Then the buds swell but soon wither and the twigs die. Small, greenish fungus cushions form under the epidermis and break through it, setting free the conidia for further attacks. Known in Germany, Switzerland, and Italy.

*Acer campestre:* Germany.

**Septogloeum salicinum** (Pk.) Sacc. (xxx) **willow leaf spot**

Forms whitish fungus pustules scattered on brown spots on the upper surface of leaves. Distributed in Alaska, New York, Wisconsin, and Ontario in North America; also in northern Europe.

*Salix caprea:* Denmark.

*S. viminalis:* Great Britain.

**Septoria abeliceae** Hirayama (xxx) **leaf spot**

Produces conidial pustules on small, dark-brown spots on leaves of *Zelkova*. The centers turn gray with an outer zone of purplish to dark brown, and tend to fall out, giving a shothole effect. Seedling and sprout leaves are especially susceptible, and seedlings are killed by thousands. The disease is present in all Japan where *Zelkova* is grown.

*Zelkova serrata:* Japan.

**Septoria acuum** Oud. (xx) **pine needle spot**

Forms small fungus pustules on needles of *Pinus*. Distributed in Netherlands, Denmark, Russia, and Great Britain.

*Pinus sylvestris:* Great Britain.

**Septoria aesculi** (Lib.) West. (xxx) **leaf spot**

Forms fungus pustules on numerous, small spots, brown to whitish with age, bordered by a narrow fuscous line, on leaves of *Aesculus*. Distributed to a limited extent in North America; widely present in Europe.

*Aesculus hippocastanum:* Germany.

**Septoria aesculina** Thuem. (xxx) **leaf spot**

Forms fungus pustules on leaf spots on *Aesculus*. Said to be heavy at times in California on *A. californica* Nutt., but this tree has such a

short vegetative season in dry California summers that it survives defoliation indefinitely. Distributed in Europe in Austria, France, and Portugal.

*Aesculus hippocastanum:* Austria, France, Portugal.

**Septoria alni** Sacc. (xxx) **alder leaf spot**

Forms conidial pustules on brown spots on the upper surface of leaves. Distributed in Alaska, California, Oregon, Washington, and Wisconsin in North America; also in France, Italy, and Japan.

*Alnus pendula:* Japan.

**Septoria alnicola** Cke. (xxx) **alder leaf spot**

Associated with brown spots on leaves. Distributed in New York: also in Europe and Japan.

*Alnus glutinosa:* Great Britain.

**Septoria arcuata** Cke. (xxx) **leaf spot**

Forms conidial pustules on white circular spots with purple edges on leaves of *Ficus*. Distributed in India and Abyssinia.

*Ficus bengalensis:* India.
*F. benjamina:* India.
*F. indica:* India.

**Septoria betulina** Pass. (xxx) **birch leaf spot**

Conidial pustules occur on irregular gray spots on leaves. Distributed in Wisconsin, Denmark, Tyrol, Italy, Russia, and Siberia.

*Betula pendula:* Russia (Kazan).
*B. rotundifolia:* Siberia.

**Septoria cercidis** Fr. (xxx) **redbud leaf spot**

Forms fungus pustules on chestnut-brown spots, 1 to 3 mm. across, on the upper side of leaves. Distributed in Europe. Known in Argentina—1944, the first record for the country.

*Cercis siliquastrum:* Argentina.

**Septoria cocoes** Petch (xxx) **palm leaf spot**

On leaves of *Cocos* and *Borassus*. Distributed in Ceylon and Seychelles.

*Borassus flabellifer:* Seychelles.

**Septoria fraxini** Desm. (xxx) **ash leaf spot**

Associated with brown spots on leaves. Distributed widely in the United States and Europe.

*Fraxinus excelsior:* Belgium, France, Germany, Great Britain, Italy, Portugal.

**Septoria maclurae** Brun. (xxx) **leaf spot**

Conidial pustules form on olive to dull-yellow spots on leaves of *Maclura* in France.

*Maclura pomifera:* France.

**Septoria marmorata** Kab. & Bub. (xxx) **poplar leaf spot**

Forms fungus pustules on brown, then pale-yellow spots on leaves of *Populus*. Known in Italy and Denmark.

*Populus tremula:* Italy.

**Septoria meliae** Syd. (xxx) **leaf spot**

Occurs on small, circular, white spots on leaves of *Melia* causing considerable defoliation. Known in Tanganyika.

*Melia azedarach:* Tanganyika.

**Septoria miconiae** Garman (xxx) **leaf spot**

Occurs on circular leaf spots about 1.2 mm. across, with a white center and a brown distinctly raised margin, in Puerto Rico.

*Miconia impetiolaris:* Puerto Rico.

*M. laevigata:* Puerto Rico.

**Septoria orni** Pass. (xxx) **ash leaf spot**

Occurs on dull-brown, effuse spots on leaves of *Fraxinus*. Distributed in Denmark, France, and Italy.

*Fraxinus excelsior:* Denmark.

**Septoria petitiae** Garman (xxx) **leaf spot**

Forms conidial pustules on leaf spots 1 to 2 mm. in diameter, with white centers and brownish margins in Puerto Rico.

*Petitia domingensis:* Puerto Rico.

**Septoria pistacina** Allesch. (xxx) **pistache leaf spot**

Occurs on numerous small, brownish spots on leaves. Known in southern Europe and Syria.

*Pistacia lentiscus:* Syria.

*P. terebinthus:* Greece.

*P. vera:* Greece, Syria.

**Septoria quercina** Desm. (xxx) **oak leaf spot**

Forms fungus pustules on small, rounded, dry, whitish spots with broad brown borders on leaves. Distributed widely in Europe; also in Japan.

*Quercus* sp.: Japan, Norway, Russia.

*Q. robur:* Great Britain.

**Septoria salicicola** Sacc. (xxx) **willow leaf spot**

Conidial pustules form on circular brown spots on leaves. Distributed widely in the United States, Europe, and in Siberia.

*Salix* sp.: Austria, Great Britain, Siberia.

*S. amygdalina:* Russia.

*S. lanata* × *hastata:* Norway.

**Septoria unedonis** Rob. & Desm. (xxx) **leaf spot**

Conidial pustules form on small, irregular, whitish spots with purple margins on leaves of *Arbutus*. Distributed in Oregon, nearly all of Europe, and in Algeria.

*Arbutus unedo:* Austria, France, Great Britain, Greece, Italy, Portugal.

**Septotinia populiperda** Waterman & Cash (xx) **poplar leaf blotch**

Causes small brown spots on young leaves of *Populus*. The spots increase rapidly in size, turn gray at the center, and have irregular, sharply defined margins. White fungus pustules form along the veins on the lower side of the leaf, and on the upper surface small, white masses of spores develop in concentric circles. Early defoliation may result. Inoculations with wounds succeeded. Distributed in Eastern United States from Maine to Pennsylvania and Maryland; also in Hungary, Latvia, Germany, and Netherlands.

*Populus* × *canadensis:* Latvia.
*P. canadensis* var. *marilandica:* Germany.
*P. deltoides:* Germany, Latvia.
*P.* × *robusta:* Germany.

**Shiraia bambusicola** P. Henn. (xx) ———

Forms fleshy fungus bodies on culms of *Bambusa*, *Phyllostachys*, and *Sasa*. Known in Japan and China.

*Phyllostachys niger* var. *henonis:* Japan.

**Skierka agallochoa** Rac. (xxx) **rust**

Forms telial rust pustules on leaves of *Excoecaria* with spore threads up to 8 mm. long. Known in Java.

*Excoecaria agallocha:* Java.

**Skierka canarii** Rac. (xxx) **tree rust**

Forms minute subepidermal, powdery rust pustules, later followed by telial threads forced out of small pores, on the leaves of *Canarium*. Distributed in Java, New Guinea, and Philippines.

*Canarium commune:* Java.
*C. moluccanum:* Java.
*C. villosum:* Philippines.

**Skierka congonensis** P. Henn. (xxx) **rust**

Forms subepidermal, powdery rust pustules, followed by long, delicate white threads of spores forced from small pores in leaves of *Alchornea*, *Dombeya*, and *Macaranga*. Distributed in the Congo and Sierra Leone.

*Alchornea cordifolia:* Sierra Leone.
*Macaranga* sp.: Congo.

**Skierka cristata** Mains (xxx) **rust**

Forms rust pustules, deep seated in hypertrophies of leaves of *Cupania* with powdery, yellowish spores, and still later, by delicate, long, white telial threads. Distributed in Cuba, Trinidad, and British Honduras.

*Cupania americana:* Trinidad.
*C. belizensis:* British Honduras.
*C. cubensis:* Cuba.

**Skierka holwayi** Arth. (xxx) **rust**

Forms yellowish rust pustules with loose spore horns on the lower leaf surface and later in long columns on the upper leaf surface. On

leaves of *Thouinidium.* Distributed in Guatemala, Honduras, and El Salvador.

*Thouinidium decandrum:* El Salvador, Guatemala, Honduras.

**Skierka petchii** (Syd.) Mains (xxx) **rust**

Forms rust pustules on reddish-brown spots on leaves of *Sapindus.* Distributed in Ceylon and India.

*Sapindus bifoliatus:* Ceylon, India.

**Skierka philippinensis** Mains (xxx) **rust**

Forms subepidermal, pulverulent rust pustules, later with loose columns on leaves of *Canarium.* Known in the Philippines and New Guinea.

*Canarium luzonicum:* Philippines.

**Sparassis ramosa** (Schaeff.) Schroet. (xx) **heart rot**

A wound parasite with fleshy conk, whitish, very much branched, somewhat resembling a cauliflower with branches flattened at the tips and crowded closely. A single stout stem holds the structure on wounded coniferous trees or roots. Distributed in the United States, Europe, and the Philippines.

*Picea sitchensis:* Great Britain, Germany.
*Pinus strobus:* Germany.
*P. sylvestris:* Germany, Norway, Poland.
*Pseudotsuga menziesii:* Germany.

**Sphaceloma aegiphilae** Bitanc. & Jenkins (xxx) **scab**

Forms scab lesions on *Aegiphila* in Brazil.

*Aegiphila sellowiana:* Brazil.

**Sphaceloma cupaniae** Bitanc. & Jenkins (xxx) **scab**

Forms scab on leaves in Brazil.

*Cupania oblongifolia:* Brazil.
*C. vernalis:* Brazil.

**Sphaceloma erythrinae** Bitanc. & Jenkins (xxx) **scab**

Develops scab on leaves in Brazil.

*Erythrina crista-galli:* Brazil.
*E. speciosa:* Brazil.

**Sphaceloma fagarae** Bitanc. & Jenkins (xxx) **scab**

Forms scabby lesions on *Zanthoxylum.* Distributed in Brazil and Argentina.

*Zanthoxylum coco:* Argentina.
*Z. hyemale:* Brazil.
*Z. riedelianum:* Brazil.

**Sphaceloma genipae** Bitanc. (xxx) **scab**

Forms dry, rounded, rugose, carrot-red to brown, scabby spots on leaves in Brazil.

*Genipa americana:* Brazil.

**Sphaceloma lagoa-santensis** Bitanc. & Jenkins (xxx) **scab**

Forms leaf spots 0.2 to 4 mm. in diameter, nearly black, with yellowish-gray centers and scattered velvety tufts of spores. On *Byrsonima* in Brazil.

*Byrsonima coccolobaefolia:* Brazil.

**Sphaceloma mattirolianum** (Sacc. & D. Sacc.) Jenkins (xxx) **scab**

Develops scab lesions on leaves of *Arbutus*. Distributed in Italy and Germany.

*Arbutus unedo:* Germany, Italy.

**Sphaceloma murrayae** Jenkins & Grodsinsky (xxx) **willow scab**

Forms small, round, raised spots, grayish white with a narrow dark-brown margin, 0.5 to 2 mm. in diameter on leaves of *Salix*. Blotches on the leaves often follow the main leaf-veins and midrib. Distributed in North America, Argentina, Europe, and New Zealand.

*Salix babylonica:* New Zealand.

*S. fragilis:* New Zealand.

*S. viminalis:* Argentina, Latvia.

**Sphaceloma perseae** Jenkins (xxx) **avocado scab**

Forms fungus scab of leaves, young shoots and fruits of *Persea*. Distributed in Florida, Mexico, Central America, West Indies, Peru, Brazil, and Union of South Africa.

*Persea americana:* Brazil, Costa Rica, Cuba, Guatemala, Haiti, Honduras, Jamaica, Mexico, Peru, Puerto Rico, Union of South Africa.

**Sphaceloma populi** (Sacc.) Jenkins (xxx) **poplar scab**

Forms scabby spots on leaves in Argentina.

*Populus nigra* var. *italica:* Argentina.

**Sphaceloma santali** Thirum. (xxx) **sandalwood scab**

Forms cinereous patches on the surfaces of leaves, which appear as brown or black discolorations. Known in Mysore, India.

*Santalum album:* India (Mysore).

**Sphaceloma terminaliae** Bitanc. (xxx) **scab**

Associated with scabby lesions on leaves and fruits, blackish to clove-brown or pinkish-buff on *Terminalia*. Known in Brazil and India.

*Terminalia bellerica:* India (Mysore).

*T. catappa:* Brazil.

**Sphaerophragmium acaciae** (Cke.) Magn. (xxx) **rust**

Forms brown rust pustules on leaves. Distributed in the Gold Coast, Mauritius, Madagascar, India, Pakistan, China, Formosa, and the Philippines.

*Albizia lebbek:* China, Formosa, Gold Coast, India, Madagascar, Mauritius, Pakistan, Philippines.

*A. procera:* Gold Coast.

**Sphaerophragmium dalbergiae** Diet. (xxx) **rosewood rust**

Forms rust pustules, early cinnamon brown, later dark brown, on leaves of *Dalbergia* in Cuba, Ceylon, India, Pakistan, and Natal.

*Dalbergia amerimnum:* Cuba.

**Sphaerophragmium luzonicum** Yates (xxx) **rust**

Forms rust pustules on leaves of *Albizia* in the Philippines.

*Albizia acle:* Philippines.
*A. procera:* Philippines.
*A. saponaria:* Philippines.

**Sphaeropsis cryptomeriae** Saw. (xx) **blight**

Occurs on blight lesions on seedlings, stocks, cuttings, and older trees of *Cryptomeria*, but apparently only as a wound parasite. Known in Japan.

*Cryptomeria japonica:* Japan.

**Sphaeropsis mori** Berl. (xx) **mulberry dieback**

Forms canker lesions on branches of *Morus* resulting in dieback of twigs. Distributed in Italy and Tanganyika.

*Morus alba:* Tanganyika.

**Sphaeropsis necatrix** Petri & Adani (xx) **pine-cone blight**

Attacks young cones of *Pinus pinea* in May or June, appearing as chestnut-colored lesions between adjacent cone scales. A day or two later one-third of the cone may turn brown and the whole surface be affected; the seeds become small, wrinkled, and dry. The fungus is favored by wet years and its destructiveness is greater on old trees. The crop of edible nuts is reduced in some years by a valuation of 100 to 150 million lira in the Pisa region of Italy.

*Pinus pinea:* Italy.

**Sphaerostilbe repens** Berk. & Br. (xx) **root rot**

Forms black or red flattened fungus strands under the cortex of diseased roots, and the wood is stained blue or purple. Infected plants gradually die. Early fruit-bodies are conidial, short, erect, with red, hairy stalks 2 to 8 mm. high, and pink heads of spores. Later ones are ascogenous consisting of small, dark red perithecia at the base of the conidial stalks. Numerous trees, including *Hevea*, *Aleurites*, *Casuarina*, *Erythrina*, and *Mangifera*, are attacked. Distributed in the British West Indies, Gold Coast, Sierra Leone, Congo, Uganda, Ceylon, India, Indochina, Java, Malaya, New Caledonia, and Fiji.

*Aleurites montana:* Indochina.
*Erythrina* sp.: Malaya.
*Hevea brasiliensis:* Ceylon, Congo, Gold Coast, Java, India, Indochina, Malaya.

**Sphaerotheca lanestris** Harkness (xxx) **oak powdery mildew**

Forms white to gray powdery mildew on leaves of *Lithocarpus* and *Quercus*. Distributed in the United States, China, Formosa, India, and Japan.

*Lithocarpus dealbatus:* China.
*Quercus delavayi:* China.

*Q. dentata:* Japan.
*Q. glandulifera:* China, Japan.
*Q. glauca:* Formosa.
*Q. leucotrichophora:* India.
*Q. mongolica* var. *grosseserrata:* Japan.

**Sphaerotheca wrightii** (Berk. & Curt.) Hoehn. (xxx) **oak powdery mildew**

Forms superficial brown perithecia on leaves of *Quercus* in Japan and China.
*Quercus glandulifera:* Japan.
*Q. glauca:* China, Japan.
*Q. mongolica* var. *grosseserrata:* Japan.
*Q. myrsinæfolia:* Japan.

**Sphaerulina taxi** (Cke.) Mass. (xxx) **yew leaf blight**

Causes discoloration of green needles to brown, followed by protrusion of mouths of perithecia through the leaf epidermis. The disease spreads rapidly over the entire tree, once infection succeeds. Attacks continued 2 or 3 years, usually kill the tree. *Taxus* is the known host. Distributed in Oregon on the European yew, probably imported from Europe; also widespread in Great Britain and Ireland.
*Taxus baccata:* England, Scotland.

**Spumula bottomleyae** (Doidge) Thirum. (xxx) **rust**

Forms subepidermal, cupulate to cylindric, rust pustules on the lower side of leaves of *Albizia*. Later followed by powdery, brown telia sometimes intermixed with the earlier stage. Known in Rhodesia.
*Albizia versicolor:* Rhodesia (Victoria Falls).

**Spumula quadrifida** Mains (xxx) **rust**

Forms scattered, cupulate, small, rust pustules, 0.2 to 0.3 mm. in diameter, on the lower side of leaves of *Calliandra*. A later stage, associated with the first, is pulverulent and cinnamon brown. Known in Mexico.
*Calliandra bijuga:* Mexico.

**Stagonospora cryptomeriae** Saw. (xx) **needle blight**

Forms partly immersed globose conidial pustules on needles of *Cryptomeria* in Japan. A weak wound parasite on young needles.
*Cryptomeria japonica:* Japan.

**Steccherinum septentrionale** (Fr.) Banker (xx) **white heart rot**

A wound parasite of hardwood trees, causing a soft, spongy, white rot of the heartwood. Forms large overlapping masses of white crowded conks with pendant, long, crowded, white teeth. Distributed in North America, Europe, and Japan.
*Acer* sp.: Norway.
*A. mono:* Japan.
*A. platanoides:* Russia.
*Betula* sp.: Russia.
*Fagus sylvatica:* Norway.

*Tilia* sp.: Russia.
*Ulmus* sp.: Norway, Russia.
*U. laevis:* Russia.

**Stemphylium sarciniforme** (Cav.) Wiltshire (xxx) **leaf spot**

Forms spots 4 to 10 mm. across, hazel in color, on leaves of *Sophora* in Italy.
*Sophora japonica:* Italy.

**Stereostratum corticioides** (Berk. & Br.) Magn. (xxx) **bamboo rust**

Forms yellowish-brown, leathery fungus crusts up to 10 cm. long on stems of *Arundinaria* and *Phyllostachys*. Distributed in Pakistan, Japan, and China.
*Phyllostachys bambusoides:* Japan, Pakistan.
*P. nigra* var. *henonis:* China.

**Stereum abietinum** (Fr.) Fr. (xx) **brown cubical rot**

Forms small conks 2 to 8 cm. long, resupinate or effused-reflexed, brown, hirsute, uneven on top, lower surface light brown to drab. A wound parasite entering wounds or branch stubs. Associated with brown cubical rot of heartwood in conifers. Distributed in mountains and northern regions of North America and Europe.
*Abies* sp.: Great Britain.
*Pinus* sp.: Great Britain.

**Stereum frustulatum** (Fr.) Fckl. (xx) **trunk rot**

Conk woody, resupinate, tuberculose, crowded as if confluent and then broken by shrinkage into frustules 2 to 4 mm. across. On *Quercus* and related trees in wounds, causing a white pocket rot. Distributed widely in North America westward to Oregon and southward into Mexico; also in Europe, India, China, and the Philippines.
*Quercus* sp.: France, Great Britain.

**Stereum gausapatum** (Fr.) Fr. (xx) **streaked white rot**

Conk coriaceous, effused-reflexed, shell-like, up to 10 cm. across; upper surface brown to cinnamon buff or clay color, pubescent to hirsute and zonate; hymenium wood brown, pinkish buff to clay color, discoloring to fawn or bone brown when wounded. A wound parasite of *Quercus* and rarely other genera of trees, causing a streaked white rot of heartwood. Distributed widely in Alaska, Canada, and the United States, Mexico, and in Europe, Siberia, and Australia.
*Quercus* sp.: France, Great Britain.
*Q. ilex:* Italy.

**Stereum hirsutum** (Fr.) S. F. Gray (xx) **heart rot**

Conk coriaceous, semicircular, effused-reflexed or resupinate, with margin loosely radiately plicate; upper surface whitish, cinnamon buff or wood brown to grayish, hirsute, zonate; hymenium yellowish, buff, brown, or grayish. A common wound parasite on broadleaf trees and less often on conifers. Causes a white stringy rot. Distributed

in North America southward to Mexico, and in South America, Europe, Siberia, Ethiopia, South Africa, India, Japan, Australia, New Zealand, and Tasmania.

*Acacia abyssinica:* Eritrea.
*Eucalyptus globulus:* Union of South Africa.
*E. maidenii:* Union of South Africa.
*Fagus sylvatica:* Denmark.
*Juniperus procera:* Eritrea.
*Quercus* sp.: France, Germany.
*Q. suber:* Russia.
*Q. suber* var. *occidentalis:* Russia.

**Stereum purpureum** (Fr.) Fr. (xx) **white mottled rot**

Conk coriaceous, effused-reflexed, up to 6 cm. in diameter, reflexed pilei sometimes overlapping, upper surface buff and tomentose. Hymenium purplish, waxy, pruinulose. On hardwoods mostly, sometimes on conifers. Distribution common in North America south to Mexico. Also in Argentina, Uruguay, Europe, South Africa, Siberia, India, Philippines, Australia, New Zealand, and Tasmania.

*Acer platanoides:* Norway.
*Aesculus* × *carnea:* Great Britain.
*A. hippocastanum:* Great Britain.
*Betula* sp.: Denmark.
*B. pendula:* Siberia.
*Fagus moesiaca:* Yugoslavia.
*F. sylvatica:* Germany.
*Fraxinus* sp.: Denmark.
*Laburnum* sp.: New Zealand.
*L. alpinum:* Great Britain.
*L. anagyroides:* Great Britain.
*Populus* sp.: Denmark, Germany, New Zealand.
*P. alba:* Union of South Africa.
*P. laurifolia:* Siberia.
*P. nigra* var. *italica:* Netherlands.
*Salix* sp.: Denmark, New Zealand.
*Sorbus aucuparia:* Norway.

**Stereum sanguinolentum** Fr. (xx) **trunk rot**

Conk coriaceous, thin, effused and reflexed; upper surface villose, pinkish buff to pale olive-buff; hymenium glabrous, bleeding where wounded, cracking to the substratum in the resupinate part, drying avellaneous to wood brown. Occurs on conifers causing a brown rot and extensive reddish discoloration of solid wood in early stages of decay. Distribution general in Alaska, Canada, the United States, and Europe; known in Siberia, South Africa, Australia, and New Zealand.

*Abies alba:* Norway.
*A. sibirica:* Siberia.
*Agathis australis:* New Zealand.
*Dacrydium cupressinum:* New Zealand.
*Larix decidua:* Great Britain, Norway.
*Picea abies:* Germany, Great Britain, Norway, Sweden.
*Pinus cembra:* Norway.
*P. sylvestris:* Norway.

**Stereum sulcatum** Burt (xx) **white pocket rot**

Pileus resupinate or with a narrow blackish reflexed portion, coriaceous to leathery. Hymenium with a ruddy tinge when fresh, becoming darker red where bruised in fresh condition. On conifers causing a white pocket rot of the trunks. Distributed in North America in Alaska, Canada, and the United States; also in Europe, Siberia, China, Formosa, and Japan.

*Chamaecyparis formosensis:* Formosa, Japan.

**Stomiopeltis eugeniae** Toro (xxx) **orange-brown thread blight**

Forms a loosely interwoven orange-brown fungus tissue over much of the upper surface of leaves of *Eugenia* in Venezuela.

*Eugenia punicaefolia:* Venezuela.

**Taphrina acericola** Massal. (xxx) **maple leaf blister**

Forms well-defined small blisters, 2 to 3 mm. in diameter, on leaves of *Acer*. Known in Italy and the Caucasus.

*Acer campestre:* Italy, Russia (Caucasus).

**Taphrina acerina** Eliasson (xxx) **maple leaf blister**

Forms yellow-brown, water-soaked, rounded blisters on leaves of *Acer*, between veins, affecting part or all of the leaf. Also causes witches'-brooms. Distributed in Norway, Sweden, and Russia.

*Acer platanoides:* Norway, Sweden.

**Taphrina amentorum** (Sadeb.) Rostr. (xxx) **alder catkin hypertrophy**

Causes rather large, tonguelike outgrowths of pistillate catkins of *Alnus*. Distributed in Alaska, Norway, Denmark, Germany, Italy, Poland, and Japan.

*Alnus* sp.: Italy.
*A. glutinosa:* Denmark, Germany, Norway.
*A. hirsuta:* Japan.
*A.* ×*hybrida:* Germany.
*A. incana:* Denmark, Germany, Norway, Poland.

**Taphrina bacteriosperma** Johans. (xxx) **birch leaf blister**

Causes leaf yellowing without thickening, often affecting all the leaves of a shoot, but not causing witches'-brooms. Distributed in North America, Norway, Sweden, Greenland, and Russia.

*Betula nana:* Norway, Sweden.
*B. pubescens:* Sweden.

**Taphrina betulae** (Fckl.) Johans. (xxx) **birch leaf spot**

Forms small spots, up to 1 cm. across, pale green to yellow and unthickened, on leaves of *Betula*. Distributed in northern Europe.

*Betula* ×*intermedia:* Sweden.
*B. medwediewii:* Russia.
*B. pendula:* Denmark, Germany, Norway, Russia, Sweden.
*B. pubescens:* Germany, Norway.
*B. turkestanica:* Germany.

**Taphrina betulicola** Nishida (xxx) **birch witches'-broom**

Causes witches'-brooms on *Betula* in Japan.
*Betula ermanii:* Japan.

**Taphrina betulina** Rostr. (xxx) **birch witches'-broom**

Causes witches'-brooms on *Betula* in Europe.
*Betula* ×*aurata:* Germany.
*B.* ×*intermedia:* Norway, Sweden.
*B. nana:* Norway.
*B. nigra:* Denmark.
*B. pendula:* Denmark, France, Germany, Great Britain, Norway, Sweden.
*B. pubescens:* Denmark, Germany, Ireland, Norway, Sweden.
*B. pubescens* var. *carpatica:* Germany.
*B. pubescens* f. *urticifolia:* Denmark.

**Taphrina caerulescens** (Desm.) Tul. (xxx) **oak leaf blister**

Forms slightly swollen blisters on leaves of *Quercus*, sometimes deforming the whole leaf but not forming true witches'-brooms. Distributed in North America, Europe, North Africa, Siberia, and Japan.
*Quercus acutissima:* Japan.
*Q. canariensis:* Morocco.
*Q. cerris:* Algeria, Italy.
*Q. coccifera:* Algeria, France, Greece, Morocco.
*Q. dentata:* Japan.
*Q. fruticosa:* Portugal.
*Q. mongolica:* Japan, Russia, Siberia.
*Q. mongolica* var. *grosseserrata:* Japan.
*Q. petraea:* Italy, Yugoslavia (Montenegro).
*Q. pubescens:* Austria, Italy.
*Q. robur:* Denmark, Germany, Ireland, Norway.
*Q. variabilis:* Japan.

**Taphrina carnea** Johans. (xxx) **birch leaf blister**

Causes thickened, yellowish to red blister lesions on leaves of *Betula*. Distributed in eastern Canada, Greenland, and United States; also in northern Europe.
*Betula humilis:* Poland.
*B.* ×*intermedia:* Norway, Sweden.
*B. nana:* Norway, Sweden.
*B. pendula:* Sweden.
*B. pubescens:* Norway, Sweden.

**Taphrina carpini** (Rostr.) Johans. (xxx) **witches'-broom**

Causes yellowing and distortion of leaves and witches'-brooms. Distributed generally in Europe.
*Carpinus betulus:* Denmark, France, Germany, Great Britain, Italy, Norway, Poland.
*C. orientalis:* Russia, Sweden.

**Taphrina celtis** Sadeb. (xxx) **leaf blister**

Causes small, roundish, gray to brown, slightly thickened spots, apparent on the upper surface only, on leaves of *Celtis*. Distributed in France, Algeria, Russia, and Yugoslavia.

*Celtis australis:* France, Algeria, Russia (Caucasus).
*C. tournefortii:* Yugoslavia.

**Taphrina crataegi** Sadeb. (xxx) **hawthorn leaf curl**

Causing leaf curl and deformation of *Crataegus* shoots, but no true witches'-brooms. Distributed in Europe.

*Crataegus monogyna:* Austria, Denmark, Poland.
*C. oxyacantha:* Denmark, Germany, Great Britain, Poland.
*C. sanguinea:* Russia.

**Taphrina entomospora** Thaxter (xxx) **falsebeech leaf spot**

Causes yellowing without thickening of leaves of *Nothofagus*. All the leaves of a shoot may be attacked. Known at Punta Arenas, Chile.

*Nothofagus antarctica* var. *bicrenata:* Chile.
*N. antarctica* var. *uliginosa:* Chile.

**Taphrina epiphylla** Sadeb. (xxx) **alder witches'-broom**

Forms witches'-brooms, and in midsummer yellowish spots, on unthickened leaves of *Alnus*. Distributed in Europe and Japan.

*Alnus hirsuta:* Japan.
*A. incana:* Denmark, Germany, Norway, Poland, Sweden.

**Taphrina japonica** Kusano (xxx) **alder leaf curl**

Causes leaf curl with thickening of affected parts of leaves of *Alnus*. Known in Alaska, Oregon, and Japan.

*Alnus borealis* var. *koreana:* Japan.
*A. japonica:* Japan.

**Taphrina johansonii** Sadeb. (xxx) **poplar catkin hypertrophy**

Causes golden-yellow enlargements of carpels of *Populus* catkins. Distributed in eastern North America, Europe, and Japan.

*Populus* sp.: Great Britain.
*P.* ×*canescens:* Russia.
*P. sieboldii:* Japan.
*P. tremula:* Denmark, Finland, Norway.
*P. tremula* f. *pendula:* Sweden.

**Taphrina kruchii** (Vuill.) Sacc. (xxx) **oak witches'-broom**

Causes formation of witches'-brooms with negatively geotropic curvature of twigs on *Quercus*. Distributed in the Mediterranean basin: Algeria, Corsica, Sicily, Italy, and Sardinia.

*Quercus ilex:* Algeria, Corsica, Italy, Sardinia, Sicily.

**Taphrina kusanoi** Ikeno (xxx) **leaf blister**

Causes small blister spots, up to 1 cm. in diameter, on leaves of *Castanopsis* in Japan.

*Castanopsis cuspidata:* Japan.

**Taphrina nana** Johans. (xxx) **birch leaf yellowing**

Causes yellowing of leaves without thickening or formation of definite brooms on *Betula*. Distributed in Norway, Sweden, Germany, Poland, Russia, and Kamchatka.

*Betula nana:* Norway, Sweden.
*B. pendula:* Germany, Poland, Sweden.
*B. pubescens:* Sweden.

**Taphrina nikkoensis** Kusano (xxx) **maple leaf spot**

Causes grayish scurfs on pale-red or violet spots on leaves of *Acer* in Japan.

*Acer diabolicum* f. *purpurascens:* Japan.

**Taphrina ostryae** Massal. (xxx) **leaf spot**

Causes small, brown, unthickened spots on leaves of *Ostrya* in Italy.

*Ostrya carpinifolia:* Italy.

**Taphrina piri** Kusano (xxx) **leaf blister**

Causes small, pale, bullate spots or larger curled areas on leaves of *Sorbus* in Japan.

*Sorbus alnifolia:* Japan.

**Taphrina polyspora** (Sorok.) Johans. (xxx) **maple leaf spot**

Causes small, reddish-brown to black patches on leaves of *Acer* in Europe.

*Acer orientale:* Greece.
*A. tataricum:* Germany, Russia, Sweden.

**Taphrina populina** Fr. (xxx) **poplar leaf blister**

Causes golden-yellow blisterlike spots, small, but sometimes confluent and large, involving half or more of the leaf blade, on *Populus*. Distributed locally throughout eastern North America, occasionally in western North America. Widely distributed in Europe and known in India, China, and Japan.

*Populus angulata:* Germany.
*P. balsamifera:* Norway.
*P.* ×*berolinensis:* Norway.
*P. ciliata:* India.
*P.* ×*generosa:* Denmark, Great Britain, Norway.
*P. laurifolia:* Denmark, Great Britain.
*P. nigra:* Denmark, Austria, Great Britain, Italy, Poland, Sweden.
*P. nigra* var. *italica:* Germany.
*P.* ×*rasumowskiana:* Germany.

**Taphrina rhizophora** Johans. (xxx) **poplar carpel hypertrophy**

Causes golden-yellow hypertrophy of carpels in catkins of *Populus*. Distributed in Sweden, Poland, Great Britain, Algeria, and Japan.

*Populus alba:* Algeria, Poland, Sweden.
*P. tremula:* Japan.

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**Taphrina sadebeckii** Johans. (xxx) **alder leaf spot**

Causes yellow spots up to 1 cm. in diameter on *Alnus* leaves in Europe and Japan.

*Alnus glutinosa:* Denmark, Germany, Ireland, Norway, Poland, Sweden, Russia.
*A. glutinosa* f. *laciniata:* Denmark.
*A. hirsuta:* Germany, Japan.

**Taphrina splendens** Palm (xxx) **birch leaf discoloration**

Causes affected leaves of *Betula* to become abnormally deep green color above and rusty tan beneath, not thickened and not forming witches'-brooms. Distributed in Swedish Lapland and northern Norway.

*Betula pubescens:* Norway, Sweden.

**Taphrina tosquinetii** (Westend.) Tul. (xxx) **alder leaf curl**

Causes leaf curl on *Alnus*. Distributed in a single locality in New Hampshire and widely in Europe.

*Alnus glutinosa:* Belgium, Corsica, Denmark, France, Germany, Great Britain, Ireland, Norway, Sweden.
*A.* ×*hybrida:* Germany.
*A. incana:* Great Britain, Denmark.

**Taphrina ulmi** (Fckl.) Johans. (xxx) **elm leaf blister**

Causing small yellowish to brown, slightly puffed spots on leaves of *Ulmus*. Distributed widely in eastern North America and Europe.

*Ulmus carpinifolia:* Denmark.
*U. glabra:* Denmark, England, Poland, Sweden.
*U. laevis:* Germany, Netherlands.

**Tetramyxa rhizophage** Lihnell (xxx) **juniper root infection**

Parasitizes the cells of tissues of living roots of *Juniperus*. Infected cells are not abnormally swollen. Possibly this is a case of parasitism beneficial to the host, or at least not perceptibly injurious. Known in Sweden.

*Juniperus communis:* Sweden.

**Thelephora terrestris** Fr. (x) **smothering fungus**

Pileus 3 to 5 cm., ferruginous to dark fuscous, semicircular, sessile, or effused-reflexed, often overlapping, fibrous, scaly, margin fimbriate, laciniate, hymenium fuscous or pale fawn, inferior, papillate. Common on sandy soil at base of young seedlings and enveloping entire small plants. Distributed in North America, including Jamaica; also in Europe and South Africa.

*Picea* sp.: Germany.
*Pinus* sp.: Germany.
*P. mugo* var. *rostrata:* Norway.

**Thyridaria tarda** Bancroft (xx) **dieback**

Causes dying back of young shoots, which may reach the trunk and roots, finally killing the tree. Dieback attacks numerous broad-leaved trees of tropical regions. Several imperfect fungi cause much loss

to forest stands and are supposed to be conidial forms of *Thyridaria tarda.* This wound parasite is widely distributed in tropical countries of the world.

*Albizia moluccana:* Madagascar.

*Theobroma cacao:* Madagascar, Philippines, West Indies.

**Thyrococcum sirakoffii** Bub. (xx) **mulberry dieback**

Associated with dieback of twigs and cankers of trunks and branches of *Morus* in central Europe.

*Morus* sp.: Bulgaria.

**Thyronectria austro-americana** (Speg.) Seeler (x) **wilt**

Causes sudden wilting of all the leaves in spring, or yellowing and shedding of leaflets to total defoliation in later attacks on *Gleditsia japonica.* Other symptoms are excessive flower production and fruit setting, reddish-orange discolorations in the sapwood, and slender hyaline mycelial strands and minute unicellular conidia in the vessels of the current annual ring. Trees are killed in one season.

On *Gleditsia triacanthos* the disease is slower. Sunken cankers form and girdle branches, causing gradual defoliation and death. Yellowish-brown spore pustules form on the dead bark, and the spores are expelled forcibly 2 mm. into the air. Inoculations succeed.

Distributed in Eastern United States and Argentina. It might be destructive in Japan or China if introduced there.

*Gleditsia triacanthos:* Argentina.

**Titaeosporina tremulae** (Lib.) van Luijk (xxx) **aspen anthracnose**

Conidial pustules are borne on cinereous *Populus* leaf spots with fuscous border lines. Distributed generally in Europe.

*Populus tremula:* Denmark, Great Britain, Norway.

**Tomentella bambusina** Viégas (xx) **bamboo wilt**

Forms white to ashen, flat, fruiting surface on wilted bracts and culms of shrivelled plants of *Bambusa.* Inoculations in wounds succeeded. Known in Brazil.

*Bambusa vulgaris:* Brazil.

**Trachysphaera fructigena** Tabor & Bunting (xxx) **mealy pod**

Attacks young fruits of coffee, avocado, and cacao. Diseased parts die, shrivel up, become hard, a dark purple-brown discoloration appears and is later covered by a whitish or pinkish-brown mealy incrustation. Known in the Gold Coast and Congo regions.

*Coffea liberica:* Gold Coast.

*Persea americana:* Gold Coast.

*Theobroma cacao:* Belgian Congo, Gold Coast.

**Trametes corrugata** (Pers.) Bres. (xx) **trunk rot**

Conk conchate, overlapping, 5 to 15 cm. wide, surface glabrous, rugose, dark reddish-brown with a white marginal band 3 to 12 mm. wide, margin fertile, pores 2 to 4 per mm., white with reddish colored mouths. A wound parasite on broad-leaved trees. Distributed in

Central and South America, Gold Coast, Seychelles, India, Guam, Java, and Philippines.

*Hevea brasiliensis:* Brazil, Java.

**Trametes cubensis** (Mont.) Sacc. (xx) **brown trunk rot**

Pileus semicircular, sessile, corky, rigid, glabrous, concentrically sulcate, margin obtuse, pores rounded, walls thick. On wounded trunks of broad-leaved trees causing a brown carbonaceous rot. Distributed in Florida, Cuba, Honduras, Brazil, Peru, Siberia, and India.

*Eucalyptus citirodora:* India.

*Shorea robusta:* India.

**Trametes dickinsii** Berk. (xx) **brown trunk rot**

Conk sessile, applanate, corky-woody, pale brown, strigose, hymenium concolorous, pores round, equal, 0.5 mm. across, walls thick and obtuse. Causing brown cubical rot on wounded Fagaceous trees in Japan.

*Castanea* sp.: Japan.

*Fagus* sp.: Japan.

*Lithocarpus* sp.: Japan.

*Quercus* sp.: Japan.

**Trametes gibbosa** Fr. (xx) **trunk rot**

Pileus 10 to 20 cm. wide, whitish turning grayish, dimidiate, flattened, villous, margin obtuse, often brownish. Pores whitish, 2 to 8 mm. long, equal, flesh whitish, corky, compact, thick, very firm. A wound parasite on broad-leaved trees causing a white spongy rot. Distributed in Europe, Philippines and Asia.

*Betula davurica:* Siberia (Ussuri).

*B. pendula:* Siberia.

**Trametes heteromorpha** (Fr.) Bres. (xx) **rot**

A white to yellowish, effused-reflexed, multiple, corky conk 2 to 6 cm., rugose, and almost glabrous. Mostly on conifers. Causes a brown rot. A wound pathogen especially in trees broken by snow. Distributed in North America northward from Nova Scotia to Alaska, British Columbia, Alberta, and Yukon Territory; also in Europe and Siberia.

*Picea abies:* Sweden.

**Trametes hispida** Bagl. (xx) **white trunk rot**

Conk sessile, drying rigid, 2.5 to 12 cm. wide, with dense yellowish-brown strigose pubescence; pore surface grayish brown to blackish, the tubes 3 to 10 mm. long, the mouths angular, thick walled, 1 to 2 per mm. On wounded hardwood trees, rarely on conifers, causing a stringy white rot. Distributed generally in North America from Alaska to Nova Scotia and to Mexico; also in Europe and Siberia.

*Fagus sylvatica:* England.

**Trametes incerta** (Currey) Cke. (xx) **heart rot**

Causing heart rot of broad-leaved trees in India, entering through fire scars and other injuries extending through the bark to the wood.

*Boswellia serrata:* India.

*Shorea robusta:* India.

**Trametes mollis** (Sommerf.) Fr. (xx) **white fibrous rot**

Pileus effused-reflexed or resupinate, firm and rigid when dry, 1 to 6 cm. wide, umber to tobacco-brown, velvety, tomentose, zonate; pore surface gray to brownish, tubes 2 to 3 mm. long, the mouths angular and sinuous, 1 to 3 per mm. Occurs on numerous broad-leaved trees. Reported on conifers in a few instances. It is correlated with a white rot. Distributed widely in North America southward into Mexico; also in Europe, Siberia, Kamchatka, India, and the Philippines.

*Quercus semicarpifolia:* India.

**Trametes obstinatus** Cke. (xx) ———

Pileus hard, coriaceous-woody, pale, cinereous, margin acute, entire. Pores elongate-round, 0.5 mm. in diameter, toothed. On broad-leaved trees. Known in Australia and South Africa.

*Acacia decurrens* var. *mollis:* Union of South Africa.

*Celtis kraussiana:* Union of South Africa.

**Trametes ochroleuca** Berk. (xx) **white spongy rot**

Pileus corky, yellowish-white, thinly tomentose then glabrous, margin obtuse, sterile; pores dotlike, small. On broad-leaved trees causing a spongy white rot. Distributed in Australia, Tasmania, and Malacca peninsula.

*Banksia integrifolia:* Australia (Victoria).

**Trametes suaveolens** (Fr.) Fr. (xx) **white mottled rot**

Pileus sessile, soft-corky, 5 to 16 cm. wide, white, drying yellowish, tomentose to glabrous, azonate, anise-scented when fresh. Pore surface white then dark colored, tubes 0.3 to 1.5 cm. long, the mouths circular, thick walled, entire, 1 to 3 per mm. Commonly on *Salix*, but also on numerous other genera of hardwoods. It causes a white mottled rot of the heartwood. Distributed in British Columbia, Canada, and in the United States in Idaho and Montana; also in Europe and Siberia.

*Salix alba:* Denmark.

*S. caprea:* Norway.

*S. cinerea:* Denmark.

*S. pentandra:* Denmark.

**Trametes subflava** Lloyd (xx) **hackberry trunk rot**

Pileus unicolorous, maize yellow, with pore mouths darker, sessile, ungulate. Pores very minute. On *Celtis* in South Africa.

*Celtis kraussiana:* Union of South Africa.

**Trametes trogii** Berk. (xx) **trunk rot**

Conk sessile, effused-reflexed or resupinate, tough to firm and rigid, up to 12 cm. wide, with a dense brownish pubescence, never turning black, margin thin and acute; pore surface whitish to a lavender tint; the tubes 3 to 7 mm. long, the mouths rounded to angular, rather thick walled, 3 per mm. On hardwood and coniferous living trees in wounds, causing a white rot. Distributed in North America, Argentina, Europe, and Siberia.

*Cupressus sempervirens:* Argentina.

*Enterolobium contortisiliquum:* Argentina.

*Fraxinus* sp.: Portugal.
*Populus* sp.: Portugal.
*P. alba:* Argentina.
*P. tremula:* Argentina.
*Quercus* sp.: Portugal.
*Schinus dependens:* France.

**Trichoscyphella resinaria** (Cke. & Phill.) Dennis (xx) **conifer canker**

Forms tiny fungus bodies on swollen bark and exuded resin of conifers, bowl-shaped with short stems, pale yellow inside and about 1 mm. wide. Distributed in northern North America, and in Great Britain, Norway, and Hungary.

*Larix decidua:* Great Britain.
*L. sibirica:* Great Britain.
*Picea abies:* Great Britain, Norway.
*Pinus griffithii:* Great Britain.
*P. nigra:* Norway.
*P. sylvestris:* Norway.

**Trichoscyphella willkommii** (Hartig) Nannf. (xxx) **larch canker**

Forms short-stalked cupules with whitish rims covered outside by fungus hairs, orange-colored within, 3 to 5 mm. in diameter when dry. In wet weather the cups expand to a shallow saucer shape. They are seated on bark recently killed by the fungus. Depressed cankers are formed and commonly do not heal over but may girdle small twigs and kill the distal end. This fungus attacks the species of *Larix* and *Pseudolarix*. Distributed in eastern Massachusetts where all known diseased trees have been destroyed. Otherwise it appears to be limited to Europe.

Opperman warns that in Denmark, the American *Larix occidentalis* is so susceptible it should not be planted in that country. This may indicate special danger to this species in its native range if the parasite ever reaches it.

*Larix decidua:* Belgium, Czechoslovakia, Denmark, France, Germany, Great Britain (England, Scotland, Wales), Ireland, Italy, Latvia, Netherlands, Norway, Poland, Russia (Baltic Provinces), Sweden, Switzerland, Yugoslavia.
*L.* ×*eurolepis:* Scotland.
*L. gmelinii* var. *japonica:* Norway.
*L. leptolepis:* Denmark, Germany, Great Britain, Ireland, Norway, Poland, Sweden.
*L. occidentalis:* Ireland.
*L. sibirica:* Norway, Denmark, Great Britain, Sweden.

**Trichosporium vesiculosum** Butler (xx) **root rot**

Forms pulverulent brown pustules on diseased bark, heaped with abundant conidia. Causes a root disease of *Casuarina:* also a canker of bark, fruiting under the bark, rupturing it, and killing the tree. Inoculations with wounds succeeded. Distributed in India and Mauritius.

*Casuarina equisetifolia:* India, Mauritius.
*C. muricata:* India.

**Triphragmium cedrelae** Hori (xxx) **rust**

Forms yellow to black powdery rust pustules on upper and lower surfaces of leaves of *Toona* in Japan.
*Toona sinensis:* Japan.

**Triphragmium chinense** Tai & Cheo (xxx) **rust**

Forms rust pustules on leaves of *Koelreuteria* in Japan and China.
*Koelreuteria paniculata:* China.

**Triphragmium koelreuteriae** H. & P. Syd. (xxx) **rust**

Forms rust pustules on *Koelreuteria* in Japan and China.
*Koelreuteria bipinnata:* China:
*K. paniculata:* China, Japan (Morioka).

**Tripospora tripos** (Cke.) Lindau (xxx) **black spot**

Parasitic on leaves and green twigs of *Podocarpus*. Known in South Africa.
*Podocarpus elongatus:* Union of South Africa.
*P. latifolius:* Union of South Africa.

**Uleiella paradoxa** Schroet. (xxx) ———

Forms yellowish to chestnut-brown fungus pustules on leaves of *Araucaria* in Brazil.
*Araucaria araucana:* Brazil.

**Uleomyces decipiens** Syd. (xx) ———

Forms fungus stromata on indefinite pallid spots 0.5 to 2 mm. in diameter, blackish red on leaves of *Quercus* and *Lithocarpus* in Japan and Formosa.
*Lithocarpus uraianus:* Formosa.
*Quercus thalassica:* Japan (Tosa).

**Uncinula aceris** (DC.) Sacc. (xxx) **maple powdery mildew**

Forms a white to gray powdery conidial fungus coating on leaves of *Acer*. In late summer or autumn tiny, round, blackish perithecia appear scattered over the whitish coating. Distributed in Europe, Algeria, China, and Japan.
*Acer campestre:* Norway.
*A. catalpifolium:* China.
*A. caudatum* var. *multiserratum:* Japan.
*A. mono:* Japan.
*A. negundo:* Japan.
*A. palmatum:* Japan.
*A. platanoides:* Norway, Russia (Kazan).
*A. pseudoplatanus:* Norway, Scotland (Peebles).

**Uncinula adunca** (Wallr. ex Fr.) Lév. (xxx) **powdery mildew**

Forms white to gray powdery mildew coating on leaves of *Populus* and *Salix*. Distributed in the United States, Europe, and Siberia.
*Populus* × *canadensis:* Italy.
*P. nigra:* Denmark, Italy.
*P. nigra* var. *italica:* Denmark, Italy.

*P. tremula:* Norway, Italy.
*Salix alba:* Siberia.
*S. amygdalina:* Denmark.
*S. caprea:* Denmark.
*S. pyrolaefolia:* Siberia.
*S. repens:* Denmark.
*S. rubens:* Denmark.

**Uncinula clandestina** (Biv.-Bern.) Schroet. (xxx) **elm powdery mildew**

Forms powdery mildew on leaves of *Ulmus* in Japan and Europe.
*Ulmus japonica:* Japan.
*U. parvifolia:* Japan.
*U. procera:* Japan.

**Uncinula clintonii** Pk. (xxx) **powdery mildew**

Forms white to gray powdery mildew on leaves of *Celtis*, *Zelkova*, and related trees. Distributed in North America, China, Formosa, and Japan.
*Aphananthe aspera:* Japan.
*Celtis biondii:* China.
*C. sinensis:* China, Formosa, Japan.
*C. sinensis* var. *japonica:* Japan.
*Firmiana platanifolia:* China.
*Paulownia tomentosa:* China.
*Zelkova serrata:* Japan.

**Uncinula curvispora** K. Hara (xxx) **beech powdery mildew**

Develops a powdery mildew coating on leaves of *Fagus* in Japan.
*Fagus crenata:* Japan.

**Uncinula delavayi** Pat. (xxx) **powdery mildew**

Forms powdery mildew on leaves of *Toona* in Japan and China.
*Toona sinensis:* China, Japan.

**Uncinula fraxini** Miyabe (xxx) **ash powdery mildew**

Forms powdery mildew coatings on leaves of *Fraxinus* in China and Japan.
*Fraxinus chinensis:* China.
*F. longicuspis:* Japan.
*Lindera* sp.: China.

**Uncinula magellanica** Thaxt. (xxx) **falsebeech powdery mildew**

Forms a powdery mildew on leaves of *Nothofagus* in Chile.
*Nothofagus antarctica* var. *bicrenata:* Chile.

**Uncinula miyabei** (Salm.) Sacc. & Syd. (xxx) **powdery mildew**

Develops powdery mildew on leaves of *Alnus* and *Cudrania* in China and Japan.
*Alnus hirsuta:* Japan.
*A. incana:* Japan.
*A. japonica:* Japan.
*A. maritima:* Japan.
*Cudrania tricuspidata:* China.

**Uncinula mori** Miyake (xxx) **mulberry powdery mildew**

Forms a powdery mildew coating on the lower surface of leaves of *Morus*. Distributed in Japan, China, and Russia.

*Morus alba:* Japan, Russia (Tashkent).

**Uncinula nothofagi** Thaxt. (xxx) **falsebeech powdery mildew**

Forms powdery mildew coating on leaves of *Nothofagus* in Chile.

*Nothofagus antarctica* var. *bicrenata:* Chile.

**Uncinula polychaeta** (Berk. & Curt.) Ell. (xxx) **powdery mildew**

Forms white to gray powdery mildew coating, with tiny globular perithecia scattered over it on leaves of *Celtis* and *Aphananthe*. Distributed in the United States, Argentina, Uruguay, China, Formosa, Japan, and India.

*Aphananthe aspera:* Japan.
*Celtis australis:* India.
*C. boliviensis:* Argentina.
*C. sinensis:* China, Formosa, Japan.
*C. tala:* Uruguay.

**Uncinula prosopidis** Speg. (xxx) **mesquite powdery mildew**

Forms powdery mildew coating on leaves of *Prosopis* in Argentina.

*Prosopis campestris:* Argentina (Buenos Aires).

**Uncinula salicis** (DC.) Wint. (xxx) **powdery mildew**

Forms powdery mildew coating on leaves of *Populus* and *Salix*. Distributed in North America, Europe, China, India, and Japan.

*Populus* ×*canadensis:* Italy.
*P. ciliata:* India.
*P. nigra:* France, Italy, Russia.
*P. nigra* var. *italica:* Italy.
*P. sieboldii:* Japan.
*P. simonii:* China.
*P. suaveolens:* Japan.
*P. tremula:* Italy, Japan, Norway.
*Salix babylonica:* China.
*S. bakko:* Japan.
*S. caprea:* Japan, Norway, Russia.
*S. cinerea* var. *latifolia:* Russia.
*S. daphnoides:* Japan.
*S. gracilistyla:* Japan.
*S. integra:* Japan.
*S.* ×*multinervis:* Japan.
*S. phanera:* China.
*S. purpurea:* Japan.
*S.* ×*smithiana:* Norway.
*S. stipularis:* Japan.
*S. urbaniana:* Japan.
*S. viminalis:* Japan.
*S. vulpina:* Japan.
*S. wallichiana:* China.

**Uncinula salmoni** Syd. (xxx) **ash powdery mildew**

Develops powdery mildew coating on leaves in Japan.
*Fraxinus longicuspis:* Japan.
*F. longicuspis* var. *sieboldiana:* Japan.

**Uncinula septata** Salm. (xxx) **oak powdery mildew**

Forms a powdery mildew coating on leaves of *Quercus* in Japan and China.
*Quercus fabri:* China.
*Q. glandulifera:* Japan.

**Uncinula sinensis** Tai & Wei (xxx) **powdery mildew**

Develops a powdery mildew on leaves of *Sophora* and *Toxicodendron* in China.
*Sophora japonica:* China.

**Uncinula tectonae** Salm. (xxx) **powdery mildew**

Forms a powdery mildew coating on leaves of *Tectona* and *Cordia* in India.
*Cordia macleodii:* India.
*Tectona grandis:* India.

**Uncinula tulasnei** Fckl. (xxx) **maple powdery mildew**

Forms a powdery white mildew coating on leaves of *Acer.* Distributed in northern Europe and Japan.
*Acer mono:* Japan.
*A. palmatum:* Japan.
*A. platanoides:* Denmark, Germany, Norway.

**Uredinopsis adianti** Komarov (xxx) **fir-fern rust**

See remarks under *Hyalopsora* for general life history. Needle rust on *Abies* with its alternate phase on *Adiantum.* Distributed in Japan and Manchuria.
*Abies sachalinensis:* Japan.

**Uredinopsis athyrii** Kamei (xxx) **fir rust**

See remarks under *Hyalopsora* for general life history. Needle rust of *Abies.* Distributed in Japan.
*Abies sachalinensis:* Japan.

**Uredinopsis filicina** (Niessl) Magnus (xxx) **fir rust**

See *Hyalopsora* for general life history. Forms needle rust on *Abies.* Distributed in Europe, Siberia, and Japan.
*Abies sachalinensis:* Japan.

**Uredinopsis hirosakiensis** Kamei & Hiratsuka (xxx) **fir-fern rust**

For general life history see *Hyalopsora.* Causes needle rust on *Abies* with an alternate stage on *Dryopteris.* Distributed in Japan and on the Siberian Coast.
*Abies sachalinensis:* Japan.

**Uredinopsis intermedia** Kamei (xxx) **fir rust**

For general life history see *Hyalopsora.* Forms rust on needles of *Abies.* Distributed in Vladivostok and Japan.

*Abies sachalinensis:* Japan.

**Uredinopsis kameiana** Faull (xxx) **fir rust**

See under *Hyalopsora* for general life history. Needle rust of *Abies.* Distributed in Siberia, China, and Japan.

*Abies sachalinensis:* Japan.

**Uredinopsis ossaeiformis** Kamei (xxx) **fir rust**

See under *Hyalopsora* for general life history. Needle rust on *Abies.* Distributed in Siberia and Japan.

*Abies firma:* Japan.

*A. sachalinensis:* Japan.

**Uredinopsis struthiopteridis** Störmer ex Diet. (xxx) **fir-fern rust**

For general life history see *Hyalopsora.* Needle rust on *Abies* and alternate stage on *Struthiopteris* and other ferns. Distributed in Canada, United States, Europe, Caucasus, Siberia, and Japan.

*Abies sachalinensis:* Japan.

**Uredinopsis woodsiae** Kamei (xxx) **fir rust**

For general life history see *Hyalopsora.* Needle rust on *Abies.* Distributed in Japan.

*Abies sachalinensis:* Japan.

**Uredo acaciae-bursariae** Cumm. (xxx) **acacia rust**

Forms powdery, cinnamon-brown pustules on leaves of *Acacia* in Guatemala.

*Acacia bursaria:* Guatemala.

**Uredo albizziae** P. Henn. (xxx) **rust**

Forms solid rust pustules, ochraceous-orange, with spores not powdery, yellow to brown, on leaves of *Albizia* in New Guinea.

*Albizia procera:* New Guinea (Finschhafen).

**Uredo alchorneae** P. Henn. (xxx) **rust**

Forms powdery rust pustules on deformed fruit stems of *Alchornea;* spores yellowish brown to fuscous. Known in Brazil and Venezuela.

*Alchornea iricurana:* Brazil.

*A. triplinervia:* Venezuela.

**Uredo amicosa** Arth. (xxx) **rust**

Forms uredial spore pustules on leaves of *Chrysophyllum.* The spores are yellowish brown. Known in Puerto Rico.

*Chrysophyllum cainito:* Puerto Rico (Mayaguez).

**Uredo artocarpi** Berk & Br. (xxx) **rust**

Forms numerous dull brown rust pustules on the lower surfaces of leaves of *Artocarpus* and *Castilla*. Distributed in the West Indies, South America, Ceylon, Malaya, and Philippines.

*Artocarpus altilis:* Colombia, Cuba, Dominican Republic, Philippines, Puerto Rico, Venezuela.
*A. heterophyllus:* Venezuela.
*Castilla elastica:* Cuba.

**Uredo bixae** Arth. (xxx) **rust**

Forms powdery, brown, rust pustules on leaves of *Bixa* in Puerto Rico and Dominican Republic.

*Bixa orellana:* Dominican Republic, Puerto Rico.

**Uredo bombacis** Petch (xxx) **rust**

Forms rust pustules, minute to 200 $\mu$ in diameter, golden yellow with golden spores, on leaves of *Bombax* in Ceylon.

*Bombax malabaricum:* Ceylon.

**Uredo castaneae** P. Henn. (xxx) **rust**

Forms brown, rust pustules on leaves of *Castanea* and *Quercus*. Known in the Philippines and Formosa.

*Castanea mollissima:* Philippines.
*Quercus glandulifera:* Formosa.

**Uredo celtidis** Paz. (xxx) **rust**

Forms brown, powdery, rust pustules on the lower side of leaves of *Celtis* in Peru and Brazil.

*Celtis* sp.: Peru.

**Uredo chlorophorae** Cumm. (xxx) **rust**

Forms uredia on the lower side of leaves, 100 to 170 $\mu$ in diameter, golden brown with yellow to white spores. On *Chlorophora* in Sierra Leone.

*Chlorophora regia:* Sierra Leone.

**Uredo clusiae** Arth. (xxx) **rust**

Forms dark brown, rust pustules with light yellow spores on leaves of *Clusia* in Puerto Rico.

*Clusia rosea:* Puerto Rico.

**Uredo colebrookiae** Barcl. (xxx) **rust**

Forms rust pustules on leaves of *Colebrookia* in India and China.

*Colebrookia oppositifolia:* China, India.

**Uredo colubrinae** Cumm. (xxx) **rust**

Forms rust pustules on leaves of *Colubrina* in Guatemala.

*Colubrina arborescens:* Guatemala.

**Uredo cordiarum** Kern & Whet. (xxx) **rust**

Forms powdery rust pustules, 0.5 to 0.8 mm. across, with cinnamon-brown spores on leaves of *Cordia* in Colombia.

*Cordia cylindrostachya:* Colombia.

**Uredo dendrocalami** Petch (xxx) **bamboo rust**

Forms rust pustules on leaves of *Dendrocalamus* in Ceylon and China.

*Dendrocalamus latiflorus:* China.

**Uredo ehretiae** Barcl. (xxx) **rust**

Develops golden-yellow, rust pustules 1 to 8 mm. across, on leaves and petioles of *Ehretia.* Distributed in Japan, Formosa, Pakistan, India, and China.

*Ehretia acuminata:* Formosa, India, Pakistan.
*E. macrophylla:* China, Formosa.
*E. serrata:* India.

**Uredo erythrinae** P. Henn. (xxx) **rust**

Develops rust pustules on yellow-brown spots on leaves of *Erythrina.* Distributed in Guatemala, Venezuela, Congo, Uganda, Pakistan, India, Ceylon, Malaya, and Philippines.

*Erythrina berteroana:* Guatemala.
*E. glauca:* Venezuela.
*E. variegata:* Philippines.

**Uredo farinosa** P. Henn. (xxx) **rust**

Makes white, mealy spots with pale yellowish spores on leaves and twigs of *Ocotea* and related species. Known in Brazil and Puerto Rico.

*Ocotea leucoxylon:* Puerto Rico.

**Uredo ficina** Juel (xxx) **rust**

Forms minute powdery rust pustules with pale brown spores on leaves of *Ficus.* Distributed in Florida, Guatemala, Barbados, Venezuela, and Paraguay.

*Ficus aurea:* Guatemala.
*F. involuta:* Guatemala.
*F. padifolia:* Guatemala.

**Uredo hameliae** Arth. (xxx) **rust**

Forms numerous light-brown rust pustules with golden-yellow spores, on leaves of *Hamelia.* Distributed in Puerto Rico, Dominican Republic, Costa Rica, and Venezuela.

*Hamelia patens:* Costa Rica, Dominican Republic, Puerto Rico, Venezuela.

**Uredo hymenaeae** Mayor (xxx) **rust**

Forms light-brown powdery rust pustules over the entire leaf surface of trees of *Hymenaea.* Distributed in Puerto Rico, Cuba, and Venezuela.

*Hymenaea courbaril:* Cuba, Venezuela.

**Uredo ignava** Arth. (xxx) **bamboo rust**

Forms brown powdery rust pustules on leaves of *Bambusa* and *Dendrocalamus*. Distributed in Cuba, Puerto Rico, Venezuela, and China.

*Bambusa arundinacea:* China.
*B. vulgaris*: Cuba, Puerto Rico, Venezuela.
*Dendrocalamus* sp.: China.

**Uredo ingae** P. Henn. (xxx) **rust**

Forms powdery, ochraceous rust pustules on stems and fruit petioles, with light yellowish spores on *Inga*. Distributed in the West Indies, Guatemala, El Salvador, Costa Rica, Venezuela, Colombia, and Brazil.

*Inga coriacea* var. *leptopus:* Costa Rica.
*I. edulis:* Brazil, Guatemala.
*I. fastuosa:* Venezuela.
*I. preussii:* El Salvador.
*I. vera:* Puerto Rico.

**Uredo longipedis** P. Henn. (xxx) **rust**

Forms blistery, ochraceous rust pustules with yellow-brown spores on leaves of *Calliandra* in Brazil.

*Calliandra longipes:* Brazil.

**Uredo machaerii** Diet. (xxx) **rust**

Forms cinnamon rust pustules with pale brown spores on much-deformed branches of *Machaerium* in Brazil.

*Machaerium* sp.: Brazil.

**Uredo maclurae** Speg. (xxx) **rust**

Forms minute, 200 to 300 $\mu$ in diameter, pale yellow rust pustules with yellow spores on leaves of *Maclura* and *Chlorophora*. Known in Argentina and Venezuela.

*Chlorophora tinctoria:* Venezuela.
*Maclura pomifera:* Argentina.
*M. ucora:* Argentina.

**Uredo manilensis** Syd. (xxx) **rust**

Forms brown rust pustules on leaves of *Tabernaemontana* in the Philippines.

*Tabernaemontana divaricata:* Philippines.
*T. polygama:* Philippines.

**Uredo ngamboensis** P. Henn. (xxx) **rust**

Forms rust pustules on leaves of *Albizia*. Known in Mauritius and the Philippines.

*Albizia lebbek:* Mauritius, Philippines.

**Uredo prosopidicola** Speg. (xxx) **mesquite rust**

Causes hypertrophy of seed pods with fleshy tumors up to the size of hen's eggs, with brown subpulverulent rust pustules and pale fulvous spores. On young seed pods of *Prosopis* in Argentina.

*Prosopis campestris:* Argentina (Catamarca).

**Uredo pusilla** Kern, Thurston & Whet. (xxx) **rust**

Forms rust pustules, small, up to 0.3 mm. across, with pale cinnamon-brown spores on *Machaerium* in Venezuela.

*Machaerium humboldtianum:* Venezuela.

**Uredo quercus** Brond. (xxx) **oak rust**

Forms small, yellow to orange, rust pustules on the lower surface of leaves of *Quercus* spp. Distributed in Europe and Morocco.

*Quercus* sp.: Belgium, France, Germany, Great Britain, Italy, Switzerland.

*Q. ilex:* Great Britain.

*Q. robur:* Great Britain.

*Q. suber:* Morocco.

**Uredo raciborskii** Sacc. & Syd. (xxx) **rust**

Forms brown rust pustules on leaves of *Pithecellobium* in Java.

*Pithecellobium scutiferum:* Java.

**Uredo rhombica** Speg. (xxx) **rust**

Forms rust pustules on leaves of *Astronium*. Distributed in Venezuela, Paraguay, and Brazil.

*Astronium graveolens:* Venezuela.

**Uredo rondeletiae** Arth. & Holw. (xxx) **rust**

Forms small, 0.1 to 0.4 mm. across, pulverulent, cinnamon-brown rust pustules with cinnamon-brown spores, on the lower surface of leaves of *Rondeletia* in Guatemala.

*Rondeletia cordata:* Guatemala.

**Uredo salicis-acmophyllae** G. Fragoso (xxx) **willow rust**

Forms small, golden-yellow rust pustules on leaves of *Salix* in Iran.

*Salix acmophylla:* Iran.

**Uredo sissoo** Syd. & Butl. (xxx) **rust**

Forms yellowish, powdery rust pustules on leaves of *Dalbergia*. Distributed in India, Ceylon, and Pakistan.

*Dalbergia sissoo:* India, Pakistan.

**Uredo spyridii** Cke. & Mass. (xxx) **rust**

Forms ochraceous to snuff-brown, pulverulent rust pustules with yellow to orange-yellow spores on leaves of *Spyridium* and *Pomaderris*. Distributed in Victoria, Australia, and in Tasmania.

*Pomaderris apetala:* Australia, Tasmania.

**Uredo stereospermi** Syd. (xxx) **rust**

Forms dark brown rust pustules with reddish-brown spores on leaves of *Stereospermum* in Ceylon.

*Stereospermum chelonoides:* Ceylon.

**Uredo tectonae** Racib. (xxx) **teak rust**

Forms brown rust pustules on leaves of *Tectona*. Distributed in Java, Indochina, Ceylon, India, Pakistan, and Formosa.

*Tectona grandis:* Formosa, India, Java, Pakistan.

**Uredo terminaliae** P. Henn. (xxx) **rust**

Forms ochraceous rust pustules on leaves of *Terminalia* in Brazil.
*Terminalia hylobates:* Brazil.

**Uredo tholopsora** Cumm. (xxx) **poplar rust**

Forms golden-yellow, powdery, minute rust pustules on leaves of *Populus* in China.
*Populus nigra:* China.
*P. tomentosa:* China.

**Uredo trichiliae** Arth. (xxx) **rust**

Forms caulicolous or hypophyllous rust pustules on etiolated shoots and on midribs and veins; pulverulent and bright yellow, on *Trichilia* in Puerto Rico.
*Trichilia pallida:* Puerto Rico.

**Uredo zarumae** Jacks. & Holw. (xxx) **rust**

Forms yellowish, pulverulent rust pustules closely gregarious in large areas 2 to 5 cm. across, on leaves of *Clusia.* Known in Ecuador.
*Clusia multiflora:* Ecuador.

**Ureomyces achrous** Syd. (xxx) **rust**

Forms minute, finally pulverulent, golden-yellow rust pustules on leaves and twigs of *Dalbergia.* Known in India and Pakistan.
*Dalbergia sissoo:* India, Pakistan.

**Uromyces ambiens** Cke. (xxx) **box rust**

Forms yellow-brown rust pustules on leaves of *Buxus* in India and Pakistan.
*Buxus sempervirens:* India, Pakistan.

**Uromyces amurensis** Kom. (xxx) **rust**

Forms rust pustules, yellow and cinnamon-brown to black on leaves of *Maackia.* Distributed in Siberia, China, Manchuria, Korea, and Japan.
*Maackia amurensis:* China, Japan, Korea, Manchuria, Siberia.
*M. amurensis* var. *buergeri:* Japan.

**Uromyces bauhiniicola** Arth. (xxx) **rust**

Forms powdery, dark-brown rust pustules on both surfaces of leaves of *Bauhinia.* Distributed in Mexico and Venezuela.
*Bauhinia pringlei:* Mexico.

**Uromyces bicinctus** McAlp. (xxx) **rust**

Forms ruddy-brown rust pustules with yellowish-brown spores on leaves and pods of *Acacia* in Australia.
*Acacia fasciculifera:* Australia.

**Uromyces cedrelae** (P. Henn.) P. Henn. (xxx) **rust**

Develops dull-brown rust pustules on the lower surface of leaves of *Toona* in Java.
*Toona serrata:* Java.

**Uromyces cladrastidis** Kusano (xxx) **yellowwood rust**

Forms powdery, black rust pustules on leaves of *Cladrastis* in Japan.
*Cladrastis shikokiana:* Japan.

**Uromyces diploglottidis** Cke. & Mass. (xxx) **rust**

Forms pale brown rust pustules on leaves of *Diploglottis*. "This species was very destructive to the foliage . . ." Known in Queensland, Australia.
*Diploglottis cunninghamii:* Australia.

**Uromyces fusisporus** Cke. & Mass. (xxx) **rust**

Produces dark brown to black erumpent rust pustules with golden-brown uredospores and ruddy-brown teliospores mixed with the former. Occurs on leaves of *Acacia* in Australia.
*Acacia neriifolia:* Australia.
*A. salicina:* Australia.

**Uromyces hyalosporus** Saw. (xxx) **rust**

Rust on *Acacia* causing serious damage by deforming the affected phyllodes and twigs. Reported in Japan and Formosa.
*Acacia confusa:* Formosa.

**Uromyces malloti** P. Henn. (xxx) **rust**

Forms brown rust pustules on leaves of *Melanolepis* in New Guinea and the Philippines.
*Melanolepis multiglandulosa:* New Guinea, Philippines.

**Uromyces phyllodiorum** (Berk. & Br.) McAlp. (xxx) **rust**

Forms rusty-brown rust pustules with yellow spores on phyllodes of *Acacia* in Australia.
*Acacia dallachiana:* Australia.
*A. decurrens* var. *dealbata:* Australia.
*A. microbotrya:* Australia.
*A. neriifolia:* Australia.
*A. notabilis:* Australia.
*A. penninervis:* Australia.
*A. pruinosa:* Australia.

**Uromyces shikokianus** Kusano (xxx) **rust**

Forms very small, powdery, black rust pustules with chestnut-brown spores on leaves of *Cladrastis* in Japan.
*Cladrastis shikokiana:* Japan.

**Uromyces sophorae-flavescentis** Kusano (xxx) **rust**

Forms reddish-orange to brownish-black rust pustules on leaves of *Sophora* in Japan, Korea, Manchuria, and China.
*Sophora angustifolia:* Japan, Korea.
*S. flavescens:* China, Manchuria.

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**Uromyces terebinthi** (DC.) Wint. (xxx) **pistache rust**

Forms rust of leaves of *Pistacia.* Distributed in Europe, Syria, Kurdestan, and Iran.

*Pistacia terebinthus:* France.
*P. vera:* Syria.

**Uromyces truncicola** P. Henn. & Shir. (xxx) **rust**

Forms powdery, chestnut to dark-vinaceous rust pustules in crevices in the bark of branches of *Sophora* in Japan and China.

*Sophora japonica:* China, Japan.

**Uromycladium alpinum** McAlp. (xxx) **rust**

Forms rusty-brown rust pustules with yellow-brown to dark-brown spores on *Acacia* in Australia and Tasmania.

*Acacia buxifolia:* Australia.
*A. dallachiana:* Australia.
*A. decurrens* var. *dealbata:* Australia, Tasmania.
*A. implexa:* Australia.

**Uromycladium bisporum** McAlp. (xxx) **rust**

Forms elongate, slightly swollen chocolate-brown masses on branches and powdery patches on phyllodes. Occurs on *Acacia* in Australia and Tasmania.

*Acacia decurrens* var. *dealbata:* Australia, Tasmania.

**Uromycladium maritimum** McAlp. (xxx) **rust**

Forms dark-brown rust pustules on stems and phyllodes of *Acacia* in Australia and Tasmania.

*Acacia longifolia:* Australia, Tasmania.

**Uromycladium notabile** (Ludw.) McAlp. (xxx) **gall rust**

Forms large, swollen, distorted, yellow-brown to chocolate-brown galls on branches, phyllodes, and pods of *Acacia* in Australia and Tasmania.

*Acacia binervata:* Australia.
*A. decurrens:* Australia.
*A. decurrens* var. *dealbata:* Australia, Tasmania.
*A. elata:* Australia.
*A. notabilis:* Australia.
*A. pruinosa:* Australia.

**Uromycladium robinsoni** McAlp. (xxx) **rust**

Forms brown, powdery rust pustules on both surfaces of phyllodes of *Acacia* in Australia and Tasmania.

*Acacia melanoxylon:* Australia, Tasmania.

**Uromycladium simplex** McAlp. (xxx) **rust**

Produces ruddy-brown to dark-brown pustules on both surfaces of phyllodes and on branches of *Acacia* in Australia.

*Acacia pycnantha:* Australia.

**Uromycladium tepperianum** (Sacc.) McAlp. (xxx) **gall rust**

Forms gall-like masses along the entire length of phyllodes and large rounded galls or broad areas on branches, coated with brown, powdery spores. Occurs on many species of *Acacia* and on *Albizia*. Kills heavily attacked branches and trees. Distributed in Australia and Tasmania; and on *Albizia* in Java.

*Acacia aneura:* New South Wales, South Australia.
*A. armata:* Australia.
*A. bynoeana:* South Australia.
*A. decurrens:* Australia.
*A. diffusa:* Tasmania (Hobart).
*A. erioclada:* Australia.
*A. glaucoptera:* Australia.
*A. hakeoides:* Australia.
*A. implexa:* Australia.
*A. juniperina:* Australia.
*A. ligulata:* South Australia.
*A. linophylla:* South Australia.
*A. longifolia:* Australia.
*A. melanoxylon:* Australia.
*A. myrtifolia:* Australia.
*A. obliqua:* South Australia.
*A. penninervis:* South Australia.
*A. pycnantha:* Australia.
*A. rigens:* South Australia.
*A. salicina:* Australia.
*A. siculiformis:* Australia.
*A. spinescens:* Australia.
*A. stricta:* Australia, New South Wales, Tasmania (Gordon).
*A. tetragonophylla:* South Australia, New South Wales.
*A. trineura:* South Australia.
*A. verniciflua:* Tasmania (Hobart).
*A. verticillata:* Tasmania (Hobart), South Australia.
*A. vomeriformis:* Australia.
*Albizia montana:* Java.

**Uropyxis fraxini** (Kom.) Magn. (xxx) **ash rust**

Forms dark-chestnut to black rust pustules up to 2 mm. across on small yellow spots on leaves of *Fraxinus*. Distributed in Manchuria, Korea, and China.

*Fraxinus chinensis:* China, Manchuria.
*F. chinensis* var. *rhynchophylla:* Korea, Manchuria (Kirinensis Province).

**Ustulina deusta** (Fr.) Petr. (xx) **root rot**

Forms large fruiting masses, thick, undulate, brittle, when young whitish and powdery, becoming rigid. Common about the bases and exposed roots of wounded living broad-leaved trees. Distributed on a very wide range of hosts and well over the entire world where there are hardwood forests. Several names have been given this root rot, but the one used here is stated to be the correct one according to botanical rules of nomenclature.

*Acacia campylacantha:* Tanganyika.
*Acer pseudoplatanus:* Denmark.

*Albizia falcata:* Sumatra.
*Aleurites fordii:* Nyasaland.
*A. montana:* Ceylon, Indochina, Nyasaland.
*Areca cathecu:* Ceylon.
*Carpinus* sp.: Denmark.
*Casuarina equisetifolia:* Mauritius.
*Ceiba pentandra:* Tanganyika.
*Delonix regia:* Nyasaland, Tanganyika.
*Elaeis guineensis:* Ceylon, Malaya, Sumatra.
*Eugenia jambos:* Mauritius.
*Fagus sylvatica:* Denmark, Germany, Great Britain.
*Ficus* sp.: Gold Coast.
*Fraxinus* sp.: Denmark.
*Hevea brasiliensis:* Borneo, Brazil, Ceylon, Congo, French Equatorial Africa, Gold Coast, India, Indochina, Java, Malaya, Seychelles, Sierra Leone, Sumatra.
*Leucaena glauca:* Sumatra.
*Populus* sp.: Denmark.
*Quercus* sp.: Germany.
*Theobroma cacao:* Ceylon, Gold Coast, Tanganyika, West Africa.
*Tilia × europaea:* Denmark, Great Britain.
*Ulmus* sp.: Denmark.
*U. procera:* Great Britain.

**Valsa cryptomeriae** Kitajima (xx) **seedling blister**

Causes blackish-brown or reddish-brown areas on stems of seedlings of *Cryptomeria*, which become sunken and cracked and cause hypertrophy and bending of diseased seedlings in Japan.

*Cryptomeria japonica:* Japan.

**Valsa eugeniae** Nutman & Roberts (xx) **clove tree "sudden death"**

Associated with "sudden death" and dieback of trees of *Eugenia caryophyllata*. Black perithecia are formed in groups of 100 or more on the bark. It is a weak wound parasite on branches. It is always associated with a brilliant saffron-yellow, water-soluble stain in affected wood, limited by a distinct black zone line. Known only on the clove tree in Zanzibar.

*Eugenia caryophyllata:* Zanzibar.

**Valsa kunzei** Fr. (xx) **conifer canker**

Causes stem and branch cankers on numerous conifers of the subfamily Abietineae inflicting considerable damage. Recent study with American specimens shows that there are three types of fungi distinct enough to be named different varieties as follows: *Valsa kunzei* var. *kunzei* (typical) on *Abies*, *Larix*, *Pseudotsuga*, and *Tsuga; V. kunzei* var. *piceae* A. M. Waterman on *Picea* spp.; and *V. kunzei* var. *superficialis* A. M. Waterman on *Pinus strobus* and *P. griffithii.* The varieties are distributed in North America and Europe.

*Abies alba:* Great Britain.
*Picea abies:* Great Britain.

**Valsa nivea** Fr. (xx) **poplar canker**

Causes bark cankers of *Populus* branches. Distributed widely in North America and Europe; also in Siberia.

*Populus angulata:* Denmark.
*P. balsamifera:* Denmark.
*P.* ×*canadensis* var. *serotina:* Great Britain.
*P. nigra:* Great Britain.
*P. tremula:* Denmark, Great Britain, Siberia.

**Valsa oxystoma** Rehm (xx) **alder dieback**

Associated with dieback of *Alnus* in Europe.

*Alnus glutinosa:* Germany.
*A. rubra:* Germany.
*A. viridis:* Austria, Germany, Great Britain.

**Valsa paulowniae** Miyabe & Hemmi (xx) **dieback**

Associated with severe dieback of twigs and branches of *Paulownia* killing entire trees in Japan. Said to act much like chestnut blight.

*Paulownia tomentosa:* Japan.

**Valsa sordida** Nits. (xx) **poplar and willow canker**

Causes cankers on twigs, branches, and trunks of *Populus* and *Salix*. Sprouts often develop just below the canker. Yellow to reddish spore tendrils form on the dead bark. Infection starts in dead twigs or some injury. The conidial stage known as *Cytospora chrysosperma* Fr. is most common on living diseased trees and appears first on the diseased bark. The ascogenous stage, *Valsa sordida*, develops later and not as abundantly as the *Cytospora*. Trees weakened by drought are especially liable to be attacked, and the fungus may penetrate the entire trunks and branches before attacked trees are completely dead. Distributed in North America, south to Mexico; in Argentina, Europe, Asia, Australia, and New Zealand.

*Populus* sp.: Italy.
*P. alba:* Great Britain.
*P.* ×*canadensis* var. *serotina:* Great Britain.
*P. deltoides:* New South Wales (Leeton).
*P. fremontii* var. *wislizenii:* Mexico.
*P. nigra:* England, Scotland, Ireland.
*P. nigra* var. *italica:* Mexico, Argentina.
*P.* ×*robusta:* Germany.
*P. tremula:* Germany, Great Britain.
*Salix* sp.: Argentina, Siberia.
*S. alba* var. *calva:* England.

**Venturia aucupariae** Rostr. (xxx) **scab**

Causes scabby leaf spots with rough, brown or greenish surfaces on *Sorbus*. Distributed in northern Europe.

*Sorbus* sp.: Germany.
*S. aucuparia:* Denmark.

**Venturia bellotae** Speg. (xxx) **scab**

Forms black scabs on the lower surface of leaves of *Cryptocarya* in Chile.

*Cryptocarya bellota:* Chile.

**Venturia chlorospora** (Ces.) Aderh. (xxx) **willow scab**

The imperfect stage is *Fusicladium saliciperdum* (All. & Tub.) Tub. It forms olive-green fungus masses along the main veins on the lower side of the developing leaves of *Salix*. The tip of the young shoot wilts and dies, resembling frost injury. Heavy attacks accompanied by moist weather kill large trees in a few years. Thousands of roadside and streamside trees have died in Northeastern United States and Canada within a few years. Distributed in Eastern North America from Greenland and Ellesmere Land southward to West Virginia, with occurrences in North and South Carolina, Colorado, and British Columbia. It is distributed generally throughout Europe.

*Salix* sp.: Great Britain.
*S. alba* var. *vitellina:* Netherlands.
*S. amygdalina:* Poland.
*S. aurita:* Europe.
*S. babylonica:* Germany, Poland.
*S.* ×*blanda:* Poland.
*S. caprea:* Denmark.
*S. cinerea:* Europe.
*S. fragilis:* Denmark, Germany, Netherlands.
*S. fragilis* var. *decipiens:* Great Britain.
*S. japonica:* Denmark.
*S. meyeriana:* Denmark, Netherlands.
*S.* ×*mollissima:* Denmark.
*S. myrsinifolia:* Netherlands, Norway.
*S. pentandra:* Germany, Netherlands..
*S. purpurea:* Germany, Poland.
*S. viminalis:* Germany, Poland.

**Venturia crataegi** Aderh. (xxx) **hawthorn scab**

Forms black, scabby spots on fruits of *Crataegus* in Florida, Germany, and Denmark.

*Crataegus oxyacantha:* Germany (Erfurt).

**Venturia ditricha** (Fr.) Karst. (xxx) **birch scab**

Forms black spore pustules on leaves of *Betula*. Distributed widely in North America and Europe.

*Betula pendula:* Denmark, Norway.
*B. pubescens:* Norway.

**Venturia fraxini** (Rostr.) Aderh. (xxx) **ash scab**

Forms black, globose perithecia on the lower leaf surface of *Fraxinus*. Distributed in Florida and northern Europe.

*Fraxinus* sp.: Germany.
*F. excelsior:* Denmark.

**Venturia populina** (Vuill.) Tub. (xx) **poplar scab**

Associated with defoliation and dieback of *Populus* shoots. Distributed in Europe.

*Populus alba:* Norway.
*P.* ×*canadensis:* Italy.
*P. deltoides:* Hungary, Italy.
*P. nigra* var. *italica:* France, Germany, Italy.
*P.* ×*robusta:* Italy.
*P. tremula:* Denmark, Norway.

**Venturia tremulae** Aderh. (xxx) **poplar scab**

Associated with leaf scab, withering of leaves and shoots, and defoliation of *Populus*. Distributed in North America and Europe.

*Populus alba:* Denmark, Germany, Italy, Netherlands.
*P. alba* f. *pyramidalis:* Germany.
*P.* ×*canadensis:* Italy.
*P.* ×*canescens:* Netherlands, Denmark, Germany.
*P. nigra:* Denmark, Italy, Russia (Kazan).
*P. nigra* var. *italica:* Denmark.
*P. tremula:* Denmark, Germany, Italy, Netherlands, Norway, Russia.

**Verticillium albo-atrum** Reinke & Berth. (xx) **wilt**

A parasite readily infecting wounds that expose the tissues within the cortex, both above and below the soil surface. Infection extends into the wood vessels; the mycelium stimulates formation of tyloses in the vascular tissues and interrupts conduction of water, causing wilting. Affected tissues are discolored within in streaks or single annual rings. Maples commonly have green discolorations, while in other hosts they may be brown. Wilt occurs in single small branches or in large main branches of the tree top. Many broad-leaved species may be attacked. Distributed generally in temperate North America, in Europe, and in the Congo, Australia, and New Zealand.

*Acer campestre:* Italy.
*A. ginnala:* Germany.
*A. negundo:* Germany.
*A. platanoides:* Germany, Italy.
*A. platanoides* f. *globosum:* Germany.
*A. platanoides* f. *schwedleri:* Germany.
*A. pseudoplatanus:* France, Germany.
*Aesculus hippocastanum:* Germany.
*Ailanthus altissima:* Italy.
*Castanea sativa:* Germany.
*Cercis siliquastrum:* Italy.
*Leucaena glauca:* Congo.
*Populus tremula:* Germany.
*Quercus* sp.: France.
*Sophora japonica:* Italy.
*Tilia cordata:* Germany.
*T.* ×*euchlora:* Germany.
*T. tomentosa:* Germany.
*Ulmus* sp.: Germany.
*U. glabra:* Italy.

**Verticillium dahliae** Kleb. (xx) **wilt**

See *Verticillium albo-atrum* for a general description of this wilt. The two parasites are much alike and may be varieties of a single species. They cause similar symptoms and attack the same trees in nurseries and in land that has been cultivated, but not in wild stands. Reports of occurrence seem to indicate that *V. dahliae* is not as generally distributed as is *V. albo-atrum*. Reported in Colombia, France, Netherlands, Sumatra, and New Zealand.

*Acer platanoides* f. *schwedleri:* Netherlands.
*A. pseudoplatanus:* France.
*Ailanthus altissima:* France.
*Koelreuteria paniculata:* France.
*Ulmus glabra:* Netherlands.

**Volutella buxi** (Fr.) Berk. & Br. (xx) **box blight**

Associated with stem cankers causing blight with straw-yellow flags of dead twigs on *Buxus*. Myriads of pink powdery spores often develop on the back of dead leaves and twigs. Distributed in North America and Europe where box is grown.

*Buxus sempervirens:* Spain (Seville and Madrid).

**Volvaria bombycina** Fr. (xx) **heart rot**

Pileus fleshy, 6 to 10 cm. across, fine, dense, silky-fibrillose above, entirely white except gills, which are pink; stem central with distinct cupulate basal volva. A wound parasite, especially where large branches break out of the main trunk of broad-leaved trees. Not on conifers. Distributed widely but is not abundant in the United States, Canada, Cuba, Europe, and Siberia.

*Betula pendula:* Siberia.
*Fagus sylvatica:* Germany.

**Xylaria apiculata** Cke. (xx) **root rot**

Forms club-shaped, single or branched, upright, white or gray to black fruit-bodies, 3 to 10 mm. in diameter and 1 to 5 cm. high, growing from buried roots or at the base of injured broad-leaved living trees. The Xylarias commonly are saprophytic but can attack open wounds on living trees. They cause stringy white rot in the infected wood. *Xylaria apiculata* kills trees of *Erythroxylon* sp. in Java.

*Erythroxylon coca:* East Indies (Java).

**Xylaria deserticola** Speg. (xx) **root rot**

See *Xylaria apiculata* for a general account of these wound parasites. *X. deserticola* is reported as causing root rot of *Hevea* and *Ficus* in Malaya and India.

*Hevea brasiliensis:* Malaya.

**Xylaria polymorpha** (Fr.) Grev. (xx) **root rot**

This root rot is like the preceding *Xylariae* but is larger and more robust. It is distributed widely in North America, Europe, and India.

*Shorea robusta:* India.

**Xylaria thwaitesii** Cke. (xx) **root rot**

Forms black, flat bands or patches on roots of *Hevea.* Diseased trees die. Causes a brownish-gray, moist rot, hard at the center but with soft decay on the outside. Distributed in Ceylon, Indochina, Java, and Sumatra.

*Hevea brasiliensis:* Ceylon, India, Indochina, Java, Sumatra.
*Tectona grandis:* East Indies.

**Zaghouania phillyreae** (DC.) Pat. (xxx) **rust**

Forms golden-yellow rust pustules on petioles, leaf blades, and stems of *Phillyrea.* Distributed in Europe and northern Africa.

*Phillyrea* sp.: Morocco.
*P. angustifolia:* Corsica.

# HOST INDEX OF THE DISEASES

This section lists the host trees alphabetically by their scientific names with their authors and many common names; all have been checked by Elbert L. Little, Jr. The scientific host names are believed to be correct under the International Code of Botanical Nomenclature and are generally accepted in usage. Synonyms are not given. The reported pathogens are listed alphabetically within their groups by their scientific names but without authors or common names because these are given in the preceding section.

**Abies** Mill. **fir**

*Caliciopsis pinea*
*Ceratocystis piceae*
*Diplodia pinea*
*Fomes pinicola*
*Ganoderma applanatum*
*Hydnum cirrhatum*
*Melampsorella caryophyllacearum*
*Polyporus schweinitzii*
*P. sulphureus*
*Stereum abietinum*

**Abies alba** Mill. **silver fir**

*Acanthostigma parasiticum*
*Aleurodiscus amorphus*
*Armillaria mellea*
*Botrytis cinerea*
*Cenangium ferruginosum*
*Chrysomyxa ledi* var. *rhododendri*
*Corticium galactinum*
*C. odoratum*
*Cucurbitaria pithyophila*
*Cytospora pinastri*
*Dasyscypha calyciformis*
*D. subtilissima*
*Fomes annosus*
*F. pini*
*F. pomaceus*
*F. robustus*
*Fusarium bulbigenum* var. *blasticola*
*F. oxysporum* var. *aurantiacum*
*Ganoderma applanatum*
*Helicobasidium purpureum*
*Hyalopsora aspidiotus*
*Hypodermella lirelliformis*
*H. nervisequia*
*Lophodermium piceae*
*Melampsora abieti-capraearum*
*M. epitea*
*Melampsorella caryophyllacearum*
*Milesia blechni*
*M. kriegeriana*
*M. polypodii*
*M. scolopendrii*
*M. vogesiaca*
*Nectria cucurbitula*
*Pellicularia filamentosa*
*Pestalotia hartigii*
*Pezicula livida*
*Phacidiopycnis pseudotsugae*
*Phaeocryptopus nudus*
*Pholiota adiposa*
*P. aurivella*
*Phomopsis abietina*
*Phytophthora cactorum*
*Pleurotus mitis*
*Polyporus schweinitzii*
*P. sulphureus*
*Poria vaporaria*
*Pucciniastrum epilobii*
*P. goeppertianum*
*Pythium debaryanum*
*Rehmiellopsis abietis*
*Rhizina undulata*
*Stereum sanguinolentum*
*Valsa kunzei*

**Abies cephalonica** Loud. **Greek fir**

*Dasyscypha calyciformis*
*Fusarium oxysporum* var. *aurantiacum*
*Hypodermella nervisequia*
*Melampsorella caryophyllacearum*
*Milesia kriegeriana*
*M. polypodii*
*M. scolopendrii*

**Abies cephalonica** Loud. **Greek fir** (Continued)
*M. vogesiaca*
*Rehmiellopsis abietis*

**Abies concolor** (Gord. & Glend.) Lindl. **white fir**
*Hypoderma robustum*
*Melampsorella caryophyllacearum*

**Abies fabri** (Mast.) Craib **Faber fir**
*Hypodermella nervisequia*

**Abies firma** Sieb. & Zucc. **momi fir**
*Dasyscypha calyciformis*
*Fomes pinicola*
*Melampsorella caryophyllacearum*
*Milesia vogesiaca*
*Phytophthora cactorum*
*Uredinopsis ossaeiformis*

**Abies forrestii** Craib **Forrest fir**
*Melampsorella caryophyllacearum*

**Abies georgei** Orr **George fir**
*Fomes annosus*
*F. nigrolimitatus*
*Polyporus dryadeus*
*P. schweinitzii*

**Abies grandis** (Dougl.) Lindl. **grand fir**
*Pucciniastrum epilobii*
*Pythium torulosum*

**Abies homolepis** Sieb. & Zucc. **Nikko fir**
*Dasyscypha abieticola*

**Abies mariesii** Mast. **Maries fir**
*Fomes annosus*
*Hypodermella nervisequia*
*Polyporus balsameus*

**Abies nephrolepis** Maxim. **Khingan fir**
*Fomes robustus*
*Polyporus schweinitzii*

**Abies nordmanniana** (Steven) Spach **Nordmann fir**
*Acanthostigma parasiticum*
*Cucurbitaria pithyophila*
*Dasyscypha calyciformis*
*Fomes robustus*
*Fusarium oxysporum* var. *aurantiacum*
*Melampsorella caryophyllacearum*
*Milesia kriegeriana*
*M. polypodii*
*M. scolopendrii*
*M. vogesiaca*
*Nectria cucurbitula*
*Polyporus berkeleyi*
*P. dryadeus*
*Pucciniastrum goeppertianum*
*Rehmiellopsis abietis*

**Abies pindrow** Spach **Pindrow fir**
*Armillaria mellea*
*Fomes annosus*
*F. pini*
*F. pinicola*
*Polyporus sulphureus*
*Rehmiellopsis abietis*

**Abies pinsapo** Boiss. **Spanish fir**
*Armillaria mellea*
*Chrysomyxa woronini*
*Cytospora pinastri*
*Diplodia pinea*
*Fomes annosus*
*Hypodermella nervisequia*
*Lophodermium piceae*
*Macrophoma pinsaponis*
*Melampsorella caryophyllacearum*
*Milesia kriegeriana*
*M. polypodii*
*M. scolopendrii*
*M. vogesiaca*
*Naemacyclus niveus*
*Rehmiellopsis abietis*

**Abies sachalinensis** Mast. **Sakhalin fir**
*Fomes annosus*
*F. officinalis*
*F. pini*
*F. pinicola*
*F. robustus*
*Fusarium oxysporum* var. *aurantiacum*
*Ganoderma applanatum*
*Hyalopsora aculeata*
*Melampsorella caryophyllacearum*
*Milesia itoana*
*M. jezoensis*
*M. vogesiaca*
*Polyporus balsameus*
*P. schweinitzii*
*P. sulphureus*
*P. tomentosus*
*Poria tsugina*
*Pucciniastrum goeppertianum*
*P. kusanoi*
*Uredinopsis adianti*
*U. athyrii*
*U. filicina*
*U. hirosakiensis*
*U. intermedia*
*U. kameiana*
*U. ossaeiformis*

**Abies sachalinensis** Mast. **Sakhalin fir** (Continued)
*U. struthiopteridis*
*U. woodsiae*

**Abies sibirica** Ledeb. **Siberian fir**
*Armillaria mellea*
*Coniophora puteana*
*Dasyscypha calyciformis*
*Fomes annosus*
*F. fomentarius*
*F. pini*
*F. pinicola*
*F. robustus*
*Fusarium oxysporum* var. *aurantiacum*
*Herpotrichia nigra*
*Melampsora epitea*
*Melampsorella caryophyllacearum*
*Phaeocryptopus nudus*
*Polyporus resinosus*
*P. schweinitzii*
*Pucciniastrum epilobii*
*P. goeppertianum*
*Rehmiellopsis abietis*
*Stereum sanguinolentum*

**Abies veitchii** Lindl. **Veitch fir**
*Fomes annosus*
*Fusarium oxysporum* var. *aurantiacum*
*Poria subacida*

**Abrus praecatorius** L. **jequirity rosary-pea (weather plant)**
*Phyllachora perforans*

**Acacia** Mill. **acacia**
*Armillaria mellea*
*Fomes conchatus*
*F. fomentarius*
*F. lignosus*
*F. robustus*
*Ganoderma applanatum*
*G. lucidum*
*Hapalophragmium acaciae*
*Polyporus schweinitzii*
*Ravenelia leucaenae-microphyllae*

**Acacia abyssinica** Hochst. ———
*Aecidium immersum*
*Stereum hirsutum*

**Acacia acuifera** Benth. ———
*Phyllachora acaciae*

**Acacia amentasea** DC. ———
*Phyllachora acaciae*

**Acacia aneura** F. Muell. ———
*Uromycladium tepperianum*

**Acacia angustissima** (Mill.) Kuntze **prairie acacia**
*Ravenelia expansa*
*R. leucaenae-microphyllae*

**Acacia anisophylla** S. Wats. ———
*Ravenelia farlowiana*

**Acacia armata** R. Br. **kangaroo-thorn acacia**
*Fomes robiniae*
*Uromycladium tepperianum*

**Acacia aulalocarpa** A. Cunn. ———
*Fomes badius*
*F. linteus*

**Acacia binervata** DC. **twinvein-wattle acacia**
*Uromycladium notabile*

**Acacia bursaria** Schenck ———
*Uredo acaciae-bursariae*

**Acacia buxifolia** A. Cunn. **boxleaf acacia**
*Uromycladium alpinum*

**Acacia bynoeana** Benth. ———
*Uromycladium tepperianum*

**Acacia campylacantha** Hochst. ———
*Ustulina deusta*

**Acacia catechu** (L.f.) Willd. **catechu acacia**
*Erysiphe acaciae*
*Fomes badius*
*Ganoderma applanatum*
*G. lucidum*
*Polyporus gilvus*

**Acacia cavenia** (Molina) Hook. & Arn. **cavenia acacia**
*Ravenelia australis*

**Acacia choriophylla** Benth. ———
*Phyllachora acaciae*

**Acacia cochliacantha** Humb. & Bonpl. ———
*Ravenelia expansa*

**Acacia concinna** (Willd.) DC. ———
Virus, mosaic

**Acacia confusa** Merr. ———
*Cercospora acaciae-confusae*
*Corticium salmonicolor*
*Ganoderma lucidum*
*Uromyces hyalosporus*

**Acacia crassifolia** A. Gray ———
*Ravenelia farlowiana*

**Acacia dallachiana** F. Muell. ———
*Uromyces phyllodiorum*
*Uromycladium alpinum*

**Acacia decurrens** Willd. **green-wattle acacia**
*Armillaria mellea*
*Camptomeris verruculosa*
*Cercosporella theae*
*Corticium salmonicolor*
*Fomes lamaoensis*
*Macrophomina phaseoli*
*Physalospora abdita*
*Schizophyllum commune*
*Uromycladium notabile*
*U. tepperianum*

**Acacia decurrens** var. **dealbata** F. Muell. **silvergreen-wattle acacia**
*Armillaria mellea*
*Cercosporella theae*
*Uromyces phyllodiorum*
*Uromycladium alpinum*
*U. bisporum*
*U. notabile*

**Acacia decurrens** var. **mollis** Lindl. **blackgreen-wattle acacia**
*Armillaria mellea*
*Cylindrocladium scoparium*
*Ganoderma applanatum*
*G. lucidum*
*Physalospora abdita*
*Schizophyllum commune*
*Trametes obstinatus*

**Acacia diffusa** Lindl. **pinbush acacia**
*Uromycladium tepperianum*

**Acacia eburnea** (L.f.) Willd. **ivory acacia**
*Aecidium esculentum*

**Acacia elata** A. Cunn. **cedar acacia**
*Macrophomina phaseoli*
*Uromycladium notabile*

**Acacia erioclada** Benth. ———
*Uromycladium tepperianum*

**Acacia farnesiana** (L.) Willd. **sweet acacia**
*Phyllachora acaciae*
*Ravenelia acaciae-farnesianae*
*R. formosana*
*R. spegazziniana*

**Acacia fasciculifera** F. Muell. **fascicled acacia**
*Uromyces bicinctus*

**Acacia glaucoptera** Benth. ———
*Uromycladium tepperianum*

**Acacia hakeoides** A. Cunn. ———
*Uromycladium tepperianum*

**Acacia hirtella** E. Mey. ———
*Ravenelia natalensis*

**Acacia horrida** (L.) Willd. **allthorn acacia**
*Ganoderma applanatum*

**Acacia implexa** Benth. **lightwood acacia**
*Uromycladium alpinum*
*U. tepperianum*

**Acacia juniperina** Willd. **juniper-wattle acacia**
*Uromycladium tepperianum*

**Acacia koa** A. Gray **koa acacia**
*Lophodermium acacicolum*

**Acacia leucophloea** (Roxb.) Willd. ———
*Catacauma acaciae*
*Corticium salmonicolor*
*Hapalophragmiopsis ponderosa*

**Acacia ligulata** A. Cunn. ———
*Uromycladium tepperianum*

**Acacia linophylla** W. V. Fitzg. ———
*Uromycladium tepperianum*

**Acacia longifolia** (Andr.) Willd. **Sydney acacia**
*Uromycladium maritimum*
*U. tepperianum*

**Acacia macracantha** Humb. & Bonpl. **longspine acacia**
*Phyllachora acaciae*

**Acacia melanoxylon** R. Br. **blackwood acacia**
*Armillaria mellea*
*Cercosporella theae*
*Fusarium coeruleum*
*Ganoderma lucidum*
*Macrophomina phaseoli*
*Uromycladium robinsoni*
*U. tepperianum*

**Acacia mellifera** (Vahl) Benth. ———
*Ravenelia acaciae-melliferae*

**Acacia microbotrya** Benth. **badjong acacia**
*Uromyces phyllodiorum*

**Acacia modesta** Wall. ———
*Ravenelia taslimii*

**Acacia myrtifolia** (Sm.) Willd. **myrtle acacia**
*Uromycladium tepperianum*

**Acacia neriifolia** A. Cunn. **oleander acacia**
*Uromyces fusisporus*
*U. phyllodiorum*

**Acacia notabilis** F. Muell. ———
*Uromyces phyllodiorum*
*Uromycladium notabile*

**Acacia obliqua** A. Cunn. **finger acacia**
*Uromycladium tepperianum*

**Acacia pennatula** (Schlecht. & Cham.) Benth. ———
*Ravenelia acaciae-pennatulae*
**Acacia penninervis** Sieb. **mountain-hickory**
*Uromyces phyllodiorum*
*Uromycladium tepperianum*
**Acacia podalyriaefolia** A. Cunn. **pearl acacia**
*Armillaria mellea*
**Acacia pruinosa** A. Cunn. **frosty-stem acacia**
*Uromyces phyllodiorum*
*Uromycladium notabile*
**Acacia pycnantha** Benth. **golden-wattle acacia**
*Armillaria mellea*
*Uromycladium simplex*
*U. tepperianum*
**Acacia rigens** A. Cunn. ———
*Uromycladium tepperianum*
**Acacia robusta** Burch. ———
*Ravenelia evansii*
**Acacia salicina** Lindl. **willow acacia**
*Uromyces fusisporus*
*Uromycladium tepperianum*
**Acacia scorpioides** (L.) W. F. Wight **babul acacia**
*Fomes badius*
*F. robiniae*
*Ganoderma applanatum*
*G. lucidum*
*Polyporus gilvus*
*Schizophyllum commune*
**Acacia senegal** (L.) Willd. **gumarabic acacia**
*Polyporus hispidus*
**Acacia seyal** Delile **seyal acacia**
*Aecidium schweinfurthii*
*Fomes robiniae*
*Leveillula taurica*
*Ravenelia macowaniana*
**Acacia siculiformis** A. Cunn. **streamlet acacia**
*Uromycladium tepperianum*
**Acacia spinescens** Benth. ———
*Uromycladium tepperianum*
**Acacia stricta** (Andr.) Willd. ———
*Uromycladium tepperianum*
**Acacia suma** Buch.-Ham. **suma-catechu acacia**
*Fomes badius*
**Acacia tequilana** S. Wats. ———
*Ravenelia expansa*
**Acacia tetragonophylla** F. Muell. ———
*Uromycladium tepperianum*
**Acacia trineura** F. Muell. ———
*Uromycladium tepperianum*
**Acacia unijuga** Rose ———
*Phyllachora acaciae*
**Acacia verniciflua** A. Cunn. ———
*Uromycladium tepperianum*
**Acacia verticillata** (L'Hér.) Willd. **star acacia**
*Uromycladium tepperianum*
**Acacia villosa** (Sw.) Willd. ———
*Camptomeris martynii*
**Acacia vomeriformis** A. Cunn. ———
*Uromycladium tepperianum*
**Acer** L. **maple**
*Armillaria mellea*
*Centrospora acerina*
*Daedalea unicolor*
*Fomes connatus*
*Ganoderma resinaceum*
*Hymenochaete mougeotii*
*Phytophthora cactorum*
*Polyporus litschaueri*
*Pythium debaryanum*
*Steccherinum septentrionale*
**Acer aidzuensis** (Franch.) Nakai ———
*Xanthomonas acernea*
*Rhytisma punctatum*
**Acer buergerianum** Miq. **trident maple**
*Xanthomonas acernea*
**Acer caesium** Wall. ———
*Pucciniastrum aceris*
*Rhytisma acerinum*
**Acer campestre** L. **hedge maple**
*Asteroma aceris*
*Cercospora acericola*
*Helicobasidium mompa*
*H. purpureum*
*Marssonina acerina*
*M. decolorans*
*M. truncatula*
*Nectria cinnabarina*
*Phleospora aceris*
*Phyllosticta aceris*
*P. campestris*
*Poria obliqua*
*Rhytisma acerinum*
*R. punctatum*
*Septogloeum hartigianum*
*Taphrina acericola*
*Uncinula aceris*
*Verticillium albo-atrum*

**Acer capillipes** Maxim. ——
*Xanthomonas acernea*

**Acer cappadocicum** Gleditsch f. **rubrum** (Kirchn.) Rehd.
**red coliseum maple**
*Nectria cinnabarina*

**Acer catalpifolium** Rehd.
**catalpa maple**
*Uncinula aceris*

**Acer caudatum** Wall. var. **multiserratum** (Maxim.) Rehd. ——
*Uncinula aceris*

**Acer caudatum** Wall. var. **prattii** Rehd. ——
*Rhytisma punctatum*

**Acer cissifolium** (Sieb. & Zucc.) K. Koch ——
*Rhytisma acerinum*

**Acer ×coriaceum** Tausch.
**thickleaf maple**
*Rhytisma punctatum*

**Acer crataegifolium** Sieb. & Zucc.
**hawthorn maple**
*Xanthomonas acernea*

**Acer diabolicum** K. Koch **devil maple**
*Xanthomonas acernea*

**Acer diabolicum** f. **purpurascens** (Franch. & Sav.) Rehd.
**red devil maple**
*Taphrina nikkoensis*

**Acer ginnala** Maxim. **Amur maple**
*Verticillium albo-atrum*

**Acer insulare** Makino ——
*Xanthomonas acernea*

**Acer japonicum** Thunb. **fullmoon maple**
*Rhytisma acerinum*
*R. punctatum*
*R. salicinum*

**Acer lobelii** Ten. **Lobel maple**
*Nectria cinnabarina*

**Acer mandshuricum** Maxim.
**Manchurian maple**
*Fomes fomentarius*

**Acer mono** Maxim. **mono maple**
*Xanthomonas acernea*
*Ceratocystis piceae*
*Fomes connatus*
*F. fomentarius*
*Ganoderma applanatum*
*Helicobasidium mompa*
*Rhytisma acerinum*
*Steccherinum septentrionale*
*Uncinula aceris*
*U. tulasnei*

**Acer mono** f. **marmoratum** (Nichols.) Rehd. **painted mono maple**
*Pucciniastrum aceris*

**Acer negundo** L. **boxelder**
Virus, mosaic
*Xanthomonas acernea*
*Cryptostroma corticale*
*Marssonina decolorans*
*M. truncatula*
*Nectria coccinea*
*Phyllosticta negundicola*
*Uncinula aceris*
*Verticillium albo-atrum*

**Acer nikoense** Maxim. **Nikko maple**
*Rhytisma punctatum*

**Acer nipponicum** Hara ——
*Xanthomonas acernea*

**Acer oblongum** Wall. ——
*Schizothyrium annuliforme*

**Acer opalus** Mill. ——
*Centrospora acerina*

**Acer orientale** L. **oriental maple**
*Marssonina acerina*
*Rhytisma acerinum*
*Taphrina polyspora*

**Acer palmatum** Thunb. **Japanese maple**
*Xanthomonas acernea*
*Endothia parasitica*
*Nectria cinnabarina*
*N. galligena*
*Phytophthora cactorum*
*Rhytisma acerinum*
*R. salicinum*
*Uncinula aceris*
*U. tulasnei*

**Acer palmatum** f. **atropurpureum** (Vanh.) Schwer.
**bloodleaf Japanese maple**
*Nectria cinnabarina*

**Acer palmatum** var. **matsumurae** (Koidz.) Makino ——
*Rhytisma acerinum*
*R. punctatum*

**Acer palmatum** f. **sessilifolium** (Sieb. & Zucc.) Rehd.
**stalkless Japanese maple**
*Nectria cinnabarina*

**Acer platanoides** L. **Norway maple**
*Armillaria mellea*
*Ascochyta pallida*
*Centrospora acerina*
*Cryptostroma corticale*
*Daedalea unicolor*
*Fomes connatus*

**Acer platanoides L. Norway maple** (Continued)
*F. igniarius*
*Mycosphaerella maculiformis*
*Nectria cinnabarina*
*Phleospora platanoidis*
*P. pseudoplatani*
*Phyllosticta aceris*
*Polyporus squamosus*
*Rhytisma acerinum*
*Steccherinum septentrionale*
*Stereum purpureum*
*Taphrina acerina*
*Uncinula aceris*
*U. tulasnei*
*Verticillium albo-atrum*

**Acer platanoides f. globosum** Schwer. **globe Norway maple**
*Verticillium albo-atrum*

**Acer platanoides f. rubrum** (Herd.) Pax **bloodleaf Norway maple**
*Phleospora platanoidis*

**Acer platanoides f. schwedleri** (K. Koch) Schwerin **Schwedler Norway maple**
*Nectria cinnabarina*
*Verticillium albo-atrum*
*V. dahliae*

**Acer pseudoplatanus L. planetree maple**
Virus, mosaic
*Armillaria mellea*
*Centrospora acerina*
*Cristulariella depraedans*
*Cryptostroma corticale*
*Daedalea unicolor*
*Euryachora rhytismoides*
*Fomes fomentarius*
*Ganoderma applanatum*
*Gnomonia pseudoplatani*
*Guignardia rhytismophila*
*Marssonina acerina*
*M. decolorans*
*Myxosporium devastans*
*Nectria cinnabarina*
*N. ditissima*
*N. galligena*
*Phleospora aceris*
*P. pseudoplatani*
*Phytophthora cactorum*
*Polyporus hispidus*
*P. squamosus*
*Rhytisma acerinum*
*R. punctatum*
*Rosellinia necatrix*
*R. quercina*
*Uncinula aceris*
*Ustulina deusta*
*Verticillium albo-atrum*
*V. dahliae*

**Acer pseudoplatanus f. worleei** Rosenth. **yellow planetree maple**
*Nectria cinnabarina*

**Acer rufinerve** Sieb. & Zucc. **redvein maple**
*Xanthomonas acernea*
*Marssonina acerina*

**Acer saccharinum L. silver maple**
*Marssonina truncatula*

**Acer shirasawanum** Koidz. ———
*Xanthomonas acernea*

**Acer sieboldianum** Miq. **Siebold maple**
*Xanthomonas acernea*

**Acer tataricum L. Tatarian maple**
*Taphrina polyspora*

**Achras zapota L. sapodilla**
*Elsinoë lepagei*
*Phyllosticta sapotae*
*Scopella sapotae*

**Acrocarpus fraxinifolius** Wight & Arn. ———
*Armillaria mellea*
*Ganoderma lucidum*

**Acrocomia aculeata** (Jacq.) Lodd. **grugru acrocomia**
*Pestalotia palmarum*

**Adansonia digitata L. baobab tree**
Virus, swollen shoot

**Adenanthera pavonina L. sandal beadtree**
*Clitocybe tabescens*

**Adenaria floribunda** H. B. K. ———
*Aecidium adenariae*

**Adenaria floribunda var. purpurata** (H. B. K.) Koehne ———
*Aecidium adenariae*

**Aegiphila sellowiana** Cham. ———
*Sphaceloma aegiphilae*

**Aesculus ×carnea** Hayne **red horsechestnut**
*Stereum purpureum*

**Aesculus glabra** Willd. **Ohio buckeye**
*Guignardia aesculi*

**Aesculus hippocastanum L. horsechestnut**
Virus, mosaic
*Armillaria mellea*
*Ascochyta aesculi*

**Aesculus hippocastanum** L. (Continued) **horsechestnut**
*A. grandimaculans*
*Botrytis cinerea*
*Collybia velutipes*
*Daedalea unicolor*
*Fomes connatus*
*F. fomentarius*
*Ganoderma applanatum*
*Guignardia aesculi*
*Nectria cinnabarina*
*N. ditissima*
*Phleospora parcissima*
*Phyllosticta aesculana*
*Polyporus squamosus*
*Schizophyllum commune*
*Septoria aesculi*
*S. aesculina*
*Stereum purpureum*
*Verticillium albo-atrum*

**Aesculus indica** Hook. **India horsechestnut**
*Fomes annosus*
*F. senex*
*Guignardia aesculi*

**Aesculus pavia** L. **red buckeye**
*Armillaria mellea*

**Aesculus turbinata** Blume **Japanese horsechestnut**
*Xanthomonas acernea*

**Agathis alba** (Lam.) Foxw. **white dammar-pine**
*Aecidium balansae*

**Agathis australis** Salisb. **kauri-pine**
*Hymenochaete mougeotii*
*Stereum sanguinolentum*

**Ailanthus altissima** (Mill.) Swingle **ailanthus (tree-of-heaven)**
*Ascochyta ailanthi*
*Cercospora ailanthi*
*C. glandulosa*
*Nectria cinnabarina*
*Phyllactinia guttata*
*Verticillium albo-atrum*
*V. dahliae*

**Alangium platanifolium** (Sieb. & Zucc.) Harms **planeleaf alangium**
*Phyllactinia guttata*

**Alangium salviifolium** (L. f.) Wangerin **Angola alangium**
*Asterina balii*

**Albizia acle** (Blanco) Merr. **acle albizia**
*Ganoderma lucidum*
*Sphaerophragmium luzonicum*

**Albizia amara** (Roxb.) Boiv. ——
*Ganoderma lucidum*

**Albizia coriaria** Welw. ——
*Camptomeris albizziae*

**Albizia falcata** (L.) Backer ——
*Fomes lamaoensis*
*Ganoderma lucidum*
*Helicobasidium compactum*
*Macrophomina phaseoli*
*Physalospora rhodina*
*Ustulina deusta*

**Albizia fastigiata** Oliv. **flatcrown albizia**
*Fomes lignosus*
*Ganoderma applanatum*
*G. lucidum*

**Albizia ferruginea** Benth. ——
*Camptomeris albizziae*

**Albizia grandibracteata** Taub. ——
*Camptomeris albizziae*

**Albizia gummifera** (F. J. Gmel.) C. A. Smith ——
*Armillaria mellea*

**Albizia julibrissin** Durazz. **silktree**
*Fusarium oxysporum* var. *perniciosum*
*Nectria cinnabarina*
*Ravenelia japonica*

**Albizia kalkora** (Roxb.) Prain ——
*Cercospora glauca*
*Ravenelia japonica*

**Albizia lebbek** (L.) Benth. **lebbek**
Virus, mosaic
*Camptomeris albizziae*
*C. albizziicola*
*Fomes robiniae*
*Nectria ditissima*
*Polyporus gilvus*
*Ravenelia sessilis*
*Sphaerophragmium acaciae*
*Uredo ngamboensis*

**Albizia moluccana** Miq. **Molucca albizia**
*Armillaria mellea*
*Cercosporella theae*
*Ganoderma lucidum*
*G. pseudoferreum*
*Macrophomina phaseoli*
*Physalospora rhodina*
*Thyridaria tarda*

**Albizia montana** Benth. ——
*Uromycladium tepperianum*

**Albizia procera** (Roxb.) Benth. **tall albizia**
*Fusarium solani* f. *albizziae*
*Ganoderma lucidum*
*Polyporus gilvus*
*Sphaerophragmium acaciae*

**Albizia procera** (Roxb.) Benth. (Continued) **tall albizia**
*S. luzonicum*
*Uredo albizziae*
**Albizia saponaria?** ——
*Sphaerophragmium luzonicum*
**Albizia stipulata** (Roxb.) Boiv. ——
*Macrophomina phaseoli*
**Albizia sumatrana** v. Steenis ——
*Physalospora rhodina*
**Albizia versicolor** Welw. ——
*Spumula bottomleyae*
**Alchornea** sp. **Christmas-bush**
*Meliola alchorneae*
**Alchornea cordata** Muell.-Arg. **cordate Christmas-bush**
*Irene alchorneae*
**Alchornea cordifolia** Muell.-Arg. **heartleaf Christmas-bush**
*Angiopsora hansfordii*
*Armillaria mellea*
*Asterina alchorneae*
*Skierka congonensis*
**Alchornea iricurana** Casar. ——
*Olivea capituliformis*
*Uredo alchorneae*
**Alchornea latifolia** Sw. ——
*Olivea capituliformis*
**Alchornea pycnogyne** Muell.-Arg.
*Olivea capituliformis* ——
**Alchornea rugosa** Muell.-Arg.
*Aecidium alchorneae*
*Colletotrichum gloeosporioides*
**Alchornea triplinervia** (Spreng.) Muell.-Arg. ——
*Uredo alchorneae*
**Aleurites** sp. ——
*Pseudomonas solanacearum*
*Colletotrichum gloeosporioides*
**Aleurites fordii** Hemsl. **tung-oil tree**
*Pseudomonas aleuritidis*
*Armillaria mellea*
*Colletotrichum gloeosporioides*
*Glomerella cingulata*
*Pestalotia dichaeta*
*Phyllosticta aleuritidis*
*P. microspora*
*Physalospora rhodina*
*Phytophthora palmivora*
*Ustulina deusta*
**Aleurites moluccana** Willd. **candlenut-tree**
*Botryosphaeria ribis* var. *chromogena*
*Ganoderma lucidum*
*Lophodermium aleuritis*
**Aleurites montana** (Lour.) E. H. Wils. **mu-oil-tree**
*Pseudomonas aleuritidis*
*Armillaria mellea*
*Botryosphaeria ribis*
*Colletotrichum gloeosporioides*
*Fomes lamaoensis*
*F. lignosus*
*Fusarium lateritium*
*Ganoderma pseudoferreum*
*Mycosphaerella websteri*
*Pellicularia filamentosa*
*P. rolfsii*
*Pestalotia dichaeta*
*Phyllosticta microspora*
*Physalospora rhodina*
*Phytophthora cactorum*
*Poria hypolateritia*
*Sphaerostilbe repens*
*Ustulina deusta*
**Alhagi pseudalhagi** (Bieb.) Desv. **camelthorn**
*Cercospora alhagi*
**Alibertia** sp. ——
*Aecidium alibertiae*
**Allamanda cathartica** L. **common allamanda**
Virus, mosaic
**Allophylus** sp. ——
*Cercospora allophyli*
**Allophylus timorensis** (DC.) Blume ——
*Cercospora allophyli*
**Alnus** sp. **alder**
*Armillaria mellea*
*Corticium comedens*
*C. galactinum*
*Daedalea unicolor*
*Fomes conchatus*
*F. fomentarius*
*F. pinicola*
*Ganoderma applanatum*
*Hericium erinaceus*
*Nectria ditissima*
*N. galligena*
*Phyllosticta alnigena*
*Pleurotus salignus*
*Polyporus sulphureus*
*Poria obliqua*
*P. prunicola*
*Taphrina amentorum*
**Alnus acuminata** H. B. K. ——
*Melampsoridium hiratsukanum*
**Alnus arguta** Benth. ——
*Melampsoridium hiratsukanum*

**Alnus borealis** Koidz. var. **Koreana** Nakai ——
*Taphrina japonica*

**Alnus cordata** Desf. **Italian alder**
*Gnomoniella tubiformis*

**Alnus cremastogyne** Burk. ——
*Melampsoridium hiratsukanum*
*Phyllactinia fraxini*
*P. guttata*

**Alnus formosana** (Burk.) Makino ——
*Ganoderma applanatum*
*Phyllactinia guttata*

**Alnus fruticosa** Rupr. **Manchu alder**
*Fomes igniarius*
*Melampsoridium alni*

**Alnus glutinosa** (L.) Gaertn. **European alder**
*Armillaria mellea*
*Ciboria alni*
*Cryptospora suffusa*
*Cytospora ambiens*
*Fomes annosus*
*F. connatus*
*F. fomentarius*
*F. igniarius*
*Gnomoniella tubiformis*
*Melampsoridium alni*
*Microsphaera alni*
*Nectria coccinea*
*N. ditissima*
*Phyllactinia guttata*
*Phyllosticta alnea*
*P. alniperda*
*Septoria alnicola*
*Taphrina amentorum*
*T. sadebeckii*
*T. tosquinetii*
*Valsa oxystoma*

**Alnus glutinosa** f. **laciniata** Koehne **cutleaf European alder**
*Taphrina sadebeckii*

**Alnus hirsuta** (Spach) Rupr. **Manchurian alder**
*Melampsoridium hiratsukanum*
*Taphrina amentorum*
*T. epiphylla*
*T. sadebeckii*
*Uncinula miyabei*

**Alnus** ×**hybrida** A. Br. ——
*Taphrina amentorum*
*T. tosquinetii*

**Alnus incana** (L.) Moench ——
*Armillaria mellea*
*Ciboria alni*
*Cryptospora suffusa*
*Fomes annosus*
*F. fomentarius*
*F. igniarius*
*Gnomoniella tubiformis*
*Melampsoridium alni*
*Microsphaera alni*
*Phyllactinia guttata*
*Taphrina amentorum*
*T. epiphylla*
*T. tosquinetii*
*Uncinula miyabei*

**Alnus japonica** (Thunb.) Steud. **Japanese alder**
*Fomes igniarius*
*Phyllactinia fraxini*
*P. guttata*
*Polyporus sulphureus*
*Taphrina japonica*
*Uncinula miyabei*

**Alnus jorullensis** H. B. K. ——
*Melampsoridium hiratsukanum*

**Alnus jorullensis** var. **mirbelii** (Spach) Winkl. ——
*Melampsoridium hiratsukanum*

**Alnus maritima** (Marsh.) Muhl. **seaside alder**
*Phyllactinia guttata*
*Uncinula miyabei*

**Alnus maximowiczii** Call. ——
*Melampsoridium hiratsukanum*

**Alnus nepalensis** D. Don **Nepal alder**
*Phyllactinia guttata*

**Alnus pendula** Matsum. **nodding alder**
*Melampsoridium hiratsukanum*
*Septoria alni*

**Alnus rubra** Bong. **red alder**
*Valsa oxystoma*

**Alnus sinuata** (Reg.) Rydb. **Sitka alder**
*Melampsoridium hiratsukanum*

**Alnus subcordata** C. A. Mey. **Caucasian alder**
*Cercoseptoria esfandiarii*

**Alnus viridis** DC. **European green alder**
*Hysterographium fraxini*
*Melampsoridium alni*
*M. hiratsukanum*
*Valsa oxystoma*

**Alphonsea arborea** (Blanco) Merr. ——
*Fomes annularis*

**Alstonia scholaris** R. Br. **palimara alstonia**
*Colletotrichum gloeosporioides*
*Meliola alstoniae*
**Altingia excelsa** Noronna **rasamala altingia**
*Fomes lignosus*
*Pellicularia filamentosa*
**Amelanchier** sp. **serviceberry**
*Coleopuccinia sinensis*
**Amelanchier asiatica** (Sieb. & Zucc.) Endl. **Asian serviceberry**
*Gymnosporangium amelanchieris*
*G. idetae*
*Phyllactinia guttata*
**Amelanchier nervosa** (Decne.) Standl. ——
*Roestelia guatemaliana*
**Amelanchier ovalis** Med. **garden serviceberry**
*Gymnosporangium amelanchieris*
*Lophodermium hysterioides*
**Amherstia nobilis** Wall. **flame amherstia**
*Macrophomina phaseoli*
**Anacardium** sp. **cashew**
*Asterina carbonacea*
**Anacardium excelsum** (Bert. & Balb.) Skeels **espavé**
*Cercospora rhinocarpi*
**Anacardium occidentale** L. **cashew**
*Pseudomonas magniferae-indicae*
*Ganoderma lucidum*
**Andira inermis** (W. Wright) H. B. K. **cabbage angelin**
*Cercospora stevensii*
*Mycena citricolor*
*Polystigma pusillum*
**Andira pisonis** Mart. ——
*Ravenelia goyazensis*
**Angophora lanceolata** Cav. **rusty gum-myrtle**
*Fomes robustus*
*Ganoderma applanatum*
**Anogeissus latifolia** Wall. **bakligum axlewood**
*Corticium repens*
*Fomes caryophylli*
*F. robiniae*
**Antidesma** sp. **China-laurel**
*Fomes conchatus*
**Antidesma ghesaembilla** Gaertn. ——
*Crossopsora antidesmae-dioicae*
**Antidesma heterophyllum** Blume ——
*Elsinoë antidesmae*
**Antidesma venosum** E. Mey. ——
*Crossopsora antidesmae-dioicae*
**Aphananthe aspera** (Blume) Planch. ——
*Helicobasidium mompa*
*Uncinula clintonii*
*U. polychaeta*
**Aquilaria agallocha** Roxb. **agalloch eaglewood**
*Epicoccum granulatum*
**Aralia spinosa** L. **devils-walkingstick**
*Helicobasidium mompa*
**Araucaria** sp. ——
*Pestalotia micheneri*
**Araucaria angustifolia** (Bert.) Kuntze **Parana-pine**
*Armillaria mellea*
*Phyllosticta brasiliensis*
*Phytophthora citrophthora*
**Araucaria araucana** (Molina) K. Koch **monkey-puzzle**
*Armillaria mellea*
*Botryosphaeria ribis*
*Caeoma sanctae-crucis*
*Cryptosporella araucariae*
*Didymella araucariae*
*Fusicoccum araucariae*
*Uleiella paradoxa*
**Araucaria cunninghamii** Sweet **Moreton-Bay-pine**
*Armillaria mellea*
*Botryosphaeria ribis*
*Diplodia pinea*
*Helicobasidium purpureum*
*Hymenochaete mougeotii*
*Physalospora rhodina*
**Araucaria excelsa** R. Br. **Norfolk-Island-pine**
*Phytophthora parasitica*
**Araucaria rulei** F. Muell. ——
*Botryosphaeria dothidea*
**Arbutus andrachne** L. ——
*Fomes ribis*
**Arbutus longifolia** Andr. ——
*Cercospora molleriana*
**Arbutus menziesii** Pursh ——
*Pucciniastrum sparsum*
**Arbutus unedo** L. **strawberry madrone**
*Cercospora molleriana*
*Coryneum microstictum*
*Elsinoë mattirolianum*

**Arbutus unedo** L. strawberry madrone (Continued)
*Exobasidium unedonis*
*Fomes conchatus*
*F. torulosus*
*Ganoderma applanatum*
*Phyllosticta arbuti*
*Septoria unedonis*
*Sphaceloma mattirolianum*

**Arbutus xalapensis** H. B. K. Mexican madrone
*Pucciniastrum sparsum*

**Archontophoenix alexandrae** (F. Muell.) H. Wendl. & Drude Alexandra kingpalm
*Phytophthora palmivora*

**Areca** sp. ——
*Gliocladium vermoesenii*

**Areca cathecu** L. betel-nut-palm
*Xanthomonas vasculorum*
*Ceratocystis paradoxa*
*Fomes lamaoensis*
*Ganoderma lucidum*
*Macrophomina phaseoli*
*Pellicularia koleroga*
*Pestalotia palmarum*
*Phytophthora palmivora*
*Ustulina deusta*

**Arecastrum romanzoffianum** (Cham.) Becc. queen-palm
*Catacauma mucosum*

**Arenga ambong** Becc. Philippine sugar-palm
*Graphiola arengae*

**Arenga pinnata** (Wurmb.) Merr. gomuti sugar-palm
*Ganoderma pseudoferreum*

**Arthrostylidium racemiflorum** Steud. ——
*Ciliochorella bambusarum*
*Lateropeltis bambusarum*

**Artocarpus altilis** (Parkinson) Fosberg breadfruit
*Cercospora artocarpi*
*Fomes lignosus*
*Phytophthora palmivora*
*Polyporus zonalis*
*Uredo artocarpi*

**Artocarpus blancoi** (Elm.) Merr. ——
*Cercospora artocarpi*

**Artocarpus heterophyllus** Lam. jackfruit
*Corticium salmonicolor*
*Fomes annularis*
*F. lamaoensis*
*F. lignosus*
*Ganoderma applanatum*
*Pellicularia rolfsii*
*Phyllostictina artocarpina*
*Phytophthora palmivora*
*Polyporus zonalis*
*Rosellinia bunodes*
*Uredo artocarpi*

**Aspidosperma guaraniticum** Malme white quebracho
*Actinothecium guaraniticum*

**Astronium graveolens** Jacq. ——
*Uredo rhombica*

**Bambusa arundinacea** Retz. ——
*Ganoderma lucidum*
*Puccinia longicornis*
*Uredo ignava*

**Bambusa vulgaris** Schrad. common bamboo
*Tomentella bambusina*
*Uredo ignava*

**Banksia** sp. ——
*Fomes robustus*

**Banksia integrifolia** L. entireleaf banksia
*Trametes ochroleuca*

**Barringtonia acutangula** Gaertn. chee barringtonia
*Cercospora barringtoniae*
*Meliola indica*

**Barringtonia luzoniensis** Vidal ——
*Cercospora barringtoniae*

**Barringtonia racemosa** Roxb. ——
*Phyllosticta microstegia*

**Barringtonia speciosa** Forst. India barringtonia
*Pellicularia rolfsii*

**Bassia decurrens** J. M. Black ——
*Puccinia bassiae*

**Bassia obliquicuspis** R. H. Anders. ——
*Puccinia bassiae*

**Bassia paradoxa** (R. Br.) F. Muell. ——
*Puccinia bassiae*

**Bassia uniflora** (R. Br.) F. Muell. ——
*Puccinia bassiae*

**Bauhinia sp.** ——
*Armillaria mellea*
*Phyllosticta bauhinicola*
**Bauhinia candicans Benth.** ——
*Phytophthora citrophthora*
**Bauhinia cumanensis H. B. K.** ——
*Phyllachora panamensis*
**Bauhinia divaricata L.** ——
*Ramularia bauhiniae*
**Bauhinia heterophylla Kunth.** ——
*Scopella bauhiniicola*
**Bauhinia malabarica Roxb.** ——
*Cercospora bauhiniae*
*Corticium repens*
**Bauhinia pringlei S. Wats.** ——
*Uromyces bauhiniicola*
**Bauhinia purpurea L. purple bauhinia**
*Phyllosticta bauhiniae*
**Bauhinia reticulata DC.** ——
*Cercospora bauhiniae*
**Bauhinia rubiginosa Bong.** ——
*Scopella bauhiniicola*
**Bauhinia variegata L. var. candida Buch.-Ham. greenvein Buddhist bauhinia**
*Pellicularia rolfsii*
**Berrya cardifolia (Willd.) Burret trincomali-wood**
*Pellicularia rolfsii*
**Bertholletia excelsa Humb. & Bonpl. Brazilnut**
*Elsinoë bertholletiae*
**Betula sp. birch**
Virus, mosaic
*Armillaria mellea*
*Asteroma betulae*
*Ciboria betulae*
*Coniophora puteana*
*Coniothyrium betulae*
*Daedalea unicolor*
*Daldinia concentrica*
*Diaporthe aristata*
*Fomes annosus*
*F. connatus*
*F. fomentarius*
*F. igniarius*
*F. igniarius* var. *laevigatus*
*F. pini*
*F. pinicola*
*Guignardia betulae*
*Hydnum cirrhatum*
*Hysterographium fraxini*
*Marssonina betulae*
*Melampsoridium betulinum*
*Melanconis stilbostoma*
*Mycosphaerella maculiformis*
*Myxosporium devastans*
*Nectria ditissima*
*N. galligena*
*Pholiota destruens*
*Phyllosticta betulina*
*Phytophthora cactorum*
*Polyporus cuticularis*
*P. squamosus*
*P. sulphureus*
*P. zonatus*
*Poria obliqua*
*Rosellinia aquila*
*Steccherinum septentrionale*
*Stereum purpureum*
**Betula albo-sinensis Burk. China paper birch**
*Fomes igniarius*
**Betula ×aurata Borkh.** ——
*Taphrina betulina*
**Betula celtiberica Rothm. & Carv. Vasc.**
*Melampsoridium betulinum*
**Betula costata Trautv.** ——
*Fomes igniarius*
*Poria obliqua*
**Betula davurica Pall. Dahurian birch**
*Daedalea unicolor*
*Trametes gibbosa*
**Betula ermanii Cham. Erman birch**
*Melampsoridium betulinum*
*Taphrina betulicola*
**Betula ermanii var. communis Reg.** ——
*Fomes igniarius* var. *laevigatus*
*Melampsoridium betulinum*
*Poria obliqua*
**Betula ermanii var. subcordata (Reg.) Koidz.** ——
*Ciboria betulae*
**Betula fruticosa Pall. Altai birch**
*Melampsoridium betulinum*
**Betula grossa Sieb. & Zucc. Japanese cherry birch**
*Poria obliqua*
**Betula humilis Schrank** ——
*Taphrina carnea*
**Betula ×intermedia Thomas** ——
*Taphrina betulae*
*T. betulina*
*T. carnea*

**Betula lenta** L. **sweet birch**
*Melampsoridium betulinum*
**Betula maximowicziana** Reg. **monarch birch**
*Fomes igniarius* var. *laevigatus*
*Melampsoridium betulinum*
*Poria obliqua*
**Betula medwediewii** Reg. ——
*Taphrina betulae*
**Betula nana** L. **dwarf arctic birch**
*Melampsoridium betulinum*
*Taphrina bacteriosperma*
*T. betulina*
*T. carnea*
*T. nana*
**Betula nigra** L. **river birch**
*Taphrina betulina*
**Betula papyrifera** Marsh. **paper birch**
*Ciboria betulae*
**Betula pendula** Roth **European white birch**
*Ceratocystis piceae*
*Ciboria betulae*
*Cytospora ambiens*
*Daedalea unicolor*
*Discula betulina*
*Fomes annosus*
*F. connatus*
*F. igniarius*
*Ganoderma applanatum*
*Irpex hirsutus*
*Marssonina betulae*
*Melampsoridium betulinum*
*Microsphaera alni*
*Myxosporium devastans*
*Phyllactinia guttata*
*Phytophthora cinnamomi*
*Poria obliqua*
*Septoria betulina*
*Stereum purpureum*
*Taphrina betulae*
*T. betulina*
*T. carnea*
*T. nana*
*Trametes gibbosa*
*Venturia ditricha*
*Volvaria bombycinus*
**Betula platyphylla** Suk. **Asian white birch**
*Ganoderma applanatum*
*Melampsoridium betulinum*
**Betula platyphylla** var. **japonica** (Miq.) Hara **Japanese white birch**
*Ciboria betulae*
*Melampsoridium betulinum*
**Betula pubescens** Ehrh. ——
*Armillaria mellea*
*Ciboria betulae*
*Daedalea unicolor*
*Discula betulina*
*Fomes annosus*
*F. connatus*
*F. igniarius*
*F. igniarius* var. *laevigatus*
*Melampsoridium betulinum*
*Microsphaera alni*
*Nectria ditissima*
*N. galligena*
*Phyllactinia guttata*
*Poria obliqua*
*Taphrina bacteriosperma*
*T. betulae*
*T. betulina*
*T. carnea*
*T. nana*
*T. splendens*
*Venturia ditricha*
**Betula pubescens** var. **carpatica** Koch ——
*Taphrina betulina*
**Betula pubescens** f. **urticifolia** Schelle ——
*Taphrina betulina*
**Betula rotundifolia** Spach **ground birch**
*Septoria betulina*
**Betula turkestanica** Litvin. **Turkestan birch**
*Taphrina betulae*
**Bischofia javanica** Blume **Java bishopwood**
*Cercospora bischofiae*
*Colletotrichum gloeosporioides*
*Fomes lamaoensis*
**Bixa orellana** L. **anatto**
*Corticium salmonicolor*
*Fomes lignosus*
*Macrophomina phaseoli*
*Phyllosticta bixina*
*Rhizoctonia lamellifera*
*Rosellinia bunodes*
*Uredo bixae*

**Blakea sp.** ———
*Bagnisiopsis tijucensis*
**Blighia sapida** Koenig **akee**
*Armillaria mellea*
**Bombax sp.** ———
*Puccinia bombacis*
**Bombax buonopozense** Beauv. ———
Virus, swollen shoot
*Calonectria rigidiuscula*
**Bombax malabaricum** DC. **Malabar simal-tree**
*Cercospora bombacina*
*Chrysomyxa bombacis*
*Corticium salmonicolor*
*Fomes lamaoensis*
*Uredo bombacis*
**Bombax munguba** Mart. ———
*Fomes lignosus*
*Polyporus zonalis*
**Borassus flabellifer** L. **Palmyra palm**
*Ceratocystis paradoxa*
*Graphiola borassi*
*Macrophomina phaseoli*
*Pestalotia palmarum*
*Phytophthora palmivora*
*Septoria cocoes*
**Bossiaea cinerea** R. Br. ———
*Cronartium jacksoniae*
**Boswellia serrata** Roxb. **India frankincense**
*Dasturella boswelliae*
*Fomes fastuosus*
*F. robiniae*
*F. senex*
*Hexagonia sulcata*
*Trametes incerta*
**Bougainvillea glabra** Choisy **lesser bougainvillea**
*Fusarium oxysporum*
**Bougainvillea spectabilis** Willd. **Brazil bougainvillea**
Virus, mosaic
*Armillaria mellea*
**Brachychiton acerifolium** (Cunn.) F. Muell. **flame bottletree**
*Phytophthora citrophthora*
**Brachychiton populneum** (Don) R. Br. **kurajong bottletree**
*Pellicularia rolfsii*
*Phytophthora cactorum*
*P. citrophthora*
*P. palmivora*
*P. parasitica*

**Breynia sp.** ———
*Aecidium breyniae*
**Breynia acuminata** Muell.-Arg. ———
*Asterina breyniaecola*
**Breynia rhamnoides** Muell.-Arg. ———
*Aecidium breyniae*
*Masseeëlla breyniae*
**Bridelia micrantha** Baill. ———
*Aecidium brideliae-micranthae*
**Bridelia monoica** (Lour.) Merr. **pikpoktsai bridelia**
*Cercospora atrides*
**Bridelia tomentosa** Blume ———
*Bubakia cingens*
**Broussonetia sp.** ———
*Cercospora broussonetiae*
**Broussonetia kazinoki** Sieb. & Zucc. **kazinoki paper-mulberry**
*Aecidium mori*
*Helicobasidium mompa*
*H. tanakae*
*Phyllactinia guttata*
**Broussonetia papyrifera** (L.) Vent. **paper-mulberry**
Virus, mosaic
*Cerotelium fici*
*Fomes fraxineus*
*Helicobasidium mompa*
*Phyllactinia guttata*
**Buchanania sp.** ———
*Corticium salmonicolor*
**Buchanania latifolia** Roxb. ———
*Corticium repens*
**Buettneria carthaginensis** Jacq. ———
*Puccinia filopes*
**Buettneria lateralis** Presl ———
*Puccinia filopes*
**Buettneria ramosissima** Pohl ———
*Meliola buettneriae*
**Bunchosia glandulifera** (Jacq.) H. B. K. ———
*Cercospora bunchosiae*
**Butea monosperma** (Lam.) Kuntze **Bengal kino**
*Corticium salmonicolor*
**Butyrospermum parkii** (G. Don) Kotschy **Shea butterseed**
*Fusicladium butyrospermi*
**Buxus sp.** **box**
*Hyponectria buxi*

**Buxus sempervirens** L. **common box**
*Fomes robustus*
*F. torulosus*
*Ganoderma applanatum*
*Guignardia buxi*
*Hyponectria buxi*
*Phyllosticta buxina*
*Uromyces ambiens*
*Volutella buxi*
**Byrsonima** sp. ——
*Aecidium byrsonimatis*
*Cercospora byrsonimatis*
*Meliola byrsonimicola*
**Byrsonima coccolobaefolia** H. B. K. ——
*Cronartium byrsonimatis*
*Sphaceloma lagoa-santensis*
**Byrsonima crassifolia** (L.) H. B. K. ——
*Aecidium byrsonimatis*
*Crossopsora notata*
**Byrsonima intermedia** Juss. ——
*Aecidium vinnulum*
*Crossopsora notata*
**Byrsonima verbascifolia** Rich. ——
*Aecidium byrsonimatis*
**Calliandra** sp. ——
*Ravenelia armata*
**Calliandra bijuga** Rose ——
*Spumula quadrifida*
**Calliandra caracasana** (Jacq.) Benth. ——
*Ravenelia echinata*
**Calliandra chapaderoana** (Britton & Rose) Standl. ——
*Ravenelia ectypa*
**Calliandra falcata** Benth. ——
*Ravenelia lagerheimiana*
**Calliandra gracilis** Klotsch ——
*Ravenelia ectypa*
**Calliandra grandiflora** (L'Hér.) Benth. ——
*Ravenelia mexicana*
**Calliandra houstoniana** Benth. **panbotano calliandra**
*Ravenelia bizonata*
**Calliandra laxa** (Willd.) Benth. ——
*Ravenelia ectypa*
**Calliandra longipes** Benth. ——
*Uredo longipedis*
**Calliandra macrocephala** Benth. ——
*Ravenelia dieteliana*
**Calliandra similis** Sprague & Riley ——
*Camptomeris calliandrae*
**Callitris** sp. **cypress-pine**
*Armillaria mellea*
**Callitris propinqua** R. Br. ——
*Fomes robustus*
**Calodendrum** sp. ——
*Armillaria mellea*
**Calophyllum** sp. ——
*Fomes lignosus*
*Polyporus zonalis*
**Calophyllum brasiliense** Camb. var. **rekoi** (Standl.) Standl. ——
*Haplographium calophylli*
**Calophyllum inophyllum** L. **kamani**
*Helicobasidium mompa*
**Calophyllum tacamahaca** Willd. ——
*Botryosphaeria ribis*
*Haplographium calophylli*
**Calycophyllum spruceanum** (Benth.) K. Schum. **mulatto calycophyllum**
*Fomes lignosus*
*Polyporus zonalis*
**Cananga odorata** (Lam.) Hook. f. & Thoms. **ylang-ylang**
*Pellicularia rolfsii*
**Canarium album** Raeusch. ——
*Glomerella cingulata*
**Canarium commune** L. **Java-almond canary-tree**
*Skierka canarii*
**Canarium laciniatum** Elm. ——
*Phyllachora canarii*
**Canarium luzonicum** Miq. **elemi canary-tree**
*Phyllachora canarii*
*Skierka philippinensis*
**Canarium moluccanum** Blume ——
*Skierka canarii*
**Canarium ovatum** Engl. ——
*Fomes annularis*
**Canarium perkinsiae** Merr. ——
*Phyllachora canarii*
**Canarium villosum** (Blume) F. Vill. ——
*Anthomycetella canarii*
*Phyllachora canarii*
*Skierka canarii*
**Canthium** sp. ——
*Aecidium incomparabile*
**Canthium arnoldiana** Wildem. & Th. Dur. ——
*Aecidium incomparabile*

**Canthium coprosmoides** F. Muell.
———
*Aecidium baileyanum*
*A. plectroniae*
**Canthium gynochthodes** Baill. ———
*Hemileia canthii*
**Canthium horridum** Blume ———
*Hemileia canthii*
**Canthium parviflorum** Lam.
**little-flower canthium**
*Hemileia canthii*
*Pellicularia koleroga*
**Canthium pedunculare** Cav. ———
*Hemileia canthii*
**Canthium rheedii** DC. ———
*Hemileia canthii*
**Canthium schimperianum** A. Rich.
———
*Dimerium autrani*
**Canthium vulgaris** (K. Schum.) Bullock ———
*Aecidium hansfordii*
**Carapa guianensis** Aubl.
**Guiana crabwood**
*Fomes lignosus*
*Polyporus zonalis*
**Careya arborea** Roxb. **Kumbi careya**
*Cercospora careyae*
**Cariniana estrellensis** (Raddi) Kuntze
———
*Cercospora couratariae*
**Carpinus** sp. **hornbeam**
*Daedalea unicolor*
*Fistulina hepatica*
*Fomes fomentarius*
*F. igniarius*
*Ganoderma lucidum*
*Gnomoniella fimbriata*
*Hericium erinaceus*
*Melampsoridium carpini*
*Nectria ditissima*
*N. galligena*
*Polyporus cuticularis*
*Ustulina deusta*
**Carpinus betulus** L.
**European hornbeam**
*Armillaria mellea*
*Fomes fomentarius*
*F. igniarius*
*Gnomoniella fimbriata*
*Melampsoridium carpini*
*Monostichella robergei*
*Nectria cinnabarina*
*N. ditissima*
*N. galligena*
*Pezicula carpinea*
*Phyllactinia guttata*
*Pleurotus dryinus*
*Taphrina carpini*
**Carpinus cordata** Blume
**heartleaf hornbeam**
*Daedalea unicolor*
*Fomes igniarius*
**Carpinus erosa** Blume ———
*Gnomoniella fimbriata*
**Carpinus laxiflora** Blume
**looseflower hornbeam**
*Melampsoridium carpini*
**Carpinus orientalis** Mill.
**oriental hornbeam**
*Taphrina carpini*
**Carpinus tschonoskii** Maxim.
**Yeddo hornbeam**
*Melampsoridium carpini*
**Carya** sp. ———
*Gnomonia leptostyla*
**Carya illinoensis** (Wangenh.) K. Koch
**pecan**
*Cercospora caryae*
*C. fusca*
**Caryota** sp. **fishtail-palm**
*Auerswaldia copelandi*
*Phyllosticta cocos*
**Casearia aculeata** Jacq. ———
*Meliola paulliniae*
**Casearia arborea** (L. C. Rich.) Urban
———
*Meliola paulliniae*
**Casearia guianensis** (Aubl.) Urban
———
*Cercospora caseariae*
*C. ciferii*
*Meliola paulliniae*
**Casearia sylvestris** Sw. ———
*Dothiorella caseariae*
*Meliola paulliniae*
**Casearia tomentosa** Roxb. ———
*Cercospora caseariae*
**Castanea** sp. **chestnut**
*Pseudomonas castaneae*
*Armillaria mellea*
*Bagcheea castanea*
*Daedalea unicolor*
*Endothia fluens*
*E. parasitica*
*Fistulina hepatica*
*Fomes robustus*
*Ganoderma applanatum*

**Castanea** sp. **Chestnut**
(Continued)
*Mycosphaerella maculiformis*
*Nummularia regia*
*Polyporus sulphureus*
*Trametes dickinsii*

**Castanea crenata** Sieb. & Zucc. **Japanese chestnut**
*Actinopelte japonica*
*Cronartium quercuum*
*Cryptodiaporthe castanea*
*Cytospora ambiens*
*Endothia gyrosa*
*E. parasitica*
*Helicobasidium mompa*
*Microsphaera alni*
*Monochaetia desmazierii*
*Phyllactinia guttata*
*Phytophthora cactorum*
*P. cambivora*
*P. cinnamomi*
*P. syringae*
*Pucciniastrum castaneae*
*Schizophyllum commune*

**Castanea ×coudercii** A. Camus **Couderc chestnut**
*Phytophthora cambivora*
*P. cinnamomi*

**Castanea dentata** (Marsh.) Borkh. **American chestnut**
*Cryptodiaporthe castanea*
*Endothia gyrosa*
*E. parasitica*

**Castanea henryi** (Skan) Rehd. & E. H. Wils. **Henry chinkapin**
*Cronartium quercuum*
*Pucciniastrum castaneae*

**Castanea mollissima** Blume **Chinese chestnut**
*Cronartium quercuum*
*Endothia parasitica*
*Microsphaera alni*
*Phyllactinia guttata*
*Phytophthora cambivora*
*Pucciniastrum castaneae*
*Uredo castaneae*

**Castanea sativa** Mill. ——
*Armillaria mellea*
*Cercospora castaneae*
*Ciborinia candolleana*
*Cryptodiaporthe castanea*
*Cylindrosporium castaneae*
*Cytospora ambiens*
*Daedalea unicolor*
*Endothia gyrosa*
*E. parasitica*
*Fistulina hepatica*
*Fomes torulosus*
*Ganoderma applanatum*
*G. lucidum*
*Hypoxylon mediterraneum*
*Lophodermium punctiforme*
*Microsphaera alni*
*M. alni* var. *extensa*
*Mycosphaerella castanicola*
*M. maculiformis*
*Phytophthora cactorum*
*P. cambivora*
*P. cinnamomi*
*P. syringae*
*Polyporus croceus*
*P. dryadeus*
*P. squamosus*
*P. sulphureus*
*Rhizina undulata*
*Rosellinia radiciperda*
*Verticillium albo-atrum*

**Castanopsis** sp. ——
*Pucciniastrum castaneae*

**Castanopsis argentea** (Blume) A. DC. ——
*Fomes korthalsii*

**Castanopsis concolor** Rehd. & E. H. Wils. ——
*Erysiphe polygoni*

**Castanopsis cuspidata** (Thunb.) Schottky **Japanese evergreen-chinkapin**
*Asterina pasaniae*
*Cronartium quercuum*
*Hericium erinaceus*
*Taphrina kusanoi*

**Castanopsis delavayi** Franch. ——
*Erysiphe polygoni*

**Castanopsis javanica** (Blume) A. DC. ——
*Pucciniastrum castaneae*

**Castanopsis tibetana** Hance ——
*Irenina castanopsidis*
*Meliola castanopsidis*

**Castilla costaricana** Liebm. **Costa Rica rubber**
*Mycosphaerella castillae*

**Castilla elastica** Cervantes **Central America rubber**
*Cercospora castilloae*
*Corticium salmonicolor*
*Uredo artocarpi*

**Casuarina** sp. **casuarina**
*Fomes conchatus*
**Casuarina equisetifolia** L. **horsetail casuarina**
Virus, witches'-broom
*Pseudomonas solanacearum*
*Armillaria mellea*
*Corticium salmonicolor*
*Fomes fastuosus*
*F. senex*
*Ganoderma lucidum*
*Macrophomina phaseoli*
*Pellicularia rolfsii*
*Phytophthora cambivora*
*Trichosporium vesiculosum*
*Ustulina deusta*
**Casuarina lepidophloia** F. Muell. **scalybark casuarina**
*Fomes robiniae*
*F. robustus*
**Casuarina leptoclada** Miq. ——
*Pestalotia funerea*
**Casuarina luehmannii** R. T. Baker ——
*Fomes robustus*
**Casuarina muricata** Roxb. ——
*Trichosporium vesiculosum*
**Casuarina stricta** Ait. **coast casuarina**
*Fomes robiniae*
*F. robustus*
*Ganoderma lucidum*
**Casuarina suberosa** Otto & Dietr. **erect casuarina**
*Fomes robustus*
**Catalpa bignonioides** Walt. **southern catalpa**
*Phyllosticta catalpicola*
**Catha edulis** Forsk. **Arabian-tea**
*Dielsiella pollaccii*
**Cecropia** sp. **pumpwood**
*Fomes lignosus*
*Polyporus zonalis*
**Cecropia peltata** L. **shieldleaf pumpwood**
*Calostilbe striispora*
*Sclerotium coffeicola*
**Cedrela macrocarpa** Ducke ——
*Phyllactinia guttata*
**Cedrela mexicana** M. J. Roem. **Mexican cedrela**
*Phyllachora balansae*
**Cedrela odorata** L. **cigarbox cedrela**
*Armillaria mellea*
**Cedrus atlantica** Manetti **Atlas cedar**
*Fomes officinalis*
*Lophodermium cedrinum*
*Phacidiopycnis pseudotsugae*
**Cedrus deodara** (Roxb.) Loud. **Deodar cedar**
*Armillaria mellea*
*Fomes annosus*
*F. pini*
*Fusarium fuliginosporum*
*Panellus rupicola*
*Peridermium cedri*
*Phacidiopycnis pseudotsugae*
*Polyporus tomentosus* var. *circinatus*
**Cedrus libanensis** Juss. **cedar-of-Lebanon**
*Fomes officinalis*
*Phacidiopycnis pseudotsugae*
**Ceiba pentandra** (L.) Gaertn. **kapok**
Virus, swollen shoot
*Armillaria mellea*
*Calonectria rigidiuscula*
*Cercospora ceibae*
*Fomes lamaoensis*
*F. lignosus*
*Glomerella gossypii*
*Phyllosticta criodendri*
*Physalospora rhodina*
*Polyporus zonalis*
*Ustulina deusta*
**Celtis** sp. **hackberry**
*Fomes lamaoensis*
*Polyporus squamosus*
*Uredo celtidis*
**Celtis australis** L. **European hackberry**
*Helicoceras celtidis*
*Phyllosticta destruens*
*Phytophthora citrophthora*
*Taphrina celtis*
*Uncinula polychaeta*
**Celtis biondii** Pampan ——
*Uncinula clintonii*
**Celtis boliviensis** Planch. **Bolivian hackberry**
*Uncinula polychaeta*
**Celtis caucasica** Willd. **Caucasian hackberry**
*Coryneum mori*
**Celtis kraussiana** Bernh. ——
*Ganoderma applanatum*
*Lenzites betulina*
*Trametes obstinatus*
*T. subflava*

**Celtis latifolia** Planch. ——
*Napicladium celtidis*
**Celtis sinensis** Pers.
**Chinese hackberry**
*Helicobasidium mompa*
*Uncinula clintonii*
*U. polychaeta*
**Celtis sinensis** Pers. var. **japonica** (Planch.) Nakai ——
*Uncinula clintonii*
**Celtis tala** Gill. ——
*Cercospora spegazzinii*
*Phyllosticta talae*
*Uncinula polychaeta*
**Celtis tournefortii** Lam.
**oriental hackberry**
*Helicoceras celtidis*
*Taphrina celtis*
**Celtis zenkeri** Engl. ——
*Calonectria rigidiuscula*
**Centrolobium robustum** Mart. ——
*Elsinoë centrolobii*
**Ceratonia siliqua** L.
**carob (St. Johns-bread)**
*Colletotrichum gloeosporioides*
*Oidium ceratoniae*
**Cercis chinensis** Bunge
**Chinese redbud**
*Cercospora chionea*
*Diplodia cerci-chinensis*
**Cercis siliquastrum** L. **Judas-tree**
*Aecidium lipskianum*
*Septoria cercidis*
*Verticillium albo-atrum*
**Chamaecyparis formosensis** Matsumura
**Formosa false-cypress**
*Stereum sulcatum*
**Chamaecyparis lawsoniana** (A. Murr.) Parl. **Port-Orford-cedar**
*Didymascella thujina*
*Monochaetia unicornis*
*Phytophthora cinnamomi*
**Chamaecyparis obtusa** (Sieb. & Zucc.) Endl. **hinoki false-cypress**
*Armillaria mellea*
*Botrytis cinerea*
*Ceratocystis piceae*
*Helicobasidium mompa*
*Lophodermium chamaecyparisii*
*Pellicularia filamentosa*
*Pestalotia chamaecyparidis*
*P. funerea*
*Phytophthora cactorum*
*Pythium debaryanum*
*Sclerotinia kitajimana*
**Chamaecyparis pisifera** (Sieb. & Zucc.) Endl. **Sawara false-cypress**
*Gymnosporangium solenoides*
*Helicobasidium mompa*
**Chamaecyparis pisifera f. plumosa** Beissn. ——
*Pestalotia funerea*
**Chamaecyparis pisifera f. squarrosa** Beissn. & Hochst. ——
*Pestalotia funerea*
**Chlorophora excelsa** (Welw.) Benth. & Hook. f. **Iroko fustic-tree**
*Armillaria mellea*
*Fomes lamaoensis*
*Helicobasidium compactum*
**Chlorophora regia** A. Chev. ——
*Uredo chlorophorae*
**Chlorophora tinctoria** (L.) Gaud.
**drug fustic-tree**
*Uredo maclurae*
**Chloroxylon swietenia** DC.
**Ceylon satinwood**
*Cercospora chloroxyli*
**Chomelia asiatica** (L.) Kuntze ——
*Puccinia spongiosa*
**Chrysalidocarpos lutescens** H. Wendl.
**yellow butterfly-palm**
*Phytophthora palmivora*
**Chrysalidocarpos madagascariensis** Becc. **Madagascar butterfly-palm**
*Phytophthora palmivora*
**Chrysobalanus icaco** L.
**icaco cocoplum**
*Cercospora chrysobalani*
*Pestalotia funerea*
**Chrysophyllum cainito** L. **starapple**
Virus, rosette
*Uredo amicosa*
**Chrysophyllum oliviforme** L.
**satinleaf**
*Asterina chrysophylli*
**Chukrasia tabularis** A. Juss.
**Chittagong chickrassy**
*Fomes senex*
**Cinchona delessertiana** Standl. ——
*Elsinoë cinchonae*
**Cinchona micrantha** Ruiz. & Pav.
——
*Phytophthora quininea*

**Cinchona officinalis L.** ———
*Armillaria mellea*
*Ceratocystis fimbriata*
*Cercospora cinchonae*
*Corticium salmonicolor*
*Elsinoë cinchonae*
*Guignardia yersini*
*Pellicularia filamentosa*
*P. koleroga*
*P. rolfsii*
*Phlyctaena cinchonae*
*Phoma cinchonae*
*Phyllosticta cinchonaecola*
*P. honbaensis*
*P. yersini*
*Physalospora cinchonae*
*Phytophthora cinnamomi*
*P. palmivora*
*P. parasitica*
*P. quininea*
*Pythium vexans*

**Cinchona pitayensis** Wedd. ———
*Phytophthora parasitica*

**Cinchona pubescens** Vahl ———
*Armillaria mellea*
*Ceratocystis fimbriata*
*Corticium salmonicolor*
*Elsinoë cinchonae*
*Fusarium javanicum*
*Guignardia yersini*
*Pellicularia filamentosa*
*Phlyctaena cinchonae*
*Phoma cinchonae*
*Phyllosticta cinchonaecola*
*P. honbaensis*
*P. yersini*
*Physalospora cinchonae*
*P. rhodina*
*Phytophthora cinnamomi*
*P. palmivora*
*P. parasitica*
*P. quininea*
*Prillieuxina cinchonae*
*Pythium vexans*

**Cinnamodendron axillare** Endl. ———
*Meliola cinnamodendri*

**Cinnamomum** sp. **cinnamon**
*Ganoderma pseudoferreum*

**Cinnamomum burmannii** Blume **Malay cinnamon**
*Colletotrichum gloeosporioides*
*Phytophthora cinnamomi*

**Cinnamomum camphora** (L.) Nees & Eberm. **camphor-tree**
*Colletotrichum gloeosporioides*
*Corticium salmonicolor*
*Fomes lamaoensis*
*F. lignosus*
*Glomerella cinnamomi*
*Helicobasidium mompa*
*Phyllosticta cinnamomi-glanduliferi*
*Phytophthora cinnamomi*

**Cinnamomum cassia** Nees & Eberm. **cassiabark-tree**
*Exobasidium cinnamomi*

**Cinnamomum cecidodaphne** Meissn. ———
*Ganoderma applanatum*

**Cinnamomum culilawan** Blume **culiban cinnamon**
*Phytophthora cinnamomi*

**Cinnamomum glanduliferum** Meissn. **Nepal camphor-tree**
*Phyllosticta cinnamomi-glanduliferi*

**Cinnamomum iners** Reinw. ———
*Aecidium cinnamomi*

**Cinnamomum sintok** Blume ———
*Phytophthora cinnamomi*

**Cinnamomum zeylanicum** Blume **Ceylon cinnamon**
*Aecidium cinnamomi*
*Exobasidium cinnamomi*
*Phyllosticta cinnamomi*
*Phytophthora cinnamomi*

**Cladrastis shikokiana** Mak. ———
*Uromyces cladrastidis*
*U. shikokianus*

**Clerodendrum** sp. ———
*Aecidium clerodendri*

**Clerodendrum buchholzii** Gürke ———
*Hemileia scholzii*

**Clerodendrum calamitosum** L. ———
*Endophyllum superficiale*

**Clerodendrum capitatum** Schum. & Thou. ———
*Meliola clerodendricola*

**Clerodendrum cyrtophyllum** Turcz. **mayflower glorybower**
*Aecidium clerodendri*

**Clerodendrum fragrans** Vent. **fragrant glorybower**
*Aecidium clerodendri*
*Caeoma clerodendri*

**Clerodendrum fragrans** Vent.
(Continued) **fragrant glorybower**
*Cercospora volkameriae*
*Coleosporium clerodendri*
*Endophyllum superficiale*
**Clerodendrum inerme** (L.) Gaertn.
———
*Cercospora kashotoensis*
*Puccinia erebia*
**Clerodendrum infortunatum** Gaertn.
———
*Ascochyta infortunata*
*Colletotrichum gloeosporioides*
*Meliola clerodendricola*
**Clerodendrum intermedium** Cham.
———
*Endophyllum superficiale*
**Clerodendrum minahassae** Teijsm. & Binn. ———
*Puccinia erebia*
**Clerodendrum paniculatum** L. ———
*Aecidium clerodendri*
*Hemileia scholzii*
**Clerodendrum quadriloculare** Merr.
———
*Endophyllum superficiale*
**Clerodendrum scandens** Beauv. ———
*Cercospora volkameriae*
**Clerodendrum speciosissimum** Van Geert **Java glorybower**
*Pellicularia filamentosa*
**Clerodendrum trichotomum** Thunb. **harlequin glorybower**
*Cercospora clerodendri*
*Coleosporium clerodendri*
**Clerodendrum villosum** Blume ———
*Coleosporium clerodendri*
*C. euphrasiae*
**Clusia gundlachii** Stahl ———
*Asterina diplocarpa*
*Meliola clusiae*
**Clusia multiflora** H. B. K. ———
*Uredo zarumae*
**Clusia rosea** Jacq. **copey clusia**
*Coccomyces clusiae*
*Dimerium melioloides*
*Pestalotia funerea*
*Uredo clusiae*
**Coccoloba** sp. ———
*Clypeotrabutia portoricensis*
***Coccoloba uvifera*** (L.) L. **seagrape**
*Lembosia tenella*
*Phyllosticta coccolobae*
**Coccoloba venosa** L. ———
*Clypeotrabutia portoricensis*

**Cocos nucifera** L. **coconut**
*Xanthomonas vasculorum*
*Armillaria mellea*
*Catacauma torrendiella*
*Ceratocystis paradoxa*
*Coniothyrium cocoes*
*Corticium penicillatum*
*Didymella cocoina*
*Diplodia epicocos*
*Exosporium palmivorum*
*Fomes annularis*
*F. lamaoensis*
*F. lignosus*
*Ganoderma lucidum*
*G. pseudoferreum*
*Graphiola cocoina*
*Macrophomina phaseoli*
*Mycosphaerella gastonis*
*Pestalotia palmarum*
*Phyllosticta cocos*
*Physalospora rhodina*
*Phytophthora palmivora*
*P. parasitica*
*Polyporus zonalis*
**Coffea abeokutae** Cramer ———
*Ceratocystis paradoxa*
*Mycena citricolor*
**Coffea arabica** L. **Arabian coffee**
Virus, mosaic
*Armillaria mellea*
*Botrytis cinerea*
*Ceratocystis fimbriata*
*Cercospora coffeicola*
*Colletotrichum gloeosporioides*
*Corticium salmonicolor*
*Fomes lamaoensis*
*F. lignosus*
*Fusarium lateritium*
*F. solani* var. *eumartii*
*Ganoderma pseudoferreum*
*Glomerella cingulata*
*G. coffeicola*
*Helicobasidium compactum*
*Hemileia coffeicola*
*H. vastatrix*
*Macrophomina phaseoli*
*Micropeltella mulleri*
*Micropeltis applanata*
*Mycena citricolor*
*Mycosphaerella coffeicola*
*Myrothecium roridum*
*Paracapnodium brasilense*
*Pellicularia filamentosa*
*P. koleroga*

*Phyllosticta coffeicola*
*Polyporus rubidus*
*P. zonalis*
*Rhizoctonia choussii*
*Rosellinia aquila*
*R. bunodes*
*R. pepo*
*Sclerotium coffeicola*

**Coffea arabica** var. **bourbon** Hort. ———
*Ceratocystis fimbriata*

**Coffea arabica** var. **maragogipes** C. J. Fernandez ———
*Nectria dodgeii*

**Coffea arabica** var. **mokka** Cramer ———
*Hemilceia vastatrix*

**Coffea arabica** var. **myrtifolia** (Roxb.) A. Chev. ———
*Hemileia vastatrix*
*Mycosphaerella coffeae*

**Coffea bukohensis** Zimmerm. ———
*Cercospora coffeicola*
*Glomerella cingulata*

**Coffea camoensis** ———
*Phyllosticta camoensis*

**Coffea canephora** Pierre ———
*Ceratocystis paradoxa*
*Cercospora coffeicola*
*Clitocybe tabescens*
*Hemileia vastatrix*
*Mycena citricolor*

**Coffea canephora** var. **laurentii** (De Wild.) A. Chev. **Lawrence coffee**
*Mycena citricolor*

**Coffea canephora** var. **robusta** (L. Linden) A. Chev. **robust coffee**
Virus, mosaic
*Armillaria mellea*
*Cercospora coffeicola*
*Cladosporium herbarum*
*Clitocybe tabescens*
*Colletotrichum gloeosporioides*
*Fomes lamaoensis*
*F. lignosus*
*Fusarium oxysporum*
*Gibberella xylarioides*
*Glomerella cingulata*
*Hemileia vastatrix*
*Macrophomina phaseoli*
*Mycena citricolor*
*Myrothecium roridum*
*Polyporus rubidus*

**Coffea congensis** Frohener ———
*Hemileia vastatrix*

**Coffea congensis** var. **chalotii** Pierre ———
*Hemilcia vastatrix*

**Coffea dewevrei** De Wild. & Dur. ———
*Gibberella xylarioides*
*Sclerotium coffeicola*

**Coffea eugenioides** S. Moore ———
*Hemileia vastatrix*

**Coffea excelsa** A. Chev. ———
*Cercospora coffeicola*
*Gibberella xylarioides*
*Glomerella cingulata*
*Hemilcia vastatrix*

**Coffea liberica** Hiern. **Liberian coffee**
*Ceratocystis paradoxa*
*Colletotrichum gloeosporioides*
*Corticium salmonicolor*
*Fomes lamaoensis*
*F. lignosus*
*Hemileia vastatrix*
*Mycena citricolor*
*Myrothecium roridum*
*Sclerotium coffeicola*
*Trachysphaera fructigena*

**Coffea neo-arnoldiana** A. Chev. ———
*Gibberella xylarioides*

**Coffea stenophylla** G. Don **Sierra Leone coffee**
*Cercospora coffeicola*

**Cola acuminata** (Beauv.) Schott & Endl. **Sudan colanut**
*Armillaria mellea*
*Calonectria rigidiuscula*
*Fomes lignosus*
*Hainesia kolae*
*Marasmius scandens*
*Physalospora rhodina*

**Cola chlamydantha** K. Schum. ———
Virus, swollen shoot

**Cola cordifolia** (Cav.) R. Br. ———
Virus, swollen shoot
*Calonectria rigidiuscula*

**Cola nitida** (Vent.) A. Chev. ———
*Pellicularia koleroga*

**Cola togoensis** Engl. & K. Krause ———
Virus, swollen shoot
*Calonectria rigidiuscula*

**Cola vera** K. Schum. ——
*Fomes lignosus*
*Marasmius scandens*
**Colebrookia oppositifolia** Sm. ——
*Uredo colebrookiae*
**Colubrina arborescens** (Mill.) Sarg. **coffee colubrina**
*Uredo colubrinae*
**Colubrina reclinata** (L. Hér.) Brongn. **soldierwood**
*Asterina colubrinae*
**Colubrina rufa** Reiss. ——
*Cercospora colubrinae*
**Combretum** sp. **combretum**
*Armillaria mellea*
**Combretum decandrum** Roxb. ——
*Corticium repens*
**Combretum secundum** Jacq. ——
*Aecidium adenariae*
*Mollisia grisleae*
**Condalia obovata** Hook. **bluewood**
*Meliola condaliae*
**Conocarpus erectus** L. **button-mangrove**
*Cercospora conocarpi*
**Coprosma billardieri** Hook f. ——
*Puccinia coprosmae*
**Coprosma hirtella** Labill. ——
*Puccinia coprosmae*
**Cordia** sp. **cordia**
*Aecidium brasiliense*
*Diatractium cordiae*
*Dimeriella cordiae*
*Elsinoë mayaguensis*
**Cordia alba** (Jacq.) Roem. & Schult. **white cordia**
*Aecidium lindavianum*
**Cordia alliodora** (Ruiz. & Pav.) Oken ——
*Puccinia cordiae*
**Cordia corymbosa** (L.) G. Don ——
*Dimeriella cordiae*
*Dimerium stevensii*
**Cordia curassavica** (Jacq.) Roem. & Schult. ——
*Aecidium cordiae*
**Cordia cylindrostachya** (Ruiz. & Pav.) Roem. & Schult. ——
*Aecidium brasiliense*
*A. cordiae*
*Alveolaria cordiae*
*Chaetostigme cordiae*
*Uredo cordiarum*
**Cordia dichotoma** Forst. f. ——
*Aecidium morobeanum*
**Cordia discolor** Cham. ——
*Aecidium brasiliense*
**Cordia ecalyculata** Vell. ——
*Aecidium brasiliense*
**Cordia ferruginea** (Lam.) Roem. & Schult. ——
*Alveolaria cordiae*
*Asterina vagans*
*Dimeriella cordiae*
**Cordia gerascanthus** L. ——
*Puccinia cordiae*
*P. corticola*
**Cordia glabra** L. **nopo cordia**
*Diatractium cordiae*
**Cordia globosa** (Jacq.) H. B. K. ——
*Aecidium cordiae*
**Cordia lanceolata** (Desv.) H. B. K. ——
*Dimeriella cordiae*
**Cordia laxiflora** H. B. K. ——
*Alveolaria cordiae*
**Cordia macleodii** Hook f. & Thoms. **MacLeod cordia**
*Uncinula tectonae*
**Cordia macrostachya** (Jacq.) Roem. & Schult. ——
Virus, mosaic
**Cordia myxa** L. **sebastian-plum cordia**
*Cercospora myxa*
**Cordia nodosa** Lam. ——
*Aecidium lindavianum*
**Cordia obscura** Cham. ——
*Aecidium brasiliense*
**Cordia riparia** H. B. K. ——
*Alveolaria cordiae*
**Cordia rothii** Roem. & Schult. ——
*Aecidium brasiliense*
**Cordia sellowiana** Cham. ——
*Elsinoë costai*
*E. mayaguensis*
**Cordia suaveolens** Blume ——
*Guignardia javanica*
**Cordia sulcata** DC. ——
*Dimeriella cordiae*
**Cordia tarmensis** Krause ——
*Alveolaria cordiae*
**Cordia urticaefolia** Cham. ——
*Aecidium cordiae*
**Corylopsis platypetala** Rehd. & E. H. Wils. ——
*Aecidium hamamelidis*

**Corylopsis veitchiana** Bean
**Veitch winter-hazel**
*Aecidium hamamelidis*

**Corylus avellana** L. **European filbert**
*Fomes igniarius*
*Ganoderma lucidum*
*Nectria ditissima*
*Phyllactinia guttata*

**Corylus colurna** L. **Turkish filbert**
*Microsphaera alni*
*Pucciniastrum coryli*

**Corylus cornuta** Marsh. **beaked filbert**
*Microsphaera alni*

**Corylus heterophylla** Fisch.
**Siberian filbert**
*Microsphaera alni*
*Pucciniastrum coryli*

**Corylus heterophylla** Fisch. var. **japonica** Koidz. ———
*Microsphaera alni*
*Pucciniastrum coryli*

**Corylus sieboldiana** Blume
**Japanese filbert**
*Microsphaera alni*
*Pucciniastrum coryli*

**Corylus sieboldiana** var. **mandshurica** (Maxim. & Rupr.) Schneid.
**Manchurian filbert**
*Microsphaera alni*
*Pucciniastrum coryli*

**Cotoneaster** sp. **cotoneaster**
*Cytospora ambiens*
*Gymnosporangium mespili*

**Cotoneaster affinis** Lindl. var. **bacillaris** (Lindl.) Schneid.
**brownberry cotoneaster**
*Fomes conchatus*

**Cotoneaster frigida** Wall.
**Himalayan cotoneaster**
*Botrytis cinerea*

**Cotoneaster integerrima** Med.
**European cotoneaster**
*Gymnosporangium mespili*

**Coutarea hexandra** (Jacq.) K. Schum. ———
*Aecidium coutareae*

×**Crataegomespilus grandiflora** (Sm.) Bean **bigflower hawmedlar**
*Gymnosporangium clavariiforme*

**Crataegus calycina** Peterm. ———
*Gymnosporangium clavariiforme*

**Crataegus cuneata** Sieb. & Zucc.
**Nippon hawthorn**
*Gymnosporangium haraeanum*

**Crataegus heldreichii** Boiss.
**Heldreich hawthorn**
*Gymnosporangium clavariiforme*

**Crataegus hupehensis** Sarg. ———
*Gymnosporangium haraeanum*

**Crataegus insegnae** Bertol. ———
*Gymnosporangium orientale*

**Crataegus intricata** Lange
**thicket hawthorn**
*Aecidium patulum*
*Gymnosporangium clavariiforme*
*Lophodermium hysterioides*

**Crataegus** ×**lambertiana** Lange
**Lambert hawthorn**
*Gymnosporangium clavariiforme*

**Crataegus monogyna** Jacq.
**one-seed hawthorn**
*Fomes annosus*
*Gymnosporangium clavariiforme*
*G. mespili*
*Helicobasidium purpureum*
*Lophodermium hysterioides*
*Phyllactinia guttata*
*Podosphaera oxyacanthae*
*Taphrina crataegi*

**Crataegus nigra** Waldst. & Kit.
**European black hawthorn**
*Gymnosporangium clavariiforme*

**Crataegus oxyacantha** L.
**English hawthorn**
*Erwinia amylovora*
*Armillaria mellea*
*Cercospora crataegi*
*Coniophora puteana*
*Fomes annosus*
*F. igniarius*
*Gymnosporangium clavariiforme*
*G. mespili*
*G. tremelloides*
*Nectria galligena*
*Podosphaera oxyacanthae*
*Taphrina crataegi*
*Venturia crataegi*

**Crataegus pentagyna** Waldst. & Kit. ———
*Gymnosporangium clavariiforme*

**Crataegus pinnatifida** Bunge
**Chinese hawthorn**
*Gymnosporangium haraeanum*
*Podosphaera oxyacanthae*

**Crataegus sanguinea** Pall. **redhaw hawthorn**
*Gymnosporangium clavariiforme*
*Podosphaera oxyacanthae*
*Taphrina crataegi*

**Crataegus sanguinea** var. **chlorocarpa** (K. Koch) Schneid. ———
*Gymnosporangium tremelloides*

**Crataegus scabrifolia** Franch. & Rehd. ———
*Gymnosporangium clavariiforme*
*Podosphaera oxyacanthae*

**Crataegus succulenta** Schrad. **fleshy hawthorn**
*Gymnosporangium clavariiforme*
*G. tremelloides*

**Crataeva religiosa** Forst. f. ———
*Aecidium crataevae*

**Crescentia cujete L.** **common calabash-tree**
*Irenina arachnoidea*

**Cryptocarya bellota ?** ———
*Venturia bellotae*

**Cryptocarya mandioccana** Meissn. ———
*Drepanoconis larviformis*

**Cryptolepsis buchananii** Roem. & Schult. ———
*Aecidium ponderosum*

**Cryptomeria japonica** (L. f.) D. Don **Japanese cryptomeria**
*Armillaria mellea*
*Botrytis cinerea*
*Cercospora cryptomeriae*
*Fomes annosus*
*F. ulmarius*
*Helicobasidium mompa*
*Hysterium thujopsidis*
*Leptosphaerulina japonica*
*Macrophoma sugi*
*Mycosphaerella cryptomeriae*
*Pellicularia filamentosa*
*Pestalotia funerea*
*P. shiraiana*
*Phoma cryptomeriae*
*Phomopsis juniperovora*
*Physalospora cryptomeriae*
*Phytophthora parasitica*
*Polyporus gilvus*
*Sclerotinia kitajimana*
*Sphaeropsis cryptomeriae*
*Stagonospora cryptomeriae*
*Valsa cryptomeriae*

**Cryptomeria japonica** f. **elegans** Beissn. **plume Japanese cryptomeria**
*Cladosporium laricis*

**Cudrania tricuspidata** (Carr.) Bur. ———
*Uncinula miyabei*

**Cunninghamia lanceolata** (Lamb.) Hook. **common China-fir**
*Macrophoma sinensis*
*Pestalotia funerea*

**Cupania** sp. **cupania**
*Irenina wrightii*

**Cupania americana** L. **American cupania**
*Cionothrix cupaniae*
*Skierka cristata*

**Cupania belizensis** Standl. ———
*Skierka cristata*

**Cupania cubensis** Maza & Molt. ———
*Skierka cristata*

**Cupania glabra** Sw. **Florida cupania**
*Cionothrix cupaniae*

**Cupania guatemalensis** Radlk. **Guatemala cupania**
*Cercospora cupaniae*

**Cupania oblongifolia** Mart. ———
*Sphaceloma cupaniae*

**Cupania vernalis** Cambess. ———
*Sphaceloma cupaniae*

**Cupressus** sp. **cypress**
*Alternaria tenuis*
*Armillaria mellea*
*Fusarium bulbigenum* var. *blasticola*
*Phytophthora cinnamomi*
*Pythium ultimum*
*Rhizoctonia lamellifera*

**Cupressus duclouxiana** Hickel **Bhutan cypress**
*Alternaria tenuis*
*Gymnosporangium cunninghamianum*
*G. distortum*
*Monochaetia unicornis*

**Cupressus funebris** Endl. **mourning cypress**
*Gymnosporangium tsingshenensis*

**Cupressus lusitanica** Mill. **Mexican cypress**
*Armillaria mellea*
*Hymenochaete mougeotii*
*Monochaetia unicornis*
*Pestalotia funerea*

**Cupressus lusitanica** var. **benthamii** (Endl.) Carr.
**Bentham Mexican cypress**
*Gymnosporangium meridissimum*
*Macrophomina phaseoli*
*Monochaetia unicornis*

**Cupressus macrocarpa** Hartw.
**Monterey cypress**
*Armillaria mellea*
*Coryneum cardinale*
*Monochaetia unicornis*
*Pestalotia funerea*
*Polyporus versicolor*

**Cupressus sempervirens** L.
**Italian cypress**
*Coryneum cardinale*
*Diplodia pinea*
*Gymnosporangium minus*
*Monochaetia unicornis*
*Pestalotia funerea*
*Trametes trogii*

**Cupressus sempervirens f. stricta** (Ait.) Rehd.
**pyramidal Italian cypress**
*Monochaetia unicornis*

**Curtisia faginea** Ait. **assegai-tree**
*Fomes connatus*
*F. robiniae*
*Ganoderma applanatum*

**Cyathea arborea** (L.) J. E. Smith
**tree-fern**
*Griggsia cyathea*

**Cybistax antisyphilitica** Mart.
**primavera**
*Cercospora cybistacis*

**Dacrydium cupressinum** Soland.
**rimu dacrydium**
*Stereum sanguinolentum*

**Dalbergia amerimnum** Benth. ———
*Sphaerophragmium dalbergiae*

**Dalbergia lactea** Vatke ———
*Auerswaldia dalbergiae*

**Dalbergia latifolia** Roxb.
**East Indian rosewood**
*Fomes lamaoensis*
*Ganoderma lucidum*
*Polyporus gilvus*

**Dalbergia paniculata** Roxb. ———
*Maravalia pterocarpi*

**Dalbergia saxatilis** Hook. f. ———
*Phyllachora lactea*

**Dalbergia sissoo** Roxb. **sissoo**
*Cercospora sissoo*
*Fomes lamaoensis*
*F. robiniae*
*Fusarium solani*
*Ganoderma applanatum*
*G. lucidum*
*Marasmius equicrinis*
*Pellicularia filamentosa*
*Polyporus gilvus*
*Schizophyllum commune*
*Uredo sissoo*
*Uromyces archrous*

**Delonix regia** (Bojer) Raf.
**flamboyant-tree (royal poinciana)**
*Armillaria mellea*
*Cercosporella theae*
*Fomes lignosus*
*Ganoderma lucidum*
*Ustulina deusta*

**Dendrocalamus** sp. ———
*Pellicularia koleroga*
*Uredo ignava*

**Dendrocalamus latiflorus** Munro
———
*Uredo dendrocalami*

**Dendrocalamus strictus** Nees ———
*Dasturella divina*

**Desplatzia lutea** A. Chev. ———
*Calonectria rigidiuscula*

**Dictyosperma album** Wendl. & Drude
**white princess-palm**
*Xanthomonas vasculorum*

**Dillenia retusa** Thunb. ———
*Cercospora dilleniae*

**Dimorphandra latifolia** Tul.
**broadleaf dimorphandra**
*Irene cubitorum*

**Diospyros** sp. ———
*Fomes annularis*

**Diospyros discolor** Willd.
**mabola persimmon**
*Ganoderma applanatum*
*Schizophyllum commune*

**Diospyros kaki** L. f. **kaki persimmon**
*Elsinoë diospyri*
*Helicobasidium mompa*
*Phyllactinia guttata*

**Diospyros lotus** L.
**dateplum persimmon**
*Phyllactinia guttata*

**Dipholis salicifolia** (L.) A. DC.
**willow bustic**
*Cylindrocladium scoparium*
*Puccinia johnstonii*

**Diploglottis cunninghamii** Hook. f. ——
*Uromyces diploglottidis*

**Dipterocarpus grandiflorus** Blanco **Apitong gurjinoil tree**
*Fomes annularis*

**Dipterocarpus hasseltii** Blume ——
*Phyllachora oblongispora*

**Dipterocarpus subalpinus** Foxworthy ——
*Phyllachora oblongispora*

**Dipterocarpus vernicifluus** Blanco ——
*Asterinella dipterocarpi*

**Dolichandrone platycalyx** Baker ——
*Cercospora dolichandrones*

**Dovyalis caffra** (Hook. f. & Harv.) Warb. **Kei-apple**
*Phyllachora aberiae*

**Dracaena** sp. **dracaena**
*Meliola dracaenicola*

**Dracaena cooperi** Regel ——
*Phyllosticta draconis*

**Dracaena draco** L. **dragon dracaena**
*Phyllosticta draconis*

**Dracontomelum dao** Merr. & Rolfe **dao dragonplum**
*Ganoderma lucidum*

**Drimys winteri** Forst. **wintersbark drimys**
*Actinothyrium drimydis*

**Dryobalanops aromatica** Gaertn. f. **common Borneo camphor**
*Rosellinia bunodes*

**Durio zibethinus** Murr. **civet durian**
*Corticium salmonicolor*
*Ganoderma pseudoferreum*
*Placosphaeria durionis*
*Pythium vexans*

**Dysoxylum cumingianum** C. DC. ——
*Asterinella dysoxyli*

**Dysoxylum richii** C. DC. ——
*Cercospora didymochetonis*

**Dysoxylum spectabile** Hook. f. **showy pencilwood**
*Pseudomonas dysoxyli*

**Ehretia** sp. **ehretia**
*Bubakia ehretiae*
*Schroeteriaster ehretiae*

**Ehretia acuminata** R. Br. **heliotrope-tree**
*Bubakia ehretiae*
*Schroeteriaster ehretiae*
*Uredo ehretiae*

**Ehretia macrophylla** Baker **largeleaf ehretia**
*Uredo ehretiae*

**Ehretia serrata** Roxb. ——
*Uredo ehretiae*

**Ehretia thyrsiflora** (Sieb. & Zucc.) Nakai ——
*Cercospora ehretiae*
*Schroeteriaster ehretiae*

**Elaeis guineensis** Jacq. **African oilpalm**
Virus, mosaic
*Armillaria mellea*
*Ceratocystis paradoxa*
*Cercospora elaedis*
*Fomes lamaoensis*
*F. lignosus*
*Fusarium albedinis*
*F. oxysporum*
*F. vasinfectum*
*Ganoderma applanatum*
*G. lucidum*
*G. pseudoferreum*
*Glomerella cingulata*
*Helminthosporium halodes* var. *elaeicola*
*Meliolinella palmicola*
*Mycosphaerella elaeidis*
*Pestalotia palmarum*
*Phytophthora palmivora*
*Ustulina deusta*

**Elaeocarpus** sp. ——
*Aecidium elaeocarpi*
*A. elaeocarpicola*

**Elaeocarpus argenteus** Merr. ——
*Asterina elaeocarpi*

**Elaeocarpus munroi** Mast. ——
*Catacauma elaeocarpi*

**Elaeocarpus oblongus** Gaertn. ——
*Catacauma elaeocarpi*

**Elaeocarpus pendulus** Merr. ——
*Asterina elaeocarpi*

**Elaeodendron croceum** DC. ——
*Fomes robiniae*

**Elaeodendron glaucum** Pers. ——
*Fomes robiniae*

**Enterolobium contortisiliquum** (Vell.) Morong ———
*Ravenelia hassleri*
*Trametes trogii*

**Enterolobium cyclocarpum** (Jacq.) Griseb. **guanacaste**
*Calostilbe striispora*
*Ganoderma pseudoferreum*

**Erythrina** sp. **coralbean**
*Armillaria mellea*
*Dicheirinia binata*
*Fomes lamaoensis*
*F. lignosus*
*Ganoderma pseudoferreum*
*Rosellinia bunodes*
*Sphaerostilbe repens*

**Erythrina altissima** A. Chev. ———
*Calonectria rigidiuscula*

**Erythrina berteroana** Urban **machette**
*Uredo erythrinae*

**Erythrina crista-galli** L. **cockspur coralbean**
*Dicheirinia binata*
*Elsinoë erythrinae*
*Pleospora erythrina*
*Sphaceloma erythrinae*

**Erythrina glauca** Willd. **swamp immortelle**
*Calostilbe striispora*
*Dicheirinia binata*
*Phaeosaccardinula seaveriana*
*Phyllosticta erythrinicola*
*Uredo erythrinae*

**Erythrina indica** Lam. **India coralbean**
*Xanthomonas erythrinae*
*Fomes lignosus*
*Macrophomina phaseoli*

**Erythrina lithosperma** Blume ———
*Armillaria mellea*
*Macrophomina phaseoli*

**Erythrina mitis** Jacq. ———
*Calostilbe striispora*
*Dicheirinia binata*
*Macrophomina phaseoli*

**Erythrina poeppigiana** (Walp.) O. F. Cook ———
*Calostilbe striispora*
*Phyllosticta erythrinicola*

**Erythrina speciosa** Andr. ———
*Elsinoë erythrinae*
*Sphaceloma erythrinae*

**Erythrina variegata** L. **variegated coralbean**
*Uredo erythrinae*

**Erythrina velutina** Willd. ———
*Calostilbe striispora*
*Macrophomina phaseoli*

**Erythroxylon** sp. ———
*Bubakia erythroxylonis*
*Cronartium bresadoleanum*

**Erythroxylon areolatum** L. ———
*Bubakia erythroxylonis*

**Erythroxylon brevipes** DC. ———
*Bubakia erythroxylonis*

**Erythroxylon coca** Lam. **cocaine**
*Armillaria mellea*
*Bubakia erythroxylonis*
*Corticium salmonicolor*
*C. theae*
*Mycena citricolor*
*Xylaria apiculata*

**Erythroxylon havanense** Jacq. ———
*Bubakia erythroxylonis*

**Erythroxylon ovalifolium** Peyr. ———
*Bubakia erythroxylonis*

**Erythroxylon pelleterianum** St. Hil. ———
*Bubakia erythroxylonis*

**Eucalyptus** sp. **eucalyptus**
*Agrobacterium tumefaciens*
*Armillaria mellea*
*Botryosphaeria ribis* var. *chromogena*
*Cercospora eucalypti*
*Corticium salmonicolor*
*Cylindrocladium scoparium*
*Fistulina hepatica*
*Fomes conchatus*
*F. fomentarius*
*Fusarium orthoceras*
*Ganoderma applanatum*
*Oidium eucalypti*
*Pellicularia filamentosa*
*Phytophthora cinnamomi*
*Pleurotus lampas*
*Polyporus dryadeus*
*P. sulphureus*
*Rosellinia radiciperda*

**Eucalyptus alba** Reinw. **poplar eucalyptus**
*Botrytis cinerea*

**Eucalyptus baxteri** (Benth.) Maiden & Blakely ———
*Polyporus eucalyptorum*

**Eucalyptus botryoides** Sm.
**bangalay eucalyptus**
*Botrytis cinerea*
*Fomes robustus*

**Eucalyptus camaldulensis** Dehnh.
**longbeak eucalyptus**
*Botrytis cinerea*
*Cercospora eucalypti*
*Fomes robustus*
*F. setulosus*
*Hypoxylon mediterraneum*
*Oidium eucalypti*
*Polyporus eucalyptorum*

**Eucalyptus citriodora** Hook.
**lemon-gum**
*Agrobacterium tumefaciens*
*Armillaria mellea*
*Botrytis cinerea*
*Cylindrocladium scoparium*
*Ganoderma lucidum*
*Physalospora eucalyptorum*
*Phytophthora parasitica*
*Puccinia psidii*
*Trametes cubensis*

**Eucalyptus cladocalyx** F. Muell.
**sugar-gum**
*Colletotrichum gloeosporioides*
*Glomerella cingulata*

**Eucalyptus coccifera** Hook. f.
**ridgetop eucalyptus**
*Cylindrocladium scoparium*

**Eucalyptus diversicolor** F. Muell.
**karri eucalyptus**
*Cercosporella theae*
*Endothia gyrosa*

**Eucalyptus diversifolia** Bonpl. ———
*Rhytisma eucalypti*

**Eucalyptus elaeophora** F. Muell.
**bundy eucalyptus**
*Polyporus eucalyptorum*

**Eucalyptus fasciculosa** F. Muell.
———
*Fomes robustus*

**Eucalyptus ficifolia** F. Muell.
**scarlet eucalyptus**
*Cercospora eucalypti*
*Physalospora eucalyptorum*

**Eucalyptus gigantea** Hook. f.
**delegate eucalyptus**
*Cylindrocladium scoparium*
*Phyllosticta eucalypti*

**Eucalyptus globulus** Labill.
**Tasmanian blue eucalyptus**
*Armillaria mellea*
*Botrytis cinerea*
*Cercospora epicoccoides*
*C. eucalypti*
*Coryneum eucalypti*
*Cylindrocladium scoparium*
*Ganoderma lucidum*
*Macrophomina phaseoli*
*Mycosphaerella molleriana*
*Stereum hirsutum*

**Eucalyptus gomphocephala** DC.
**tooart eucalyptus**
*Hypoxylon mediterraneum*

**Eucalyptus gunnii** Hook. f.
**cider eucalyptus**
*Cylindrocladium scoparium*

**Eucalyptus leucoxylon** F. Muell.
**white ironbark eucalyptus**
*Polyporus eucalyptorum*

**Eucalyptus longifolia** Link & Otto
**longleaf woollybutt eucalyptus**
*Cylindrocladium scoparium*

**Eucalyptus maidenii** F. Muell.
**Maiden eucalyptus**
*Stereum hirsutum*

**Eucalyptus marginata** Sm.
**jarrah eucalyptus**
*Fistulina hepatica*
*Polyporus eucalyptorum*

**Eucalyptus obliqua** L'Hér.
**messmate stringybark eucalyptus**
*Cylindrocladium scoparium*
*Fomes conchatus*
*Mycosphaerella heimii*
*Pestalotia molleriana*
*Polyporus dryadeus*
*P. eucalyptorum*
*P. schweinitzii*

**Eucalyptus odorata** Behr & Schlecht.
**peppermint eucalyptus**
*Fomes robiniae*
*F. robustus*

**Eucalyptus oleosa** F. Muell.
**oil mallee eucalyptus**
*Fomes robiniae*
*F. robustus*

**Eucalyptus ovata** Labill.
**ovalleaf eucalyptus**
*Fomes robustus*

**Eucalyptus paniculata** Sm.
**gray ironbark eucalyptus**
*Armillaria mellea*
*Fomes robiniae*

**Eucalyptus pauciflora** Sieber
**snow eucalyptus**
*Cylindrocladium scoparium*

**Eucalyptus piperita** Sm.
**Sydney peppermint eucalyptus**
*Fomes conchatus*

**Eucalyptus regnans** F. Muell.
**giant eucalyptus**
*Cylindrocladium scoparium*
*Fomes robiniae*
*Ganoderma applanatum*
*Irpex obliquus*

**Eucalyptus resinifera** Sm.
**kino eucalyptus**
*Cylindrocladium scoparium*

**Eucalyptus robusta** Sm.
**beakpod eucalyptus**
*Agrobacterium tumefaciens*
*Cercosporella theae*
*Cylindrocladium scoparium*
*Hypoxylon mediterraneum*
*H. sertatum*
*Macrophomina phaseoli*
*Readeriella mirabilis*

**Eucalyptus salicifolia** (Sol.) Cav.
**willowleaf eucalyptus**
*Physalospora eucalyptorum*

**Eucalyptus saligna** Sm.
**Sydney blue eucalyptus**
*Cylindrocladium scoparium*
*Fomes robustus*

**Eucalyptus tereticornis** Sm.
**horncap eucalyptus**
*Botrytis cinerea*
*Cylindrocladium scoparium*

**Eucalyptus viminalis** Labill.
**ribbon eucalyptus**
*Cylindrocladium scoparium*
*Fomes robustus*
*F. setulosus*
*Phytophthora parasitica*
*Polyporus eucalyptorum*

**Eucommia ulmoides** Oliver ———
*Helicobasidium mompa*

**Eugenia** sp. **eugenia**
*Actinothecium callicola*
*Asterina lobata*
*A. mandaquiensis*
*Asterinella cylindrotheca*
*Catacauma eugeniicola*
*Fomes senex*
*Puccinia psidii*

**Eugenia apiculata** DC.
**shortleaf eugenia**
*Asterinella puiggarii*

**Eugenia caryophyllata** Thunb.
**clovetree**
*Asterina assimilis*
*Cryptosporella eugeniae*
*Cylindrocladium quinqueseptatum*
*Glomerella cingulata*
*Mycosphaerella caryophyllata*
*Valsa eugeniae*

**Eugenia cumini** (L.) Druce **jambolan**
*Asterina colliculosa*
*Corticium repens*
*Fomes carophylli*
*Pellicularia koleroga*

**Eugenia dodonaefolia** Cambess.
———
*Phyllachora mulleri*

**Eugenia gerrardii** (Harv.) Sim
———
*Armillaria mellea*

**Eugenia heyneana** Duthie ———
*Corticium repens*

**Eugenia jambos** L. **rose-apple**
*Cryptosporella eugeniae*
*Puccinia psidii*
*Ustulina deusta*

**Eugenia javanica** Lam. ———
*Cercospora eugeniae*

**Eugenia latifolia** Aubl. ———
*Corynebacterium hypertrophicans*

**Eugenia luschnathiana** Klotsch
**pitomba**
*Elsinoë talisiae*

**Eugenia malaccensis** L. **Malay-apple**
*Puccinia psidii*

**Eugenia myrtoides** Poir.
**boxleaf eugenia**
*Asterina fawcettii*

**Eugenia perpallida** Merr. ———
*Angatia eugeniae*

**Eugenia pitanga** Kiaersk. ———
*Elsinoë pitangae*

**Eugenia punicaefolia** (H. B. K.) DC.
———
*Parasterina mirabilis*
*Stomiopeltis eugeniae*

**Eugenia rhombea** (Berg) Krug & Urban **spiceberry eugenia**
*Phyllachora biareolata*
*P. eugeniae*
**Eugenia uniflora** L. **pitanga**
*Cercospora eugeniae*
**Euptelea polyandra** Sieb. & Zucc. **Japanese euptelea**
*Helicobasidium mompa*
**Excoecaria agallocha** L. **blinding tree (river-poison)**
*Skierka agallochoa*
**Fagraea speciosa** Blume ———
*Meliola fagraeae*
**Fagus** sp. **beech**
*Trametes dickinsii*
**Fagus crenata** Blume **Siebold beech**
*Fomes annosus*
*Uncinula curvispora*
**Fagus japonica** Maxim. **Japanese beech**
*Cronartium quercuum*
*Ganoderma applanatum*
**Fagus moesiaca** (Maly) Domin ———
*Hypoxylon fragiforme*
*Schizophyllum commune*
*Stereum purpureum*
**Fagus orientalis** Lipsky **oriental beech**
*Armillaria mellea*
*Fomes igniarius*
**Fagus sylvatica** L. **European beech**
*Actinonema fagicola*
*Armillaria mellea*
*A. mucida*
*Daedalea unicolor*
*Discula quercina*
*Endothia parasitica*
*Fistulina hepatica*
*Fomes annosus*
*F. conchatus*
*F. connatus*
*F. fomentarius*
*F. igniarius*
*F. pinicola*
*Ganoderma applanatum*
*Helicobasidium purpureum*
*Hericium erinaceus*
*Hydnum cirrhatum*
*Hypoxylon mediterraneum*
*Hysterographium fraxini*
*Microsphaera alni* var. *extensa*
*Nectria cinnabarina*
*N. coccinea*
*N. ditissima*
*N. galligena*
*Nummularia regia*
*Pestalotia hartigii*
*Pholiota adiposa*
*P. aurivella*
*Phyllactinia guttata*
*Phyllosticta fagi*
*P. faginea*
*Phytophthora cactorum*
*P. cambivora*
*P. cinnamomi*
*P. syringae*
*Pleurotus salignus*
*P. ulmarius*
*Polyporus adustus*
*P. cuticularis*
*P. giganteus*
*P. hispidus*
*P. squamosus*
*P. sulphureus*
*P. zonatus*
*Poria obliqua*
*Quaternaria persoonii*
*Rosellinia quercina*
*Schizophyllum commune*
*Steccherinum septentrionale*
*Stereum hirsutum*
*S. purpureum*
*Trametes hispida*
*Ustulina deusta*
*Volvaria bombycina*
**Faramea occidentalis** (L.) A. Rich. ———
*Aecidium farameae*
**Ficus** sp. **fig**
Virus, mosaic
*Armillaria mellea*
*Asterina mysorensis*
*Catacauma robinsonii*
*Cerotelium fici*
*Favolus albus*
*Fomes annularis*
*F. lignosus*
*Helicobasidium purpureum*
*Phomopsis cinerescens*
*Phytophthora palmivora*
*Polyporus zonalis*
*Scopella fici*
*Ustulina deusta*
**Ficus angustifolia** Miq. **slimleaf fig**
*Cerotelium fici*
**Ficus asperifolia** Hook. ———
*Armillaria mellea*

**Ficus aurea** Nutt. **Florida strangler fig**
*Uredo ficina*

**Ficus benghalensis** L. **banyan fig**
*Septoria arcuata*

**Ficus benjamina** L. **Benjamin fig**
*Colletotrichum gloeosphorioides*
*Ganoderma pseudoferreum*
*Septoria arcuata*

**Ficus blepharostoma** Warb. ———
*Phyllachora elmeri*

**Ficus capensis** Thunb. **Cape fig**
*Crossopsora fici*

**Ficus carica** L. **common fig**
Virus, mosaic
*Armillaria mellea*
*Cercospora elasticae*
*Cerotelium fici*
*Corticium salmonicolor*
*Ganoderma lucidum*
*Gibberella moricola*
*Helicobasidium mompa*
*Phomopsis cinerescens*
*Phytophthora palmivora*
*Pleurotus ostreatus*

**Ficus carica** var. **sylvestris** Nees **capri fig**
Virus, mosaic

**Ficus combsii** Warb. ———
*Cerotelium fici*

**Ficus crassinervia** Desf. ———
*Cerotelium fici*

**Ficus elastica** Nois. **India-rubber fig**
*Cercospora elasticae*
*Clasterosporium javanicum*
*Colletotrichum gloeosporioides*
*Fusicladium elasticae*
*Glomerella cingulata*
*Helicobasidium mompa*
*Septogloeum elasticae*

**Ficus glomerata** Roxb. **cluster fig**
*Cerotelium fici*

**Ficus guyeri** Elmer ———
*Schizochora elmeri*

**Ficus hispida** L. f. **opposite-leaf fig**
*Phyllachora catervaria*

**Ficus ibapohy** Orbigny ———
*Cerotelium fici*

**Ficus indica** L. **Indian fig**
*Septoria arcuata*

**Ficus involuta** (Liebm.) Miq. ———
*Uredo ficina*

**Ficus laevigata** Vahl ———
*Cerotelium fici*

**Ficus magnolioides** Borzi **magnolia fig**
*Cladosporium epiphyllum*

**Ficus manilensis** Warb. **Manila fig**
*Phyllachora elmeri*

**Ficus merrillii** Elmer ———
*Phyllachora catervaria*

**Ficus minahassae** Miq. ———
*Cerotelium fici*
*Phyllachora elmeri*

**Ficus nota** Merr. ———
*Phyllachora pseudes*

**Ficus odorata** Merr. ———
*Cerotelium fici*

**Ficus padifolia** H. B. K. **plumleaf fig**
*Cerotelium fici*
*Uredo ficina*

**Ficus radula** Willd. ———
*Cerotelium fici*

**Ficus religiosa** L. **botree fig**
*Cerotelium fici*

**Ficus retusa** L. **India-laurel fig**
*Helicobasidium mompa*
*Phytophthora palmivora*

**Ficus ulmifolia** Lam. **elmleaf fig**
*Phyllachora elmeri*

**Ficus vogelii** Miq. **vogel fig**
*Corticium salmonicolor*

**Firmiana platanifolia** (L. f.) Schott & Endl. **Chinese parasol-tree**
*Helicobasidium mompa*
*H. tanakae*
*Phyllactinia guttata*
*Uncinula clintonii*

**Flacourtia indica** (Burm. f.) Merr. **ramontchi (governors-plum)**
*Catenulopsora flacourtiae*

**Flacourtia sepiaria** Roxb. **rukam**
*Catenulopsora flacourtiae*

**Flindersia brayleyana** F. Muell. **Brayley flindersia**
*Agrobacterium tumefaciens*

**Fluggea microcarpa** Blume ———
*Masseeëlla fluggeae*

**Fluggea virosa** Buch.-Ham. ———
*Masseeëlla fluggeae*

**Fraxinus** sp. **ash**
Virus, mosaic
*Pseudomonas savastanoi*
*P. savastanoi* var. *fraxini*
*Armillaria mellea*
*Cercospora lumbricoides*
*Collybia velutipes*
*Fistulina hepatica*

**Fraxinus** sp. **ash**
(Continued)
*Fomes fomentarius*
*F. fraxineus*
*F. igniarius*
*F. ulmarius*
*Ganoderma applanatum*
*Nectria ditissima*
*N. galligena*
*Pholiota aurivella*
*Pleurotus dryinus*
*Polyporus schweinitzii*
*P. squamosus*
*P. sulphureus*
*Stereum purpureum*
*Trametes trogii*
*Ustulina deusta*
*Venturia fraxini*

**Fraxinus americana** L. **white ash**
*Pseudomonas savastanoi* var. *fraxini*

**Fraxinus americana** var. **juglandifolia** D. J. Browne **walnutleaf white ash**
*Phyllosticta trappenii*

**Fraxinus angustifolia** Vahl **narrowleaf ash**
*Pseudomonas savastanoi*
*P. savastanoi* var. *fraxini*

**Fraxinus bungeana** A. DC. **Bunge ash**
*Nectria galligena*
*Phytophthora cactorum*

**Fraxinus championii** Little ———
*Phyllactinia fraxini*

**Fraxinus chinensis** Roxb. **Chinese ash**
*Accidium fraxini-bungeanae*
*Phyllactinia fraxini*
*Uncinula fraxini*
*Uropyxis fraxini*

**Fraxinus chinensis** var. **rhynchophylla** (Hance) Hemsl. ———
*Aecidium fraxini-bungeanae*
*Uropyxis fraxini*

**Fraxinus excelsior** L. **European ash**
*Pseudomonas savastanoi*
*P. savastanoi* var. *fraxini*
*Armillaria mellea*
*Ascochyta metulispora*
*Cytospora ambiens*
*Endoxylina astroidea*
*Fomes annosus*
*F. connatus*
*Ganoderma applanatum*
*Helicobasidium purpureum*
*Hysterographium fraxini*
*Nectria cinnabarina*
*N. ditissima*
*N. galligena*
*Pestalotia hartigii*
*Phyllactinia guttata*
*Polyporus hispidus*
*P. squamosus*
*P. sulphureus*
*P. zonatus*
*Septoria fraxini*
*S. orni*
*Venturia fraxini*

**Fraxinus longicuspis** Sieb. & Zucc. **Japanese ash**
*Uncinula fraxini*
*U. salmoni*

**Fraxinus longicuspis** var. **sieboldiana** (Blume) Lingelsh. ———
*Uncinula salmoni*

**Fraxinus mandshurica** Rupr. **Manchurian ash**
*Phyllactinia fraxini*
*P. guttata*
*Phytophthora cactorum*
*Polyporus hispidus*

**Fraxinus nigra** Marsh. **black ash**
*Polyporus hispidus*

**Fraxinus ornus** L. **flowering ash**
*Diplodia hungarica*
*Hysterographium fraxini*
*Phyllactinia guttata*
*Phyllosticta orni*

**Funtumia africana** (Benth.) Stapf. **African silkrubber**
*Armillaria mellea*
*Marasmius scandens*

**Funtumia elastica** (Preuss) Stapf. **lagos silkrubber**
*Fomes lamaoensis*

**Garcinia dulcis** Kurz ———
*Colletotrichum gloeosporioides*

**Garcinia mangostana** L. **mangosteen**
*Macrophomina phaseoli*
*Pellicularia koleroga*

**Genipa americana** L. **genipa**
*Phyllachora genipae*
*Sphaceloma genipae*

**Ginkgo biloba** L. **ginkgo (maidenhair-tree)**
*Helicobasidium mompa*
*Pestalotia funerea*
*Phyllosticta ginkgo*
*P. salisburiae*

**Gleditsia sinensis** Lam. **Chinese honeylocust**
*Phyllactinia guttata*
**Gleditsia triacanthos** L. **honeylocust**
Virus, witches'-broom
*Phyllosticta triacanthi*
*Thyronectria austro-americana*
**Gmelina arborea** Roxb. **Malay bushbeech**
*Poria rhizomorpha*
**Gmelina philippensis** Cham. **Philippine bushbeech**
*Dimerina graffi*
**Gourliea spinosa** (Molina) Skeels ———
*Ganoderma lucidum*
**Grevillea robusta** A. Cunn. **silk-oak**
*Amphichaeta grevilleae*
*Armillaria mellea*
*Botryosphaeria ribis*
*Fomes annularis*
*F. lignosus*
*Hexagonia gunnii*
*H. tenuis*
*Macrophomina phaseoli*
*Pestalotia banksiana*
*Rhizoctonia lamellifera*
*Rosellinia bunodes*
**Grewia betulaefolia** Juss. ———
*Catenulopsora grewiae*
**Grewia ferruginea** Hochst. ———
*Dasturella grewiae*
**Grewia monticola** Sond. ———
*Dasturella grewiae*
**Grewia rotundifolia** Juss. ———
*Pericladium tiliacearum*
**Grewia tiliaefolia** Vahl ———
*Pericladium tiliacearum*
**Grewia villosa** Willd. ———
*Pericladium grewiae*
**Guatteria** sp. ———
*Aecidium amazonense*
**Guatteria alutacea** Diels ———
*Aecidium huallagense*
**Guazuma** sp. ———
*Ganoderma lucidum*
**Guazuma ulmifolia** Lam. ———
*Cercospora guazumae*
**Gymnanthes lucida** Sw. **oysterwood**
*Cercospora gymnanthis*
*Meliola gymnanthicola*

**Haematoxylon campechianum** L. **logwood**
*Cercospora haematoxylonis*
*Ganoderma lucidum*
**Hakea myrtioides** Meissn. ———
*Phyllachora hakeae*
**Hamamelis japonica** Sieb. & Zucc. **Japanese witchhazel**
*Accidium hamamelidis*
*Phyllactinia guttata*
**Hamelia patens** Jacq. **scarletbush**
*Uredo hameliae*
**Heliocarpus americanus** L. ———
*Puccinia heliocarpi*
**Heritiera minor** Lam. ———
*Fomes robiniae*
*Marasmius equicrinis*
**Heterophragma roxburghii** DC. ———
*Phragmidiella heterophragmae*
**Heterostemma angustilobum** Schlechter ———
*Asterina escharoides*
**Heterotrichum cymosum** (Wendl.) Urban ———
*Bagnisiopsis toledoi*
**Heterotrichum macrodon** (Naud.) Planch. ———
*Dimeriellopsis heterotrichi*
**Heterotrichum umbellatum** (Mill.) Urban ———
*Asterina melastomatis*
**Hevea** sp. **rubbertree**
*Armillaria mellea*
*Colletotrichum gloeosporioides*
*Ganoderma lucidum*
*G. pseudoferreum*
*Poria hypobrunnea*
**Hevea benthamiana** Muell.-Arg. ———
*Catacauma huberi*
*Pellicularia filamentosa*
*Periconia heveae*
**Hevea brasiliensis** Muell.-Arg. **para rubbertree**
*Armillaria mellea*
*Ascochyta heveae*
*A. heveana*
*Asterina tenuissima*
*Calonectria rigidiuscula*
*Calostilbe striispora*
*Catacauma huberi*
*Ceratocystis fimbriata*
*Colletotrichum gloeosporioides*

**Hevea brasiliensis** Muell.-Arg. (Continued) **para rubbertree**
*C. heveae*
*Coniothyrium heveae*
*Corticium salmonicolor*
*Daldinia concentrica*
*Didymella heveana*
*Dothidella ulei*
*Fomes annularis*
*F. lamaoensis*
*F. ligneus*
*F. lignosus*
*Fusarium javanicum*
*Ganoderma lucidum*
*G. pseudoferreum*
*Glomerella cingulata*
*Helicobasidium compactum*
*Helminthosporium heveae*
*Leptosphaeria heveae*
*Macrophomina phaseoli*
*Marasmius equicrinis*
*Mycosphaerella heveae*
*M. heveicola*
*Oidium heveae*
*Ophiobolus heveae*
*Pellicularia filamentosa*
*P. koleroga*
*P. rolfsii*
*Periconia heveae*
*Phomopsis heveae*
*Phyllosticta heveae*
*Physalospora rhodina*
*Phytophthora cactorum*
*P. palmivora*
*Polyporus lignosus*
*P. zonalis*
*Poria hypobrunnea*
*P. hypolateritia*
*Pythium vexans*
*Rosellinia bunodes*
*Scolecotrichum heveae*
*Sphaerostilbe repens*
*Trametes corrugata*
*Ustulina deusta*
*Xylaria deserticola*
*X. thwaitesii*

**Hevea collina** Huber ——
*Dothidella ulei*
*Oidium heveae*

**Hevea confusa** Hemsl. ——
*Catacauma huberi*
*Dothidella ulei*

**Hevea discolor** Muell.-Arg. ——
*Catacauma huberi*

**Hevea guianensis** Aubl. ——
*Catacauma huberi*
*Dothidella ulei*
*Oidium heveae*
*Periconia heveae*
*Phyllosticta heveae*

**Hevea guianensis** var. **lutea** (Spruce) Ducke & Schultes **weak rubber**
*Dothidella ulei*
*Pellicularia filamentosa*

**Hevea lutea** Muell.-Arg. ——
*Catacauma huberi*
*Dothidella ulei*

**Hevea paludosa** Ule ——
*Dothidella ulei*

**Hevea randiana** Hub. ——
*Dothidella ulei*

**Hevea spruceana** Hub. ——
*Dothidella ulei*
*Oidium heveae*
*Periconia heveae*

**Hippophaë rhamnoides** L. **common sea-buckthorn**
*Coniophora puteana*
*Fomes igniarius*
*F. robustus*

**Hirtella triandra** Sw. ——
*Asterina inaequalis*

**Hoheria populnea** A. Cunn. **otago ribbonwood**
*Myxosporium hoheriae*

**Hoheria sexstylosa** Colenso ——
*Myxosporium hoheriae*

**Holarrhena antidysenterica** Wall. **conessi holarrhena**
*Hemileia canthii*
*H. holarrhenae*

**Holigarna longifolia** Roxb. **black-varnish-tree**
*Rosellinia bunodes*

**Hopea pierrei** Hance ——
*Actinothyrium hopeae*

**Hovenia dulcis** Thunb. **Japanese raisin-tree**
*Microsphaera alni*

**Hovenia dulcis** var. **tomentella** Mak. ——
*Microsphaera yamadae*

**Howea belmoreana** (F. Muell.) Becc. **Belmore sentrypalm**
*Phytophthora palmivora*

**Howea forsteriana** (F. Muell.) Becc. **Forster sentrypalm**
*Phytophthora palmivora*

**Hura crepitans L.** **sandbox**
*Cercospora hurae*
*C. huricola*
*Cercosporella hurae*
*Fomes lignosus*
*Polyporus zonalis*

**Hydnocarpus** sp. **chaulmoogra-tree**
*Armillaria mellea*

**Hymenaea courbaril L.** **courbaril**
*Uredo hymenaeae*

**Ichnocarpus frutescens** (L.) R. Br. ———
*Acervulopsora ichnocarpi*
*Corticium repens*

**Ilex aquifolium L.** **English holly**
*Phyllosticta aquifolina*
*P. haynaldii*

**Ilex azevinho** Sol. ———
*Phyllosticta azevinhi*

**Ilex cymosa** Blume ———
*Asterina porriginosa*

**Ilex paraguariensis** St. Hil. **Paraguay-tea**
*Asterina mate*
*Cercospora ilicicola*
*Pellicularia koleroga*
*Phyllosticta yerbae*

**Illicium anisatum L.** **Japanese anise-tree**
*Gloeosporium illicii*

**Inga adenophylla** Pittier ———
*Chaconia ingae*

**Inga coriacea** (Pers.) Desv. var. **leptopus** (Benth.) Macbr. ———
*Chaconia ingae*
*Uredo ingae*

**Inga edulis** Mart. ———
*Catacauma ingae*
*Chaconia ingae*
*Physalospora rhodina*
*Uredo ingae*

**Inga fastuosa** (Jacq.) Willd. ———
*Uredo ingae*

**Inga ingoides** (Rich.) Willd. ———
*Chaconia ingae*

**Inga inicuil** Cham. & Schlecht. ———
*Chaconia ingae*

**Inga insignis** H. B. K. ———
*Chaconia ingae*

**Inga laurina** (Sw.) Willd. ———
*Chaconia ingae*
*Microstroma ingaicola*

**Inga micheliana** Harms ———
*Chaconia ingae*

**Inga pinetorum** Pittier ———
*Chaconia ingae*

**Inga preussii** Harms ———
*Chaconia ingae*
*Uredo ingae*

**Inga spuria** Humb. & Bonpl. ———
*Chaconia ingae*

**Inga vera** Willd. ———
*Chaconia ingae*
*Microstroma ingaicola*
*Mycena citricolor*
*Mycosphaerella maculiformis*
*Pestalotia funerea*
*Uredo ingae*

**Intsia bijuga** (Coleor.) O. Kuntze **common ipil**
*Phyllachora afzeliae*

**Irvingia malayana** Oliv. ———
*Fomes pectinatus*

**Jacaranda** sp. **jacaranda**
*Aecidium jacarandae*
*A. puttemansianum*
*Armillaria mellea*
*Meliola gnathonella*
*Phytophthora cinnamomi*

**Jacquinia barbasco** (Loefl.) Mez. ———
*Dimerina jacquiniae*

**Jacquinia berterii** Spreng. ———
*Phyllachora inclusa*

**Juglans** sp. **walnut**
*Xanthomonas juglandis*
*Armillaria mellea*
*Gnomonia leptostyla*
*Helicobasidium tanakae*
*Hericium erinaceus*
*Nectria cinnabarina*
*N. ditissima*
*Polyporus hispidus*
*P. squamosus*
*P. sulphureus*

**Juglans ailantifolia** Carr. **Siebold walnut**
*Gnomonia leptostyla*
*Helicobasidium mompa*
*Microsphaera yamadae*
*Phyllactinia fraxini*
*Physalospora juglandis*
*Polyporus sulphureus*

**Juglans ailantifolia** var. **cordiformis** (Maxim.) Rehd. **flat Siebold walnut**
*Gnomonia leptostyla*
**Juglans hindsii** Jeps. **Hinds walnut**
*Gnomonia leptostyla*
**Juglans mandshurica** Maxim. **Manchu walnut**
*Fomes igniarius*
**Juglans nigra** L. **black walnut**
*Xanthomonas juglandis*
*Gnomonia leptostyla*
*Phleospora multimaculans*
**Juglans regia** L. **Persian walnut**
*Agrobacterium tumefaciens*
*Xanthomonas juglandis*
*Armillaria mellea*
*Ascochyta juglandis*
*Cercospora forsteriana*
*Fomes fomentarius*
*F. igniarius*
*Gnomonia leptostyla*
*Melanconis juglandis*
*Microsphaera alni*
*Microstroma juglandis*
*Mycosphaerella woronowii*
*Phyllactinia guttata*
*Phytophthora cambivora*
*P. cinnamomi*
*P. citrophthora*
*P. parasitica*
*Polyporus hispidus*
*P. squamosus*
*P. sulphureus*
*Rosellinia necatrix*
**Juglans ×sinensis** (DC.) Dode **Chinese walnut**
*Gnomonia leptostyla*
**Juniperus** sp. **juniper**
*Armillaria mellea*
*Coccodothis sphaeroidea*
*Didymascella tetraspora*
*Exosporium juniperinum*
*Fomes connatus*
*F. roseus*
*Phomopsis juniperovora*
**Juniperus ashei** Buchholz **Ashe juniper**
*Gymnosporangium speciosum*
**Juniperus bermudiana** L. **Bermuda redcedar**
*Fomes cajanderi*
*Gymnosporangium bermudianum*
*Pestalotia funerea*
**Juniperus chinensis** L. **Chinese juniper**
*Gymnosporangium haraeanum*
*G. inconspicuum*
*G. yamadae*
**Juniperus chinensis** f. **japonica** (Carr.) Lipa **Japanese juniper**
*Gymnosporangium haraeanum*
*G. inconspicuum*
*G. sabinae*
*G. yamadae*
*Herpotrichia nigra*
**Juniperus chinensis** var. **sargentii** Henry **Sargent Chinese juniper**
*Gymnosporangium nipponicum*
*G. yamadae*
**Juniperus communis** L. **common juniper**
*Armillaria mellea*
*Caliciopsis nigra*
*Clasterosporium glomerulosum*
*Coniophora puteana*
*Cytospora cenisia*
*Exosporium deflectens*
*Fusarium oxysporum* var. *aurantiacum*
*Gymnosporangium amelanchieris*
*G. clavariiforme*
*G. cornutum*
*G. torminali-juniperinum*
*G. tremelloides*
*Herpotrichia nigra*
*Lophodermium juniperinum*
*Tetramyxa rhizophage*
**Juniperus communis** var. **nipponica** (Maxim.) E. H. Wils. ——
*Gymnosporangium cornutum*
**Juniperus communis** var. **saxatilis** Pall. **mountain juniper**
*Gymnosporangium gäumanni*
*Herpotrichia nigra*
**Juniperus communis** var. **stricta** (Carr.) Rehd. **Irish juniper**
*Gymnosporangium clavariiforme*
**Juniperus conferta** Parl. **shore juniper**
*Gymnosporangium shiraianum*
**Juniperus deppeana** Steud. ——
*Gymnosporangium exiguum*
**Juniperus excelsa** Bieb. **Greek juniper**
*Fomes demidoffii*
*Gymnosporangium sabinae*
**Juniperus foetidissima** Willd. ——
*Gymnosporangium sabinae*

**Juniperus macropoda** Boiss. ———
*Fomes demidoffii*
*Gymnosporangium mespili*

**Juniperus oxycedrus** L. **prickly juniper**
*Coccodothis sphaeroidea*
*Didymascella tetraspora*
*Gymnosporangium clavariiforme*
*G. mespili*
*G. sabinae*
*Lophodermium juniperinum*

**Juniperus phoenicea** L. **Phoenician juniper**
*Caliciopsis nigra*
*Gymnosporangium mespili*
*G. sabinae*

**Juniperus procera** Hochst. **African juniper**
*Armillaria mellea*
*Caliciopsis nigra*
*Fomes demidoffii*
*Monochaetia unicornis*
*Phytophthora cactorum*
*Stereum hirsutum*

**Juniperus rigida** Sieb. & Zucc. **needle juniper**
*Gymnosporangium amelanchieris*
*G. clavariiforme*
*G. cornutum*
*G. idetae*

**Juniperus sabina** L. **savin juniper**
*Caliciopsis nigra*
*Gymnosporangium fusisporum*
*G. mespili*
*G. sabinae*
*Lophodermium juniperinum*
*Phacidium infestans*

**Juniperus sabina f. tamariscifolia** (Ait.) Koehne ———
*Gymnosporangium sabinae*

**Juniperus silicicola** (Small) Bailey **southern redcedar**
*Armillaria mellea*
*Glomerella cingulata*

**Juniperus sphaerica** Lindl. **Fortune juniper**
*Gymnosporangium sabinae*

**Juniperus squamata** Buch.-Ham. **singleseed juniper**
*Gymnosporangium formosanum*
*Lophodermium juniperinum*
*Pestalotia funerea*

**Juniperus virginiana** L. **eastern redcedar**
*Cytospora cenisia*

**Kalopanax pictus** (Thunb.) Nakai ———
*Phyllactinia guttata*

**Keteleeria evelyniana** Mast. ———
*Cronartium keteleeriae*

**Khaya** sp. **khaya**
*Armillaria mellea*

**Khaya grandifoliola** C. DC ———
*Calonectria rigidiuscula*

**Kiggelaria africana** L. ———
*Fomes robiniae*

**Koelreuteria bipinnata** Franch. **bougainvillea goldenrain-tree**
*Triphragmium koelreuteriae*

**Koelreuteria paniculata** Laxm. **panicled goldenrain-tree**
*Xanthomonas acernea*
*Triphragmium chinense*
*T. koelreuteriae*
*Verticillium dahliae*

**Kolowratia elegans** Presl. ———
*Phragmocauma kolowratiae*

**Koompassia malaccensis** Maing. ———
*Fomes lignosus*

**Laburnum** sp. **laburnum**
*Armillaria mellea*
*Stereum purpureum*

**Laburnum alpinum** (Mill.) Bercht. & Presl. **Scotch laburnum**
*Stereum purpureum*

**Laburnum anagyroides** Med. **golden-chain laburnum**
*Armillaria mellea*
*Cucurbitaria laburni*
*Leveillula taurica*
*Nectria coccinea*
*N. ditissima*
*Phyllosticta cytisi*
*Stereum purpureum*

**Lagerstroemia speciosa** (L.) Pers. **queen-of-flowers**
*Cercospora lythracearum*
*Mollisia ravida*
*Omphalia campanella*

**Lannea wodier** (Roxb.) Adelb. ———
*Cerotelium lanneae*

**Lansium domesticum** Jack **domestic langsat**
*Corticium salmonicolor*

**Larix** sp. **larch**
*Armillaria mellea*
*Ganoderma lucidum*
*Helicobasidium purpureum*
*Lophodermium laricinum*
*Melampsoridium betulinum*
*Myxosporium abietinum*
*Polyporus schweinitzii*
*P. sulphureus*

**Larix decidua** Mill. **European larch**
*Armillaria mellea*
*Ascochyta piniperda*
*Cercospora exosporioides*
*Cladosporium epiphyllum*
*C. laricis*
*Coniophora putcana*
*Cytospora abietis*
*C. curreyi*
*Dasyscypha calyciformis*
*D. subtilissima*
*Fomes annosus*
*F. officinalis*
*F. pini*
*Fusarium oxysporum* var. *aurantiacum*
*Helicobasidium purpureum*
*Hypodermella laricis*
*Hysterographium fraxini*
*Lophodermium laricinum*
*Melampsora larici-capraearum*
*M. larici-epitea*
*M. larici-pentandrae*
*M. larici-populina*
*M. larici-tremulae*
*M. populnea*
*Melampsoridium alni*
*M. betulinum*
*Meria laricis*
*Mycosphaerella laricina*
*Nectria cucurbitula*
*Phacidiopycnis pseudotsugae*
*Phytophthora cactorum*
*Polyporus schweinitzii*
*P. sulphureus*
*Rhizina undulata*
*Stereum sanguinolentum*
*Trichoscyphella resinaria*
*T. willkommii*

**Larix ×eurolepis** Henry **Dunkfeld larch**
*Fomes annosus*
*Trichoscyphella willkommii*

**Larix gmelinii** (Rupr.) Kuzeneva **Dahurian larch**
*Fomes annosus*
*F. officinalis*
*F. pini*
*Hypodermella laricis*
*Melampsora larici-tremulae*
*Meria laricis*
*Pholiota destruens*
*Polyporus schweinitzii*
*P. sulphureus*

**Larix gmelinii** var. **japonica** (Reg.) Pilger **Kurile Dahurian larch**
*Fomes pini*
*Trichoscyphella willkommii*

**Larix gmelinii** var. **olgensis** (Henry) Ostenf. & Syrach-Larsen **Korean Dahurian larch**
*Fomes pini*

**Larix laricina** (Du Roi) K. Koch **tamarack**
*Melampsora larici-tremulae*

**Larix leptolepis** (Sieb. & Zucc.) Rehd. **Japanese larch**
*Armillaria mellea*
*Botrytis cinerea*
*Ceratocystis piceae*
*Cladosporium epiphyllum*
*Fomes annosus*
*F. officinalis*
*F. pini*
*F. robustus*
*Fusarium oxysporum* var. *aurantiacum*
*Melampsora larici-capraearum*
*M. larici-populina*
*M. larici-tremulae*
*Melampsoridium betulinum*
*Meria laricis*
*Mycosphaerella laricina*
*Pellicularia filamentosa*
*Phacidiopycnis pseudotsugae*
*Phytophthora cactorum*
*Poria subacida*
*Rhizinia undulata*
*Sclerotinia kitajimana*
*Trichoscyphella willkommii*

**Larix occidentalis** Nutt. **western larch**
*Trichoscyphella willkommii*

**Larix potaninii** Batal. **Chinese larch**
*Fomes pini*
*Polyporus schweinitzii*

**Larix sibirica** Ledeb. **Siberian larch**
*Armillaria mellea*
*Fomes annosus*
*F. igniarius*
*F. officinalis*
*Hypodermella laricis*
*Melampsora larici-capraearum*
*M. larici-populina*
*M. larici-tremulae*
*M. populnea*
*Phacidiopycnis pseudotsugae*
*Polyporus squamosus*
*Trichoscyphella resinaria*
*T. willkommii*
**Laurus canariensis** Webb. & Berth. ———
*Exobasidium lauri*
**Laurus nobilis** L. **Grecian laurel**
*Exobasidium lauri*
*Phyllosticta laurina*
**Lawsonia inermis** L. **henna**
*Xanthomonas lawsoniae*
*Asterina lawsoniae*
*Pellicularia koleroga*
*Pestalotia lawsoniae*
**Leandra cordifolia** (Naud.) Cogn. ———
*Bagnisiopsis leandrae*
**Leucadendron argenteum** (L.) R. Br. **silver leucadendron**
*Botryosphaeria ribis*
**Leucaena diversifolia** Benth. ———
*Ravenelia leucaenae*
**Leucaena esculenta** (Moç. & Sessé) Benth. ———
*Ravenelia leucaenae*
**Leucaena glauca** (L.) Benth. **leadtree**
*Botryosphaeria ribis* var. *chromogena*
*Camptomeris leucaenae*
*Corticium salmonicolor*
*Fomes lamaoensis*
*F. lignosus*
*Ganoderma lucidum*
*Helicobasidium compactum*
*Rhizoctonia choussii*
*Rosellinia arcuata*
*R. bunodes*
*Ustulina deusta*
*Verticillium albo-atrum*
**Lindera** sp. **spicebush**
*Phyllactinia guttata*
*Puccinia aequitatis*
*P. coronopsora*
*Uncinula fraxini*
**Lindera oldhamii** Hemsl. ———
*Cercospora lindericola*
**Lindera umbellata** Thunb. **umbeled spicebush**
*Microsphaera alni*
**Lithocarpus** sp. ———
*Trametes dickinsii*
**Lithocarpus cuspidata** (Thunb.) Nakai ———
*Dimerium elegans*
*Irpex tabacinoides*
*Polyporus patouillardii*
**Lithocarpus dealbatus** (Hook. f. & Thoms.) Rehd. ———
*Sphaerotheca lanestris*
**Lithocarpus sieboldii** (Makino) Nakai ———
*Polyporus sulphureus*
**Lithocarpus uraianus** Hayata ———
*Uleomyces decipiens*
**Lithraea brasiliensis** March. ———
*Cercospora phaeochlora*
**Lithraea caustica** (Mol.) Hook. & Arn. ———
*Cercospora phaeochlora*
**Litsea** sp. **litsea**
*Kernella lauricola*
**Litsea angustifolia** Blume ———
*Rosellinia bunodes*
**Litsea chrysocoma** Blume ———
*Phyllachora laurinearum*
**Litsea glutinosa** C. B. Robinson ———
*Cercospora litseae-glutinosae*
**Litsea perrottetii** Villar ———
*Cercospora litseae-glutinosae*
**Litsea polyantha** Juss. ———
*Phyllachora litseae*
**Litsea tayabensis** Elmer ———
*Phyllachora lepida*
**Litsea tetranthera** Mirb. ———
*Phyllachora laurinearum*
**Litsea wightiana** Benth. & Hook. f. ———
*Rosellinia bunodes*
**Livistona cochin-chinensis** Blume **Malayan fanpalm**
*Fomes lignosus*
**Livistona rotundifolia** Mart. **Java fanpalm**
*Phytophthora palmivora*

**Lonchocarpus sp.** **lancepod**
*Meliola lonchocarpicola*
**Lonchocarpus chrysophyllus Kleinh.** ———
*Cercospora lonchocarpi*
**Lonchocarpus nicou (Aubl.) DC** ———
*Cercospora lonchocarpi*
*Dicheirinia archeri*
*D. guianensis*
**Lonchocarpus sericeus (Poir.) H. B. K.** ———
*Fomes lignosus*
**Lonchocarpus urucu Killip & A. C. Smith** ———
*Cercospora lonchocarpi*
*Dicheirinia archeri*
**Lonchocrapus utilis A. C. Smith** ———
*Cephalosporium deformans*
*Cercospora lonchocarpi*
*Dicheirinia archeri*
*Pellicularia filamentosa*
**Lophira alata Banks** **winged lophira**
*Fomes lignosus*
**Lophopetalum toxicum Loher** ———
*Asterina lophopetali*
**Lysiloma acapulcensis (Kunth.) Benth.** ———
*Ravenelia sololensis*
**Lysiloma bahamensis Benth.** **Bahama lysiloma**
*Ravenelia lysilomae*
**Lysiloma tergemina Benth.** ———
*Ravenelia lysilomae*
**Maackia amurensis Rupr. & Maxim.** **Amur maackia**
*Uromyces amurensis*
**Maackia amurensis var. buergeri (Maxim.) Schneid.** **Japanese maackia**
*Uromyces amurensis*
**Maba abyssinica Hiern.** ———
*Ascochyta mabiana*
**Maba natalensis Harv.** **Natal ebony**
*Aecidium bicolor*
**Macaranga sp.** ———
*Skierka congonensis*
**Machaerium sp.** ———
*Catacauma hammari*
*Uredo machaerii*
**Machaerium acutifolium Vogel** ———
*Catacauma venezuelensis*
**Machaerium humboldtianum Vogel** ———
*Catacauma venezuelensis*
*Phyllachora machaeriicola*
*Uredo pusilla*
**Machaerium moritzianum Benth.** ———
*Catacauma venezuelensis*
*Phyllachora machaeriicola*
**Machaerium robiniaefolium Vogel** ———
*Catacauma venezuelensis*
*Phyllachora machaeriicola*
**Machilus sp.** ———
*Aecidium machili*
**Machilus bournei Hemsl.** ———
*Aecidium machili*
**Machilus longipaniculata Hayata** ———
*Aecidium machili*
*Fomes lamaoensis*
**Machilus thunbergii Sieb. & Zucc.** ———
*Aecidium machili*
**Maclura pomifera (Raf.) Schneid.** **Osage-orange**
*Septoria maclurae*
*Uredo maclurae*
**Maclura ucora (?)** ———
*Uredo maclurae*
**Madhuca bourdillonii (Gamble) H. J. Lam.** ———
*Scopella echinulata*
**Madhuca indica J. F. Gmel.** **illipe buttertree**
*Fomes caryophylli*
*Scopella echinulata*
**Madhuca longifolia (L.) Macbride** **mowra buttertree**
*Scopella echinulata*
**Maesa denticulata Mez** ———
*Amazonia peregrina*
**Maesa elmeri Mez** ———
*Amazonia peregrina*
**Maesa formosana Mez** ———
*Fomes lamaoensis*
**Maesa laxa Mez** ———
*Amazonia peregrina*
**Magnolia sp.** **magnolia**
*Nectria cinnabarina*

**Magnolia denudata** Desrouss. **yulan magnolia**
*Phyllactinia guttata*
*Phyllosticta yulan*
**Magnolia kobus** DC. **kobus magnolia**
*Phyllactinia fraxini*
*P. guttata*
**Magnolia obovata** Thunb. **whiteleaf Japanese magnolia**
*Ceratocystis piceae*
*Phyllactinia fraxini*
**Magnolia stellata** (Sieb. & Zucc.) Maxim. **star magnolia**
*Phyllactinia fraxini*
**Mallotus** sp. ———
*Crossopsora malloti*
*Phakopsora malloti*
**Mallotus japonicus** (Thunb.) Muell.-Arg. ———
*Erysiphe cichoracearum*
*Gymnosporangium malloti*
*Helicobasidium mompa*
**Mallotus philippinensis** (Lam.) Muell.-Arg. **kamala-tree**
*Fomes setulosus*
*Ganoderma applanatum*
**Mallotus ricinoides** (Pers.) Muell.-Arg. ———
*Polyporus zonalis*
**Mammea americana** L. **mammee-apple**
*Meliola paulliniae*
**Mangifera caesia** Jack. **binjai**
*Cronartium kemangae*
**Mangifera indica** L. **mango**
*Erwinia mangiferae*
*Pseudomonas mangiferae-indicae*
*Armillaria mellea*
*Ascochyta mangiferae*
*Botryosphaeria ribis* var. *chromogena*
*Ceratocystis paradoxa*
*Colletotrichum gloeosporioides*
*Didymella mangiferae*
*Diplodia recifensis*
*Erysiphe cichoracearum*
*E. polygoni*
*Fomes annularis*
*F. lignosus*
*Glomerella cingulata*
*Meliola mangiferae*
*Mycena citricolor*
*Oidium mangiferae*
*Pellicularia koleroga*
*Pestalotia funerea*
*Physalospora perseae*
*P. rhodina*
*Phytophthora palmivora*
*Polyporus zonalis*
*Schizophyllum commune*
*Sclerotium delphinii*
**Maprounea** sp. ———
*Aecidium maprouneae*
**Maprounea surinamensis** (?) ———
*Phyllachora maprouneae*
**Markhamia sansibarica** (Bojer) K. Schum. ———
*Phragmidiella markhamiae*
**Marlierea edulis** Niedenzu ———
*Puccinia psidii*
**Melaleuca decussata** R. Br. **lilac melaleuca**
*Fomes robustus*
**Melaleuca leucadendron** L. **cajeput-tree**
*Fomes lignosus*
*Phyllosticta leucadendri*
*Puccinia camargoi*
**Melaleuca pubescens** Schau. ———
*Fomes robiniae*
**Melanolepis multiglandulosa** (Blume) Reichb. f. & Zoll. ———
*Cronartium malloti*
*Uromyces malloti*
**Melia azadirachta** L. **margosa**
*Cercospora subsessilis*
*Ganoderma lucidum*
**Melia azedarach** L. **chinaberry**
*Cercospora meliae*
*C. subsessilis*
*Fomes conchatus*
*F. lamaoensis*
*F. senex*
*Ganoderma pseudoferreum*
*Gloeosporium meliicola*
*Phyllactinia guttata*
*Phytophthora citrophthora*
*P. parasitica*
*Pseudoperonospora portoricensis*
*Septoria meliae*
**Melia dubia** Cav. ———
*Armillaria mellea*
**Meliosma cuneifolia** Franch. ———
*Aecidium meliosmae-pungentis*
**Meliosma myriantha** Sieb. & Zucc. ———
*Aecidium meliosmae-myrianthae*
*Helicobasidium mompa*

**Meliosma oldhamii** Miq. ———
*Aecidium meliosmae-myrianthae*
**Meliosma parviflora** Lecomte ———
*Aecidium meliosmae-myrianthae*
**Melocanna baccifera** (Roxb.) Kurz ———
*Poria rhizomorpha*
**Memecylon umbellatum** Kostel. ———
*Aecidium memecyli*
**Metasequoia glyptostroboides** Hu & Cheng ———
*Botrytis cinerea*
**Metrosideros villosa** Sm. ———
*Phyllosticta metrosideri*
**Michelia fuscata** (Andr.) Blume **banana-shrub**
*Corticium salmonicolor*
**Miconia** sp. ———
*Asterina melastomatis*
*A. miconiae*
*Bagnisiopsis leandrae*
*B. tijucensis*
*Catacaumella miconiae*
*Dothidina peribebuyensis*
*Guignardia atropurpurea*
*G. punctiformis*
*Lembosia melastomatum*
*Parasterina venezuelana*
*Phyllachora miconiicola*
**Miconia aeruginosa** Naud. ———
*Parasterina miconiae*
*P. montagnei*
**Miconia ambigua** DC.
*Bagnisiopsis peribebuyensis*
**Miconia argentea** DC. ———
*Bagnisiopsis peribebuyensis*
**Miconia beurlingii** Triana ———
*Bagnisiopsis peribebuyensis*
**Miconia candolleana** Triana ———
*Bagnisiopsis peribebuyensis*
**Miconia caudata** DC. ———
*Bagnisiopsis amadelpha*
**Miconia ciliata** DC. ———
*Asterina antioquensis*
*A. uribei*
**Miconia flammea** Casar. ———
*Bagnisiopsis tijucensis*
**Miconia furfuracea** Griseb. ———
*Bagnisiopsis amadelpha*
**Miconia grandifolia** D. Don ———
*Bagnisiopsis toledoi*
**Miconia granulosa** (Bonpl.) Naud. ———
*Bagnisiopsis amadelpha*
**Miconia ibaguensis** (Bonpl.) Triana ———
*Cercospora mirandensis*
**Miconia impetiolaris** (Sw.) D. Don ———
*Irene melastomacearum*
*Septoria miconiae*
**Miconia laevigata** (L.) DC. ———
*Bagnisiopsis peribebuyensis*
*B. toledoi*
*Irene melastomacearum*
*Septoria miconiae*
**Miconia lepidota** DC. ———
*Bagnisiopsis tijucensis*
**Miconia macrophylla** (D. Don) Triana ———
*Bagnisiopsis peribebuyensis*
*B. tijucensis*
*B. toledoi*
**Miconia milleflora** Naud. ———
*Asterina antioquensis*
*Cronartium egenulum*
**Miconia minutiflora** DC. ———
*Bagnisiopsis tijucensis*
**Miconia prasina** (Sw.) DC. ———
*Asterina carbonacea*
*A. chrysophylli*
*Bagnisiopsis peribebuyensis*
*B. toledoi*
*Irene melastomacearum*
**Miconia racemosa** (Aubl.) DC. ———
*Asterina spathulata*
*Irene melastomacearum*
**Miconia rubiginosa** (Bonpl.) DC. ———
*Catacaumella miconiae*
**Miconia squamulosa** Triana ———
*Bagnisiopsis miconicola*
**Miconia stenostachya** (Schr. & Mart.) DC. ———
*Lembosia miconiicola*
**Miconia thomasiana** DC. ———
*Asterina spathulata*
**Miconia toroi** Gleason ———
*Asterina uribei*
**Miconia ulmarioides** Naud. ———
*Bagnisiopsis tijucensis*
**Miconia versicolor** Naud. ———
*Bagnisiopsis peribebuyensis*

**Morinda tinctoria** Roxb. ——
*Cercospora morindae*

**Morus** sp. **mulberry**
Virus, mosaic
*Agrobacterium tumefaciens*
*Pseudomonas mori*
*Aecidium mori*
*Armillaria mellea*
*Cercospora mori*
*Cerotelium fici*
*Claudopus nidulans*
*Fomes fomentarius*
*F. senex*
*Ganoderma applanatum*
*Gibberella moricola*
*Helicobasidium tanakae*
*Mycosphaerella mori*
*Nectria cinnabarina*
*Phyllactinia guttata*
*Polyporus hispidus*
*Rosellinia aquila*
*R. necatrix*
*Thyrococcum sirakoffii*

**Morus alba** L. **white mulberry**
Virus, mosaic
*Pseudomonas mori*
*Aecidium mori*
*Ascochyta morifolia*
*Botrytis cinerea*
*Cercospora moricola*
*Cerotelium fici*
*Ciboria shiraiana*
*Clasterosporium mori*
*Coryneum mori*
*Cylindrosporium maculans*
*Cytodiplospora mori*
*Cytospora ambiens*
*C. atra*
*Daedalea unicolor*
*Diplodia morina*
*Fomes robiniae*
*Fusarium lateritium*
*Ganoderma lucidum*
*Gibberella lateritia*
*G. moricola*
*Helicobasidium mompa*
*H. purpureum*
*H. tanakae*
*Kuehneola moricola*
*Macrophomina phaseoli*
*Mycosphaerella mori*
*Nectria cinnabarina*
*Phyllactinia guttata*
*P. moricola*
*Phyllosticta kuwacola*
*Polyporus hispidus*
*P. squamosus*
*Sclerotinia sclerotiorum*
*Sphaeropsis mori*
*Uncinula mori*

**Morus alba** var. **multicaulis** (Perrottet) Loud. **silkworm mulberry**
*Phyllactinia moricola*

**Morus argutidens** Koidz. ——
*Phyllactinia moricola*

**Morus australis** Poir. **Japanese mulberry**
*Pseudomonas mori*
*Aecidium mori*
*Ciboria shiraiana*
*Corticium salmonicolor*
*Gibberella moricola*
*Helicobasidium mompa*
*Phyllactinia guttata*
*P. moricola*

**Morus indica** L. ——
*Pseudomonas mori*
*Aecidium mori*
*Corticium salmonicolor*
*Mycosphaerella mori*

**Morus insignis** Bur. ——
*Cerotelium fici*

**Morus kagayamae** Koidz. ——
*Pseudomonas mori*

**Morus nigra** L. **black mulberry**
*Pseudomonas mori*
*Auricularia auricularis*
*Mycosphaerella mori*

**Morus serrata** Roxb. ——
*Aecidium mori*

**Murraya koenigii** (L.) Spreng. **curryleaf-tree**
*Cylindrosporium koenigii*
*Pellicularia filamentosa*
*Phyllostictina murrayae*

**Murraya paniculata** (L.) Jack **Chinabox jasmine-orange**
*Fomes lamaoensis*

**Musanga smithii** R. Br. ——
*Fomes lignosus*

**Myristica** sp. **nutmeg**
*Ganoderma pseudoferreum*

**Myristica fragrans** Houtt. **common nutmeg**
*Coryneum myristicae*
*Eutypa erumpens*
*Fomes lamaoensis*
*Physalospora abdita*

**Myrsine** sp. ———
*Coryneliospora fructicola*

**Myrsine africana** L. ———
*Corynelia fructicola*
*Coryneliospora fructicola*

**Myrsine melanophleos** R. Br. ———
*Corynelia fructicola*

**Myrtus communis** L. **true myrtle**
*Ascochyta myrticola*
*Cercospora myrticola*

**Myrtus divaricata** (Berg.) Ham. ———
*Cercospora myrticola*

**Nectandra** sp. ———
*Irene glabroides*

**Nectandra amara** Nees ———
*Aecidium mulleri*

**Nectandra coriacea** (Sw.) Griseb. **Jamaica nectandra**
*Phyllachora nectandrae*

**Nectandra glabrescens** Benth. ———
*Phyllachora litseae*

**Nectandra nitidula** Nees & Mart. ———
*Drepanoconis larviformis*

**Nectandra oppositifolia** Nees & Mart. ———
*Aecidium nectandrae*

**Nectandra patens** (Sw.) Griseb. ———
*Irene glabroides*
*Phyllachora nectandrae*

**Nectandra puberula** Nees ———
*Drepanoconis larviformis*

**Nectandra sinuata** Mez ———
*Phytophthora cinnamomi*

**Nectandra tweediei** (Meissn.) Mez ———
*Clinoconidium farinosum*
*Drepanoconis larviformis*

**Newbouldia laevis** Seem.
*Calonectria rigidiuscula*

**Nothofagus antarctica** (Forst.) Oerst. **Antarctic falsebeech**
*Cyttaria darwinii*
*C. harioti*
*C. hookeri*

**Nothofagus antarctica** var. **bicrenata** Macloskie ———
*Taphrina entomospora*
*Uncinula magellanica*
*U. nothofagi*

**Nothofagus antarctica** var. **uliginosa** (DC.) Reiche ———
*Taphrina entomospora*

**Nothofagus betuloides** (Mirb.) Oerst. ———
*Cyttaria darwinii*
*C. harioti*
*C. hookeri*

**Nothofagus cunninghamii** (Hook.) Oerst. **Tasmania falsebeech**
*Cyttaria gunnii*

**Nothofagus dombeyi** (Mirb.) Oerst. **southern falsebeech**
*Bondarzewia perniciosa*
*Cyttaria harioti*
*C. hookeri*

**Nothofagus fusca** (Hook. f.) Oerst. **black falsebeech**
*Cyttaria gunnii*
*Fomes robustus*

**Nothofagus glauca** (Phil.) Espinosa
*Cyttaria berterii*

**Nothofagus menziesii** (Hook. f.) Oerst. **silver falsebeech**
*Armillaria mellea*
*Cyttaria gunnii*
*Fomes robustus*

**Nothofagus moorei** (F. Muell.) Maiden **negrohead falsebeech**
*Cyttaria gunnii*
*C. septentrionalis*

**Nothofagus nitida** (Phil.) Reiche ———
*Cyttaria harioti*

**Nothofagus obliqua** (Mirb.) Oerst. ———
*Cyttaria berterii*
*C. espinosae*
*C. reichei*
*Micronegeria fagi*
*Mycosphaerella nothofagi*

**Nothofagus obliqua** var. **macrocarpa** Reiche ———
*Cyttaria berterii*

**Nothofagus procera** (Poepp. & Endl.) Oerst. ———
*Cyttaria espinosae*

*Micronegeria fagi*
*Mycosphaerella nothofagi*
**Nothofagus pumilio** (Poepp. & Endl.) Reiche ———
*Cyttaria darwinii*
*C. harioti*
*C. hookeri*
**Nothopanax fruticosus** (L.) Harms ———
*Helicobasidium purpureum*
**Nothopegia colebrookiana** (Wight) Blume ———
*Asterina nothopegiae*
**Ochroma pyramidale** (Cav.) Urban balsa
*Fomes lignosus*
*Macrophomina phaseoli*
**Ocotea** sp. ———
*Phyllachora ocoteicola*
**Ocotea architectorum** Mez ———
*Phytophthora cinnamomi*
**Ocotea bullata** E. Mey. stinkwood ocotea
*Fomes ligneus*
*F. ulmarius*
**Ocotea leucoxylon** (Sw.) Maza ———
*Catacauma ocoteae*
*Clinoconidium farinosum*
*Phyllachora ocoteicola*
*Uredo farinosa*
**Ocotea pulchella** Mart. ———
*Botryoconis pallida*
**Olea** sp. olive
*Fomes linteus*
*Phytophthora cinnamomi*
**Olea dioica** Roxb. ———
*Cystopsora oleae*
**Olea europaea** L. common olive
*Fomes linteus*
**Olea laurifolia** Lam. ———
*Asterodothis solaris*
*Fomes robiniae*
*F. robustus*
*Ganoderma applanatum*
*G. lucidum*
*Pellicularia filamentosa*
*Pestalotia hartigii*
**Olea verrucosa** Link warty olive
*Ganoderma lucidum*
**Olearia** (sp.) daisybush
*Corbulopsora clemensiae*
*C. gravida*
**Olearia argophylla** F. Muell. musktree daisybush
*Irpex zonatus*
**Olearia axillaris** F. Muell. ———
*Aecidium oleariae*
**Oncosperma filamentosum** Blume nibong palm
*Fomes lignosus*
**Opilia amentacea** Roxb. ———
*Asterina crebra*
**Opuntia aurantiaca** Lindl. orange-red pricklypear
*Gloeosporium lunatum*
**Opuntia ficus-indica** Mill. Indian-fig
*Bacillus cacticidus*
**Opuntia stricta** Haw. ———
*Gloeosporium lunatum*
**Opuntia tomentella** Berger ———
*Bacillus cacticidus*
**Opuntia vulgaris** Mill. common pricklypear
*Gloeosporium lunatum*
**Oroxylum indicum** Vent. India trumpetflower
*Corticium repens*
**Osmanthus fragrans** Lour. sweet osmanthus
*Aecidium osmanthi*
**Ostrya carpinifolia** Scop. European hophornbeam
*Taphrina ostryae*
**Ostrya virginiana** (Mill.) K. Koch var. guatemalensis (Winkl.) Macbride ———
*Melampsoridium carpini*
**Pachira insignis** Savigny Trinidad pachira
*Cercospora pachirae*
**Pachira oleagina** Decne. ———
Virus, swollen shoot
**Palaquium** sp. nota-tree
*Scopella palaquii*
**Palaquium oblongifolium** Burck ———
*Colletotrichum gloeosporioides*
*Corticium salmonicolor*
*Fomes lignosus*
*Ganoderma pseudoferreum*
**Parashorea malaanonan** (Blanco) Merr. common bagtikan
*Fomes annularis*
**Parashorea plicata** Brandis ———
*Ganoderma lucidum*
**Parinarium mobola** Oliver mobola-plum
*Armillaria mellea*

**Parkia javanica** (Lam.) Merr. **Java nittatree**
*Auricularia polytricha*
*Fomes annularis*
*Phyllachora parkiae*

**Parkia roxburghii** G. Don **Roxburgh nittatree**
*Ganoderma pseudoferreum*

**Paulownia coreana** Uyeki ———
*Gloeosporium kawakamii*

**Paulownia tomentosa** (Thunb.) Sieb. & Zucc. **royal paulownia**
Virus, witches'-broom
*Armillaria mellea*
*Ascochyta paulowniae*
*Cercospora paulowniae*
*Gloeosporium kawakamii*
*Glomerella cingulata*
*Helicobasidium mompa*
*H. tanakae*
*Mycosphaerella paulowniae*
*Phyllactinia guttata*
*P. salmonii*
*Phyllosticta paulowniae*
*Uncinula clintonii*
*Valsa paulowniae*

**Pavetta indica** L. ———
*Aecidium flavidum*

**Peltophorum inerme** (Roxb.) Naves ———
*Ganoderma pseudoferreum*

**Pentaclethra macroloba** (Willd.) Kuntze ———
*Meliola conigera*

**Pentaclethra macrophylla** Benth. ———
*Fomes lignosus*

**Persea americana** Mill. **avocado**
*Armillaria mellea*
*Colletotrichum gloeosporioides*
*Glomerella cingulata*
*Macrophomina phaseoli*
*Mycosphaerella perseae*
*Pellicularia rolfsii*
*Phyllachora gratissima*
*Physalospora perseae*
*P. rhodina*
*Phytophthora cactorum*
*P. cinnamomi*
*P. palmivora*
*Rosellinia bunodes*
*Sphaceloma perseae*
*Trachysphaera fructigena*

**Persea petiolaris** H. B. K. ———
*Meliola antioquensis*

**Persea schiedeana** Nees **coyo avocado**
*Phytophthora cinnamomi*

**Petitia domingensis** Jacq. **capá blanco**
*Olivea petitiae*
*Septoria petitiae*

**Peumus boldus** Molina **boldu-tree**
*Herpotrichia boldoae*

**Phellodendron amurense** Rupr. **Amur corktree**
*Ascochyta phellodendri*
*Coleosporium phellodendri*

**Phellodendron lavallei** Dode **Lavalle corktree**
*Coleosporium phellodendri*

**Phellodendron sachalinense** (Fr. Schmidt) Sarg. **Sakhalin corktree**
*Coleosporium phellodendri*

**Phillyrea** sp. ———
*Zaghouania phillyreae*

**Phillyrea angustifolia** L. **narrowleaf phillyrea**
*Zaghouania phillyreae*

**Phoebe formosana** (Hayata) Hayata **Formosa phoebe**
*Aecidium machili*

**Phoebe paniculata** Nees **panicled phoebe**
*Kernella lauricola*

**Phoebe wightii** Meissn. ———
*Kernella lauricola*

**Phoenix** sp. **date**
*Graphiola phoenicis*

**Phoenix canariensis** Chabaud **canary date**
*Ceratocystis paradoxa*
*Exosporium palmivorum*
*Graphiola phoenicis*
*Pestalotia palmarum*

**Phoenix dactylifera** L. **date**
*Ceratocystis paradoxa*
*Fusarium albedinis*
*Graphiola phoenicis*
*Mauginiella scaettae*

**Phoenix hanceana** var. **formosana** Becc. **Hance date**
*Graphiola phoenicis*

**Phoenix paludosa** Roxb. **Malayan date**
*Graphiola phoenicis*
**Phoenix reclinata** Jacq. **Senegal date**
*Pestalotia palmarum*
**Phoenix sylvestris** Roxb. **sugar date**
*Graphiola applanata*
*G. phoenicis*
*Pestalotia palmarum*
**Photinia amphidoxa** (Schneid.) Rehd. & Wilson **bigfruit photinia**
*Gymnosporangium inconspicuum*
**Photinia glabra** (Thunb.) Maxim. **Japanese photinia**
*Helicobasidium mompa*
**Photinia parvifolia** (Pritz.) Schneid. **littleleaf photinia**
*Gymnosporangium inconspicuum*
**Photinia villosa** (Thunb.) DC. **oriental photinia**
*Gymnosporangium inconspicuum*
**Photinia villosa var. laevis** (Thunb.) Dipp. ———
*Gymnosporangium inconspicuum*
**Phyllostachys sp.** **bamboo**
*Coccodiella arundinariae*
*Loculistroma bambusae*
*Puccinia longicornis*
**Phyllostachys bambusoides** Sieb. & Zucc. **Japanese timber bamboo**
*Aciculosporium take*
*Asterinella hiugensis*
*Colletotrichum hsienjenchang*
*Mycosphaerella bambusifolia*
*Puccinia phyllostachydis*
*Stereostratum corticioides*
**Phyllostachys nigra** (Lodd.) Munro **black bamboo**
*Aciculosporium take*
**Phyllostachys nigra var. henonis** (Mitf.) Stapf. **Henon bamboo**
*Aciculosporium take*
*Colletotrichum hsienjenchang*
*Mycosphaerella bambusifolia*
*Puccinia phyllostachydis*
*Shiraia bambusicola*
*Stereostratum corticioides*
**Picea sp.** **spruce**
*Acanthostigma parasitica*
*Ascochyta piniperda*
*Botrytis cinerea*
*Ceratocystis coerulescens*
*C. piceae*
*Chrysomyxa ledi* var. *ledi*
*Cladosporium herbarum*
*Cytospora curreyi*
*Fomes pinicola*
*F. robustus*
*F. roseus*
*Ganoderma lucidum*
*Lophodermium macrosporum*
*Polyporus schweinitzii*
*P. sulphureus*
*Rosellinia aquila*
*Thelephora terrestris*
**Picea abies** (L.) Karst. **Norway spruce**
Virus, mosaic
*Acanthostigma parasiticum*
*Armillaria mellea*
*Ascochyta piniperda*
*Botrytis cinerea*
*Ceratocystis coerulescens*
*C. piceae*
*C. tetropii*
*Chrysomyxa abietis*
*C. ledi* var. *ledi*
*C. ledi* var. *rhododendri*
*C. pirolata*
*C. woronini*
*Coniophora olivacea*
*C. puteana*
*Corticium odoratum*
*Cucurbitaria piceae*
*C. pithyophila*
*Daedalea unicolor*
*Dasyscypha abietis*
*D. calyciformis*
*D. subtilissima*
*Fomes annosus*
*F. pini*
*F. pinicola*
*F. robustus*
*Fusarium bulbigenum* var. *blasticola*
*Ganoderma applanatum*
*G. lucidum*
*Helicobasidium mompa*
*H. purpureum*
*Herpotrichia nigra*
*Hysterographium fraxini*
*Lophodermium macrosporum*
*L. piceae*
*Nectria cucurbitula*
*Pellicularia filamentosa*
*Pestalotia hartigii*
*Pezicula livida*
*Phacidiopycnis pseudotsugae*
*Phacidium infestans*

**Picea ables** (L), Karst.
(Continued) **Norway spruce**
*Phytophthora cactorum*
*Pleurotus mitis*
*Polyporus adustus*
*P. borealis*
*P. mollis*
*P. resinosus*
*P. schweinitzii*
*P. tomentosus* var. *circinatus*
*P. zonatus*
*Poria vaporaria*
*Pucciniastrum areolatum*
*P. sparsum*
*Pythium debaryanum*
*Rhizina undulata*
*Rhizosphaera kalkhoffii*
*Rosellinia aquila*
*Scleroderris abietina*
*Stereum sanguinolentum*
*Trametes heteromorpha*
*Trichoscyphella resinaria*
*Valsa kunzei*

**Picea engelmannii** Parry
**Engelmann spruce**
*Herpotrichia nigra*

**Picea glauca** (Moench) Voss
**white spruce**
*Armillaria mellea*
*Cenangium ferruginosum*
*Helicobasidium purpureum*
*Pestalotia hartigii*

**Picea glehnii** (Fr. Schmidt) Mast.
**Sakhalin spruce**
*Ceratocystis piceae*
*Fomes annosus*
*Pellicularia filamentosa*
*Polyporus balsameus*
*Poria subacida*

**Picea jezoensis** (Sieb. & Zucc.) Carr.
**Yeddo spruce**
*Ceratocystis piceae*
*Chrysomyxa expansa*
*C. ledi* var. *rhododendri*
*Fomes annosus*
*F. pini*
*F. pinicola*
*Fusarium oxysporum* var. *aurantiacum*
*Lentinus kaufmannii*
*Polyporus schweinitzii*
*P. sulphureus*
*P. tomentosus*
*Poria subacida*
*P. weirii*
*Pucciniastrum areolatum*

**Picea jezoensis** var. **hondoensis** (Mayr) Rehd. **Hondo Yeddo spruce**
*Dasyscypha abieticola*
*Peridermium piceae-hondoensis*
*Phytophthora cactorum*

**Picea likiangensis** (Franch.) Pritz.
**Likiang spruce**
*Chrysomyxa ledi* var. *ledi*
*Fomes annosus*
*F. nigrolimitatus*
*F. pini*
*F. roseus*

**Picea mariana** (Mill.) B. S. P.
**black spruce**
*Armillaria mellea*

**Picea obovata** Ledeb. **Siberian spruce**
*Chrysomyxa woronini*
*Fomes pini*
*Polyporus borealis*
*Pucciniastrum areolatum*

**Picea omorika** (Pancic) Purkyne
**Serbian spruce**
*Armillaria mellea*
*Fomes pini*
*Fusarium oxysporum* var. *aurantiacum*
*Herpotrichia nigra*
*Lophodermium macrosporum*

**Picea orientalis** (L.) Link
**oriental spruce**
*Fusarium oxysporum* var. *aurantiacum*
*Rhizosphaera kalkhoffii*

**Picea schrenkiana** Fisch. & Mey.
**Schrenk spruce**
*Chrysomyxa deformans*
*Rhizosphaera kalkhoffii*

**Picea sitchensis** (Bong.) Carr.
**Sitka spruce**
*Ascochyta piniperda*
*Chrysomyxa ledi* var. *rhododendri*
*Pezicula livida*
*Sparassis ramosa*

**Picea smithiana** (Wall.) Boiss
**Himalayan spruce**
*Armillaria mellea*
*Chrysomyxa deformans*
*C. himalensis*
*C. piceae*
*Fomes annosus*
*F. pini*
*Lophodermium piceae*
*Peridermium thomsoni*
*Polyporus sulphureus*

*P. tomentosus* var. *circinatus*
*Pucciniastrum areolatum*
**Picralima nitida** (Stapf) Th. & H. Dur.
———
*Calonectria rigidiuscula*
**Picrasma philippinensis** Elmer
**Philippine quassiawood**
*Asterina lobata*
**Picrasma quassioides** (D. Don) Benn.
**India quassiawood**
*Microsphaera alni*
*Phyllactinia guttata*
**Pimenta dioica** (L.) Merr. **allspice**
*Ceratocystis fimbriata*
*Puccinia psidii*
**Pimenta racemosa** (Mill.) J. W. Moore
**bay-rum tree**
*Puccinia psidii*
**Pinanga insignis** Becc. ———
*Phytophthora palmivora*
**Pinus sp.** **pine**
*Ceratocystis coerulescens*
*Cladosporium herbarum*
*Coleosporium senecionis*
*Corticium galactinum*
*C. odoratum*
*Cronartium coleosporioides*
*Fomes fomentarius*
*F. officinalis*
*F. pini*
*F. pinicola*
*Fusarium avenaceum*
*F. bulbigenum* var. *blasticola*
*F. orthoceras*
*F. solani* var. *martii*
*F. vasinfectum*
*Ganoderma applanatum*
*G. resinaceum*
*Hypodermella sulcigena*
*Lophodermium pinastri*
*Melampsora pinitorqua*
*Pellicularia filamentosa*
*Phytophthora cactorum*
*Polyporus sulphureus*
*P. tomentosus* var. *circinatus*
*Pythium ultimum*
*Stereum abietinum*
*Thelephora terrestris*
**Pinus ayacahuite** Ehrenb.
**Mexican white pine**
*Cronartium ribicola*
**Pinus banksiana** Lamb. **jack pine**
*Dasyscypha calyciformis*

**Pinus canariensis** C. Smith
**Canary pine**
*Diplodia pinea*
*Pestalotia funerea*
*Phacidiopycnis pseudotsugae*
**Pinus caribaea** Morelet
**Caribbean pine**
*Armillaria mellea*
*Physalospora abdita*
**Pinus cembra** L. **Swiss stone pine**
*Armillaria mellea*
*Cronartium ribicola*
*Cucurbitaria pithyophila*
*Fomes annosus*
*F. officinalis*
*Herpotrichia nigra*
*Hypoderma desmazierii*
*Lophodermium nitens*
*L. pinastri*
*Nectria cucurbitula*
*Phacidium infestans*
*Scleroderris abietina*
*Stereum sanguinolentum*
**Pinus cembra** var. **sibirica** Loud.
**Siberian stone pine**
*Coleosporium pinicola*
*C. saussureae*
*Cronartium ribicola*
*Crumenula sororia*
*Fomes pini*
*Lophodermium pinastri*
*Phoma strobiligena*
**Pinus contorta** Dougl. **lodgepole pine**
*Excipulina pinea*
**Pinus densiflora** Sieb. & Zucc.
**Japanese red pine**
*Aristadiplodia pini*
*Armillaria mellea*
*Botrytis cinerea*
*Ceratocystis ips*
*C. minor*
*C. piceae*
*Cercospora pini-densiflorae*
*Coleosporium asterum*
*C. campanulae*
*Cronartium quercuum*
*Dasyscypha subtilissima*
*Fomes pinicola*
*Fusarium oxysporum* var. *aurantiacum*
*Helicobasidium mompa*
*Lophodermium pinastri*
*Pellicularia filamentosa*

**Pinus densiflora** Sieb. & Zucc. (Continued) **Japanese red pine**
*Polyporus orientalis*
*P. schweinitzii*
*Sclerotinia kitajimana*

**Pinus echinata** Mill. **shortleaf pine**
*Rhizoctonia lamellifera*

**Pinus gerardiana** Wall. **chilghoza pine**
*Fomes pini*

**Pinus griffithii** McClelland **Himalayan pine**
*Armillaria mellea*
*Coleosporium barclayense*
*C. campanulae*
*Cronartium flaccidum*
*C. ribicola*
*Fomes annosus*
*F. pini*
*Hypoderma desmazierii*
*Lophodermium pinastri*
*Melampsora oblonga*
*Phoma strobiligena*
*Polyporus tomentosus* var. *circinatus*
*Scleroderris abietina*
*Trichoscyphella resinaria*

**Pinus halepensis** Mill. **Aleppo pine**
*Bacillus vuilemini*
*Armillaria mellea*
*Brunchorstia pini*
*Coleosporium inulae*
*C. senecionis*
*Cronartium flaccidum*
*Diplodia pinea*
*Fomes pini*
*Fusarium oxysporum*
*Lophodermium nitens*
*L. pinastri*
*Naemacyclus niveus*
*Phytophthora citrophthora*
*P. parasitica*

**Pinus khasya** Royle **Khasia pine**
*Armillaria mellea*
*Cronartium quercuum*
*Diplodia pinea*
*Fomes pinicola*
*Pellicularia filamentosa*
*Polyporus sulphureus*
*Pythium debaryanum*

**Pinus koraiensis** Sieb. & Zucc. **Korean pine**
*Coleosporium eupatorii*
*Cronartium ribicola*
*Fomes pini*
*Lophodermium pinastri*

**Pinus leiophylla** Schiede & Deppe
———
*Cronartium conigenum*
*Hypoderma mexicanum*

**Pinus leiophylla** var. **chihuahuana** (Engelm.) Shaw **Chihuahua pine**
*Cronartium conigenum*

**Pinus luchuensis** Mayr **Luchu pine**
*Cercospora pini-densiflorae*
*Cronartium quercuum*

**Pinus massoniana** Lamb. **Masson pine**
*Cercospora pini-densiflorae*
*Coleosporium asterum*
*Cronartium quercuum*
*Pestalotia funerea*
*Pythium debaryanum*

**Pinus montezumae** Lamb. **Montezuma pine**
*Cronartium conigenum*
*Diplodia pinea*
*Peridermium guatemalense*
*P. montezumae*

**Pinus monticola** Dougl. ex. Lamb. **western white pine**
*Dasyscypha calyciformis*
*Fomes pini*

**Pinus mugo** Turra **Swiss mountain pine**
*Armillaria mellea*
*Cenangium ferruginosum*
*Coleosporium cacaliae*
*C. melampyri*
*C. senecionis*
*Cronartium flaccidum*
*Crumenula pinicola*
*Dasyscypha subtilissima*
*Diplodia pinea*
*Excipulina pinea*
*Fomes annosus*
*Fusarium bulbigenum* var. *blasticola*
*Helicobasidium purpureum*
*Hendersonia montana*
*Herpotrichia nigra*
*Hypodermella sulcigena*
*Lophodermium nitens*
*L. pinastri*
*Melampsora pinitorqua*
*M. populnea*
*Naemacyclus niveus*
*Nectria cucurbitula*
*Pestalotia hartigii*
*Phacidiopycnis pseudotsugae*
*Phytophthora cactorum*
*Rhizospaera kalkhoffi*

*Rosellinia aquila*
*Scleroderris abietina*

**Pinus mugo** var. **mughus** (Scop.) Zenari **mugho Swiss mountain pine**
*Diplodia pinea*

**Pinus mugo** var. **pumilio** (Haenke) Zenari **shrubby Swiss pine**
Virus, mosaic
*Caliciopsis pinea*
*Dasyscypha calyciformis*
*Neopeckia coulteri*

**Pinus mugo** var. **rostrata** (Ant.) Hoopes **tree Swiss pine**
*Armillaria mellea*
*Cenangium ferruginosum*
*Cronartium flaccidum*
*Crumenula pinicola*
*Dasyscypha subtilissima*
*Fomes annosus*
*Fusarium bulbigenum* var. *blasticola*
*Hypodermella sulcigena*
*Lophodermium pinastri*
*Melampsora pinitorqua*
*Phacidium infestans*
*Pythium debaryanum*
*Scleroderris abietina*
*Thelephora terrestris*

**Pinus mugo** var. **rotundata** (Link) Hoopes **Hoopes Swiss pine**
*Fomes annosus*
*Lophodermium pinastri*

**Pinus muricata** D. Don **bishop pine**
*Armillaria mellea*
*Phacidiopycnis pseudotsugae*
*Rhizoctonia lamellifera*

**Pinus nigra** Arnold **Austrian pine**
*Armillaria mellea*
*Brunchorstia pini*
*Cenangium ferruginosum*
*Coleosporium campanulae*
*C. petasitis*
*C. senecionis*
*Cronartium flaccidum*
*Crumenula pinicola*
*C. sororia*
*Dasyscypha calyciformis*
*D. pini*
*D. subtilissima*
*Diplodia pinea*
*Excipulina pinea*
*Fomes annosus*
*Helicobasidium purpureum*
*Hypodermella sulcigena*
*Lophodermium pinastri*
*Naemacyclus niveus*
*Phacidium infestans*
*Pythium debaryanum*
*Rhizosphaera kalkhoffii*
*Scirrhia acicola*
*Scleroderris abietina*
*Trichoscyphella resinaria*

**Pinus nigra** var. **cebennensis** (Godr.) Rehd. **Cevennes pine**
*Lophodermium pinastri*

**Pinus nigra** var. **poiretiana** Schneid. **Corsican pine**
*Armillaria mellea*
*Cenangium ferruginosum*
*Coleosporium senecionis*
*Crumenula pinicola*
*C. sororia*
*Dasyscypha calyciformis*
*Diplodia pinea*
*Fomes annosus*
*Lophodermium pinastri*
*Naemacyclus niveus*
*Pellicularia filamentosa*
*Rhizina undulata*
*Scleroderris abietina*

**Pinus occidentalis** Sw. **Cuban pine**
*Fusarium lateritium*
*Lophodermium pinastri*

**Pinus oocarpa** Schiede ———
*Cronartium conigenum*
*Peridermium mexicanum*

**Pinus parviflora** Sieb. & Zucc. **Japanese white pine**
*Ceratocystis piceae*
*Cronartium ribicola*
*Helicobasidium mompa*
*Hypoderma desmazierii*
*Polyporus schweinitzii*

**Pinus patula** Schlecht. & Cham. **jelecote pine**
*Armillaria mellea*
*Diplodia pinea*
*Peridermium mexicanum*

**Pinus peuce** Griseb. **Balkan pine**
*Cronartium ribicola*
*Fomes pini*
*Hypoderma desmazierii*

**Pinus pinaster** Ait. **cluster pine**
*Armillaria mellea*
*Coleosporium senecionis*
*Cronartium flaccidum*
*Cytosporella damnosa*
*Diplodia pinea*
*Fomes annosus*
*F. pini*
*Lophodermium pinastri*
*Melampsora pinitorqua*
*Mycosphaerella pinifolia*
*Naemacyclus niveus*
*Pestalotia funerea*
*Polyporus schweinitzii*
*Rhizina undulata*
*Rhizoctonia lamellifera*
*Scleroderris abietina*

**Pinus pinea** L. **Italian stone pine**
*Alternaria tenuis*
*Cladosporium laricis*
*Diplodia pinea*
*Fomes pini*
*Melampsora pinitorqua*
*Naemacyclus niveus*
*Phytophthora citrophthora*
*Polyporus schweinitzii*
*Sphaeropsis necatrix*

**Pinus ponderosa** Laws. **ponderosa pine**
*Dasyscypha calyciformis*
*Fusarium oxysporum* var. *aurantiacum*

**Pinus pseudostrobus** Lindl. **Nicaragua pine**
*Cronartium conigenum*

**Pinus pumila** Reg. **Japanese stone pine**
*Coleosporium pinicola*
*C. saussureae*
*C. senecionis*
*Cronartium kamtschaticum*
*C. ribicola*
*Hypodermella hiratsukae*
*Peridermium kurilense*

**Pinus radiata** D. Don **Monterey pine**
*Armillaria mellea*
*Dasyscypha calyciformis*
*Fusarium oxysporum*
*Phacidiopycnis pseudotsugae*
*Poria ferruginosa*
*Rhizoctonia lamellifera*
*Scirrhia acicola*
*Scleroderris abietina*

**Pinus rigida** Mill. **pitch pine**
*Cladosporium herbarum*

**Pinus roxburghii** Sarg. **chir pine**
*Armillaria mellea*
*Coleosporium campanulae*
*C. inulae*
*Cronartium himalayense*
*Diplodia pinea*
*Fomes annosus*
*F. pini*
*Helicobasidium compactum*
*Lophodermium pinastri*
*Pestalotia funerea*
*Poria monticola*

**Pinus strobus** L. **eastern white pine**
*Ceratocystis minor*
*Cytospora curreyi*
*Pythium debaryanum*
*Sparassis ramosa*

**Pinus sylvestris** L. **Scotch pine**
*Armillaria mellea*
*Botrytis cinerea*
*Brunchorstia pini*
*Cenangium ferruginosum*
*C. kazachstanicum*
*Ceratocystis coerulescens*
*C. ips*
*C. minor*
*C. piceae*
*C. pilifera*
*Coleosporium cacaliae*
*C. campanulae*
*C. euphrasiae*
*C. inulae*
*C. melampyri*
*C. petasitis*
*C. senecionis*
*C. sonchi*
*C. tussilaginis*
*Coniophora bourdotii*
*C. puteana*
*Cronartium flaccidum*
*C. quercuum*
*Crumenula pinicola*
*C. sororia*
*Cucurbitaria pithyophila*
*Cytospora curreyi*
*Dasyscypha calyciformis*
*D. pini*
*D. subtilissima*
*Diplodia pinea*
*Excipulina pinea*

*Fomes annosus*
*F. pini*
*Fusarium bulbigenum* var. *blasticola*
*F. oxysporum* var. *aurantiacum*
*F. solani*
*Herpotrichia nigra*
*Hypoderma desmazierii*
*Hypodermella conjuncta*
*H. sulcigena*
*Lophodermium pinastri*
*Melampsora pinitorqua*
*M. populnea*
*Naemacyclus niveus*
*Nectria cucurbitula*
*Pellicularia filamentosa*
*Pestalotia hartigii*
*Phacidium infestans*
*Phoma strobiligena*
*Polyporus giganteus*
*P. mollis*
*P. schweinitzii*
*P. sulphureus*
*P. tomentosus* var. *circinatus*
*Poria vaporaria*
*Pythium debaryanum*
*P. torulosum*
*Rhizina undulata*
*Scleroderris abietina*
*Septoria acuum*
*Sparassis ramosa*
*Stereum sanguinolentum*
*Trichoscyphella resinaria*

**Pinus tabulaeformis** Carr. **Chinese pine**
*Armillaria mellea*

**Pinus tabulaeformis** var. **yunnanensis** (Franch.) Dallimore **Yunnan pine**
*Cronartium flaccidum*
*C. quercuum*
*Fomes officinalis*
*F. pini*

**Pinus thunbergii** Parl. **Japanese black pine**
*Cenangium ferruginosum*
*Ceratocystis ips*
*C. minor*
*C. piceae*
*Coleosporium asterum*
*C. campanulae*
*Cronartium quercuum*
*Dasyscypha subtilissima*
*Diplodia pinea*
*Fusarium oxysporum* var. *aurantiacum*
*Lophodermium pinastri*
*Pellicularia filamentosa*
*Peridermium pini-thunbergii*
*P. praelongum*
*Polyporus schweinitzii*

**Piptadenia** sp. **piptadenia**
*Ravenelia henningsiana*

**Piptadenia africana** Hook. f. **African piptadenia**
*Fomes lignosus*

**Piptadenia latifolia** Benth. ———
*Diorchidium piptadeniae*

**Piptadenia laxa** Benth. ———
*Diorchidium piptadeniae*

**Piptadenia peregrina** (L.) Benth. ———
*Ravenelia cebil*

**Pipturus albidus** A. Gray ———
*Botryosphaeria ribis* var. *chromogena*

**Piscidia piscipula** (L.) Sarg. **Florida fishpoison-tree**
*Cercospora piscidiae*

**Pisonia aculeata** L. **devil's-claw pisonia**
*Aecidium pisoniae*

**Pistacia chinensis** Bunge **Chinese pistache**
*Helicobasidium mompa*
*Pileolaria terebinthi*

**Pistacia khinjuk** Stocks **Egyptian pistache**
*Polyporus hispidus*

**Pistacia lentiscus** L. **lentisk pistache**
*Fomes robiniae*
*F. robustus*
*F. torulosus*
*Phyllosticta lentisci* var. *maculicola*
*Septoria pistacina*

**Pistacia mexicana** H. B. K. **Mexican pistache**
*Pileolaria standleyi*

**Pistacia mutica** Fisch. & Mey. **Turk terebinth pistache**
*Fomes robiniae*

**Pistacia terebinthus** L. **terebinth pistache**
*Pileolaria terebinthi*
*Septoria pistacina*
*Uromyces terebinthi*

**Pistacia vera** L. **common pistache**
Virus, rosette
*Fomes robiniae*
*Rosellinia necatrix*
*Septoria pistacina*
*Uromyces terebinthi*

**Pistacia weinmannifolia** Poiss. **Yunnan pistache**
*Pileolaria terebinthi*

**Pithecellobium** sp. **blackbead**
*Ravenelia minuta*

**Pithecellobium divaricatum** Benth. ———
*Chaconia alutacea*

**Pithecellobium dulce** (Roxb.) Benth. **guamachil**
Virus, mosaic
*Clitocybe tabescens*
*Corticium salmonicolor*
*Microstroma pithecolobii*
*Ravenelia pithecolobii*

**Pithecellobium glomeratum** (DC.) Benth. ———
*Chaconia alutacea*
*Ravenelia amazonica*

**Pithecellobium lanceolatum** (Humb. & Bonpl.) Benth. ———
*Cercospora spilosticta*
*Ravenelia pithecolobii*

**Pithecellobium ligustrinum** (Jacq.) Klotzsch ———
*Cercospora bauhiniae*
*C. spilosticta*
*Phyllosticta pithecolobii*

**Pithecellobium recordii** (Britton & Rose) Standl. ———
*Chaconia alutacea*

**Pithecellobium saman** (Jacq.) Benth. **rain tree**
*Cercospora samaneae*
*Fomes annularis*
*Microstroma pithecolobii*

**Pithecellobium scutiferum** (Blanco) Benth.
*Colletotrichum gloeosporioides*
*Uredo raciborskii*

**Pithecellobium tortum** Mart. ———
*Ravenelia pithecolobii*

**Pithecellobium unguis-cati** (L.) Benth. **catclaw blackbead**
*Colletotrichum gloeosporioides*
*Pestalotia funerea*
*Phyllosticta pithecolobii*
*Ravenelia pithecolobii*

**Pittosporum** sp. ———
*Armillaria mellea*

**Pittosporum clementis** Merr. ———
*Asterina escharoides*

**Pittosporum pentandrum** Merr. ———
*Asterina densa*

**Pittosporum ramiflorum** Miq. ———
*Asterina escharoides*

**Pittosporum undulatum** Vent. **orangeberry pittosporum**
*Helicobasidium tanakae*
*Meliola amaniensis*

**Plagianthus betulinus** A. Cunn. **ribbonwood twinebark**
*Myxosporium hoheriae*

**Planchonia spectabilis** Merr. ———
*Lophodermium aleuritis*

**Platanus** sp. **sycamore**
*Calonectria pyrochroa*
*Fistulina hepatica*
*Fomes connatus*
*Nummularia regia*
*Polyporus hispidus*
*P. squamosus*

**Platanus ×acerifolia** (Ait.) Willd. **London planetree**
*Gnomonia veneta*
*Mycosphaerella platanifolia*

**Platanus occidentalis** L. **American sycamore**
*Calonectria pyrochroa*
*Gnomonia veneta*
*Microstroma platani*

**Platanus orientalis** L. **oriental planetree**
*Colletotrichum dematium*
*Fomes ulmarius*
*Gnomonia veneta*
*Helicobasidium mompa*
*Mycosphaerella platanifolia*
*Nectria ditissima*
*Phytophthora cinnamomi*
*Polyporus hispidus*
*P. sulphureus*

**Platanus orientalis var. insularis** A. DC. **island oriental planetree**
*Gnomonia veneta*

**Platycarya strobilacea** Sieb. & Zucc. ———
*Helicobasidium mompa*

**Platylobium formosum** Sm. ———
*Cronartium jacksoniae*

**Podocarpus sp.** ———
*Fomes ulmarius*
*Ganoderma applanatum*
**Podocarpus andinus** Poepp. **Andes podocarpus**
*Corynelia tropica*
**Podocarpus angustifolius** Griseb. ———
*Corynelia oreophila*
**Podocarpus coriaceus** L. C. Rich. ———
*Corynelia portoricensis*
**Podocarpus costalis** C. Presl ———
*Corynelia tropica*
**Podocarpus elongatus** (Ait.) L'Her. **fern podocarpus**
*Corynelia uberata*
*Tripospora tripos*
**Podocarpus falcatus** R. Br. **oteniqua yellowwood**
*Pestalotia funerea*
**Podocarpus gracilior** Pilger **musengera podocarpus**
*Corynelia uberata*
**Podocarpus lambertii** Klotzsch ———
*Corynelia brasiliensis*
**Podocarpus latifolius** R. Br. **real yellowwood**
*Corynelia uberata*
*Tripospora tripos*
**Podocarpus macrophyllus** (Thunb.) D. Don **yew podocarpus**
*Corynelia nipponensis*
**Podocarpus macrostachys** Parl. ———
*Corynelia oreophila*
**Podocarpus milanjianus** Rendle ———
*Corynelia uberata*
*Lagenulopsis bispora*
**Podocarpus nagi** (Thunb.) Zoll. & Mortiz **Japanese podocarpus**
*Corynelia uberata*
**Podocarpus purdieanus** Hook. ———
*Corynelia jamaicensis*
**Podocarpus salignus** D. Don **willowleaf podocarpus**
*Corynelia tropica*
**Podocarpus sellowii** Kotzsch ———
*Corynelia oreophila*
**Podocarpus spinulosus** R. Br. **spinyleaf podocarpus**
*Corynelia uberata*

**Pomaderris apetala** Labill. **virescent anzacwood**
*Uredo spyridii*
**Pongamia pinnata** (L.) Merr. **poonga-oil**
*Ganoderma lucidum*
**Populus sp.** **poplar**
*Agrobacterium tumefaciens*
*Pseudomonas rimaefaciens*
*Armillaria mellea*
*Botryodiplodia penzigii*
*Collybia velutipes*
*Corticium salmonicolor*
*Cytidia salicina*
*Daedalea unicolor*
*Dothichiza populea*
*Fomes conchatus*
*F. connatus*
*F. fomentarius*
*F. fraxineus*
*F. igniarius*
*F. ulmarius*
*Ganoderma applanatum*
*G. lucidum*
*Marssonina populi*
*Melampsora allii-populina*
*M. pinitorqua*
*M. populnea*
*Nectria ditissima*
*Pholiota destruens*
*Phyllosticta populina*
*Polyporus hispidus*
*P. litschaueri*
*P. sulphureus*
*P. zonatus*
*Stereum purpureum*
*Taphrina johansonii*
*Trametes trogii*
*Ustulina deusta*
*Valsa sordida*
**Populus alba** L. **white poplar**
*Agrobacterium tumefaciens*
*Bacillus populi*
*Micrococcus populi*
*Diplodia gongrogena*
*Dothichiza populea*
*Fomes connatus*
*F. fomentarius*
*F. igniarius*
*Ganoderma applanatum*
*Marssonina populi*
*Melampsora larici-tremulae*
*M. mercurialis-tremulae*

**Populus alba L.** **white poplar** (Continued)
*M. pinitorqua*
*M. populnea*
*M. rostrupii*
*Mycosphaerella togashiana*
*Nectria ditissima*
*Olpidium brassicae*
*Polyporus sulphureus*
*P. zonatus*
*Pseudopeziza populi-albae*
*Stereum purpureum*
*Taphrina rhizophora*
*Trametes trogii*
*Valsa sordida*
*Venturia populina*
*V. tremulae*

**Populus alba f. nivea** Schneid. ———
*Melampsora pulcherrima*

**Populus alba f. pyramidalis** Dipp. **bolleana poplar**
*Venturia tremulae*

**Populus angulata** Ait. **angletwig poplar**
*Micrococcus populi*
*Dothichiza populea*
*Taphrina populina*
*Valsa nivea*

**Populus balsamifera** L. **balsam poplar**
*Micrococcus populi*
*Dothichiza populea*
*Fomes connatus*
*F. igniarius*
*Melampsora allii-populina*
*M. larici-populina*
*M. larici-tremulae*
*M. mercurialis-tremulae*
*M. pinitorqua*
*M. populnea*
*Nectria coccinea*
*N. ditissima*
*Phyllosticta prominens*
*Physalospora gregaria*
*Pseudopeziza populi-albae*
*Taphrina populina*
*Valsa nivea*

**Populus balsamifera var. subcordata** Hylander ———
*Melampsora larici-populina*

**Populus ×berolinensis** Dipp. **Berlin poplar**
*Micrococcus populi*
*Dothichiza populea*
*Nectria coccinea*
*Pseudopeziza populi-albae*
*Taphrina populina*

**Populus ×canadensis** Moench **Carolina poplar**
*Micrococcus populi*
*Pseudomonas rimaefaciens*
*Armillaria mellea*
*Ascochyta populorum*
*Dothichiza populea*
*Fomes connatus*
*F. igniarius*
*Fusarium javanicum*
*Marssonina castagnei*
*Melampsora albertensis*
*M. allii-populina*
*M. larici-populina*
*M. mercurialis-tremulae*
*Mycosphaerella populi*
*M. populicola*
*Nectria cinnabarina*
*N. ditissima*
*N. galligena*
*Phyllosticta populina*
*Physalospora populina*
*Polyporus squamosus*
*P. sulphureus*
*Septotinia populiperda*
*Uncinula adunca*
*U. salicis*
*Venturia populina*
*V. tremulae*

**Populus canadensis var. charkowiensis** Schroed. ———
*Dothichiza populea*

**Populus ×canadensis f. erecta** (Selys-Longch.) Rehd. **pyramidal Carolina poplar**
*Pseudomonas rimaefaciens*
*Dothichiza populea*
*Nectria coccinea*

**Populus ×canadensis var. eugenei** (Simon-Louis) Schelle ———
*Micrococcus populi*
*Dothichiza populea*
*Melampsora larici-populina*
*Nectria coccinea*

**Populus ×canadensis f. gelrica** Houtz. ———
*Micrococcus populi*
*Pseudomonas rimaefaciens*
*Armillaria mellea*
*Dothichiza populea*
*Melampsora larici-populina*
*Nectria coccinea*

**Populus ×canadensis var. lloydii Henry** ———
*Dothichiza populea*

**Populus ×canadensis var. marilandica (Poir.) Rehd.** **longtip Carolina poplar**
*Micrococcus populi*
*Pseudomonas rimaefaciens*
*Dothichiza populea*
*Melampsora larici-populina*
*Nectria coccinea*
*Septatinia populiperda*

**Populus ×canadensis var. regenerata (Henry) Rehd.** **early Carolina poplar**
*Micrococcus populi*
*Dothichiza populea*
*Melampsora larici-populina*
*Nectria coccinea*

**Populus ×canadensis var. serotina (Hartig) Rehd.** **late Carolina poplar**
*Micrococcus populi*
*Pseudomonas rimaefaciens*
*Armillaria mellea*
*Dothichiza populea*
*Marssonina castagnei*
*Melampsora larici-populina*
*M. populnea*
*Mycosphaerella populi*
*Nectria coccinea*
*Phyllosticta populina*
*Valsa nivea*
*V. sordida*

**Populus ×canescens** (Ait.) Sm. **gray poplar**
*Micrococcus populi*
*Armillaria mellea*
*Dothichiza populea*
*Marssonina populi*
*Melampsora pinitorqua*
*M. populnea*
*Taphrina johansonii*
*Venturia tremulae*

**Populus ciliata** Wall. ———
*Melampsora ciliata*
*M. populnea*
*Taphrina populina*
*Uncinula salicis*

**Populus deltoides** Bartr. **eastern cottonwood**
*Micrococcus populi*
*Armillaria mellea*
*Cercospora populicola*
*Fomes fomentarius*
*Marssonina castagnei*
*M. populi*
*Melampsora larici-populina*
*M. populnea*
*Nectria coccinea*
*Pholiota aegerita*
*Phyllosticta populina*
*Septotinia populiperda*
*Valsa sordida*
*Venturia populina*

**Populus fremontii** S. Wats. **Fremont cottonwood**
*Nectria coccinea*

**Populus fremontii var. wislizenii** S. Wats. **Rio Grande cottonwood**
*Nectria coccinea*
*Valsa sordida*

**Populus ×generosa** Henry ———
*Micrococcus populi*
*Melampsora larici-populina*
*Taphrina populina*

**Populus hickeliana** Dode ———
*Melampsora pulcherrima*

**Populus koreana** Rehd. **Korean popla**
*Agrobacterium tumefaciens*
*Dothichiza populea*

**Populus lasiocarpa** Oliver **Chinese popla**
*Melampsora larici-populina*

**Populus laurifolia** Ledeb. **laurel popla**
*Dothichiza populea*
*Marssonina populi*
*Melampsora larici-populina*
*M. populnea*
*Mycosphaerella populorum*
*Nectria coccinea*
*Stereum purpureum*
*Taphrina populina*

**Populus maximowiczii** Henry **Japanese popla**
*Dothichiza populea*
*Helicobasidium mompa*
*Nectria coccinea*
*Pestalotia populi-nigrae*

**Populus nigra** L. **black popla**
*Bacillus populi*
*Micrococcus populi*
*Corticium salmonicolor*
*Diplodia gongrogena*
*Dothichiza populea*
*Fomes connatus*
*F. fomentarius*

**Populus nigra L.** **black poplar** (Continued)
*F. igniarius*
*Helicobasidium mompa*
*Marssonina castagnei*
*M. populi*
*Melampsora allii-populina*
*M. larici-populina*
*M. magnusiana*
*M. mercurialis-tremulae*
*M. populnea*
*Mycosphaerella populi*
*Nectria coccinea*
*N. galligena*
*Pestalotia populi-nigrae*
*Phyllosticta populina*
*Polyporus squamosus*
*Pseudopeziza populi-albae*
*Taphrina populina*
*Uncinula adunca*
*U. salicis*
*Uredo tholopsora*
*Valsa nivea*
*V. sordida*
*Venturia tremulae*

**Populus nigra var. betulifolia Torr.** **birchleaf black poplar**
*Nectria coccinea*

**Populus nigra var. elegans Bailey**

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*Micrococcus populi*
*Dothichiza populea*
*Nectria coccinea*

**Populus nigra var. italica Muenchh.** **Lombardy poplar**
*Micrococcus populi*
*Cercospora populina*
*Cytospora ambiens*
*Dothichiza populea*
*Marssonina castagnei*
*Melampsora larici-populina*
*M. populnea*
*Mycosphaerella populi*
*M. populorum*
*Nectria coccinea*
*Phyllosticta populina*
*Sphaceloma populi*
*Stereum purpureum*
*Taphrina populina*
*Uncinula adunca*
*U. salicis*
*Valsa sordida*
*Venturia populina*
*V. tremulae*

**Populus ×petrowskyana (Schroed.) Schneid.** **Petrowsky poplar**
*Dothichiza populea*

**Populus pruinosa Schrenk** **bloomy poplar**
*Melampsora pruinosae*

**Populus ×rasumowskiana (Schroed.) Dippel** **Razoumofsky poplar**
*Dothichiza populea*
*Taphrina populina*

**Populus ×robusta (Simon-Louis) Schneid.** **false Lombardy poplar**
*Micrococcus populi*
*Pseudomonas rimaefaciens*
*Dothichiza populea*
*Melampsora larici-populina*
*Nectria coccinea*
*Septotinia populiperda*
*Valsa sordida*
*Venturia populina*

**Populus rotundifolia Griff.** **roundleaf poplar**
*Melampsora rostrupii*

**Populus sieboldii Miq.** **Siebold aspen**
*Melampsora magnusiana*
*Taphrina johansonii*
*Uncinula salicis*

**Populus simonii Carr.** **Simon poplar**
*Agrobacterium tumefaciens*
*Dothichiza populea*
*Melampsora larici-populina*
*Mycosphaerella populorum*
*M. togashiana*
*Pestalotia populi-nigrae*
*Uncinula salicis*

**Populus simonii f. fastigiata Schneid.** **pyramidal Simon poplar**
*Dothichiza populea*

**Populus suaveolens Fisch.** **Mongolian poplar**
*Cladosporium herbarum*
*Dothichiza populea*
*Melampsora populnea*
*Nectria coccinea*
*Uncinula salicis*

**Populus szechuanica Schneid.** **Szechwan poplar**
*Agrobacterium tumefaciens*

**Populus tomentosa Carr.** **Chinese white poplar**
*Phyllactinia guttata*
*Uredo tholopsora*

**Populus tremula** L. **European aspen**
*Bacillus populi*
*Micrococcus populi*
*Armillaria mellea*
*Ascochyta tremulae*
*Daedalea unicolor*
*Diplodia gongrogena*
*Fomes annosus*
*F. connatus*
*F. fomentarius*
*F. igniarius*
*F. pomaceus*
*Hypoxylon mediterraneum*
*Linospora populina*
*Marssonina castagnei*
*Melampsora larici-tremulae*
*M. magnusiana*
*M. mercurialis-tremulae*
*M. pinitorqua*
*M. populnea*
*M. rostrupii*
*Mycosphaerella populi*
*Nectria ditissima*
*Poylporus dryadeus*
*P. dryophilus*
*P. hispidus*
*P. squamosus*
*P. sulphureus*
*P. zonatus*
*Septoria marmorata*
*Taphrina johansonii*
*T. rhizophora*
*Titaeosporina tremulae*
*Trametes trogii*
*Uncinula adunca*
*U. salicis*
*Valsa nivea*
*V. sordida*
*Venturia populina*
*V. tremulae*
*Verticillium albo-atrum*

**Populus tremula var. davidiana** (Dode) Schneid. ———
*Melampsora magnusiana*

**Populus tremula f. pendula** Kirchner **weeping European aspen**
*Taphrina johansonii*

**Populus tremuloides** Michx. **quaking aspen**
*Melampsora pinitorqua*

**Populus trichocarpa** Torr. & Gray **black cottonwood**
*Micrococcus populi*
*Dothichiza populea*
*Nectria coccinea*

**Populus tristis** Fisch. **browntwig poplar**
*Dothichiza populea*
*Nectria coccinea*

**Populus yunnanensis** Dode ———
*Melampsora larici-populina*

**Pouteria caimito** (Ruiz. & Pav.) Radlk. **abiu**
*Scopella lucumae*

**Pouteria campechiana** (H. B. K.) Baehni **canistel**
*Achrotelium lucumae*

**Pouteria macrocarpa** (Huber) Ducke ———
*Fomes lignosus*
*Polyporus zonalis*

**Pouteria multiflora** (A. DC.) Eyma ———
*Pestalotia lucumae*

**Prosopis** sp. **mesquite**
*Ascochyta prosopidicola*

**Prosopis campestris** Griseb. ———
*Uncinula prosopidis*
*Uredo prosopidicola*

**Prosopis juliflora** (Sw.) DC. **mesquite**
*Asterina prosopidis*

**Prosopis ruscifolia** Griseb. ———
*Colletotrichum gloeosporioides*

**Protium** sp. ———
*Aecidium cerrense*

**Pseudolarix amabilis** (Nels.) Rehd. **golden-larch**
*Phacidiopycnis pseudotsugae*

**Pseudotsuga menziesii** (Mirb.) Franco **Douglas-fir**
*Ascochyta piniperda*
*Fomes officinalis*
*F. pini*
*Pellicularia filamentosa*
*Pythium artotrogus*
*Sparassis ramosa*

**Ptaeroxylon obliquum** (Thunb.) Radlk. ———
*Fomes robiniae*
*Ganoderma lucidum*

**Pterocarpus** sp. **padauk**
*Ganoderma pseudoferreum*

**Pterocarpus indicus** Willd.
**India padauk**
*Aldona stella-nigra*
*Fomes lamaoensis*
*Ganoderma lucidum*
*Pellicularia rolfsii*
*Schizophyllum commune*

**Pterocarpus marsupium** Roxb.
**vengai padauk**
*Ganoderma lucidum*
*Mainsia pterocarpi*
*Maravalia pterocarpi*
*Polyporus gilvus*

**Pterocarpus soyauxii** Taub.
**African padauk**
*Fomes lignosus*

**Pterocarya** sp. **wingnut**
*Gnomonia leptostyla*

**Pterocarya fraxinifolia** (Lam.) Spach
**Caucasian wingnut**
*Gnomonia leptostyla*

**Pterocarya stenoptera** C. DC.
**Chinese wingnut**
*Phyllactinia guttata*

**Pterospermum acerifolium** Willd.
———
*Nectria haematococcus*

**Pycnanthus kombo** (Baill.) Warb.
**akomo pycnanthus**
*Asterina pycnanthi*

**Pyracantha** sp. **firethorn**
*Phyllactinia guttata*

**Pyracantha coccinea** Roem.
**scarlet firethorn**
*Fusicladium pirinum* var. *pyracanthae*

**Quercus** sp. **oak**
*Armillaria mellea*
*Corticium comedens*
*Cronartium conigenum*
*C. quercuum*
*Cryptochaete rufa*
*Cystospora ambiens*
*Daedalea quercina*
*D. unicolor*
*Diaporthe taleola*
*Fistulina hepatica*
*Fomes conchatus*
*F. fomentarius*
*F. igniarius*
*F. pinicola*
*F. ribis*
*F. robiniae*
*F. robustus*
*F. ulmarius*
*Ganoderma applanatum*
*G. lucidum*
*G. resinaceum*
*Hericium erinaceus*
*Hydnum cirrhatum*
*H. obrutans*
*Hymenochaete rubiginosa*
*Hysterographium fraxini*
*Irenina quercina*
*Irpex obliquus*
*Microsphaera alni*
*M. alni* var. *extensa*
*M. dentata*
*Mycosphaerella maculiformis*
*Nectria ditissima*
*Pellicularia filamentosa*
*Phytophthora cactorum*
*Pleurotus dryinus*
*Polyporus croceus*
*P. cuticularis*
*P. dryadeus*
*P. dryophilus*
*P. frondosus*
*P. giganteus*
*P. gilvus*
*P. hispidus*
*P. schweinitzii*
*P. squamosus*
*P. sulphureus*
*Rosellinia aquila*
*Septoria quercina*
*Stereum frustulatum*
*S. gausapatum*
*S. hirsutum*
*Trametes dickinsii*
*T. trogii*
*Uredo quercus*
*Ustulina deusta*
*Verticillium albo-atrum*

**Quercus acuta** Thunb.
**Japanese evergreen oak**
*Coccochora kusanoi*
*Coccochorella quercicola*
*Cronartium quercuum*
*Helicobasidium mompa*

**Quercus acutissima** Carruthers
**sawtooth oak**
*Cronartium quercuum*
*Helicobasidium mompa*
*Microsphaera alni*
*M. alni* var. *extensa*
*Taphrina caerulescens*

**Quercus aliena** Blume
**oriental white oak**
*Erysiphe japonica*
*Microsphaera alni*
*Phyllactinia guttata*

**Quercus baronii** Skan **Baron oak**
*Erysiphe japonica*

**Quercus brutia** Tenore ———
*Microsphaera alni* var. *extensa*

**Quercus canariensis** Willd.
**Canary oak**
*Taphrina caerulescens*

**Quercus cerris** L.
**European turkey oak**
*Actinopelte dryina*
*Microsphaera alni* var. *extensa*
*Poria obliqua*
*Rosellinia quercina*
*Taphrina caerulescens*

**Quercus coccifera** L. **Kermes oak**
*Microsphaera alni* var. *extensa*
*Taphrina caerulescens*

**Quercus coccinea** Muenchh.
**scarlet oak**
*Cronartium quercuum*
*Microsphaera alni* var. *extensa*

**Quercus delavayi** Franch. ———
*Sphaerotheca lanestris*

**Quercus dentata** Thunb. **daimyo oak**
*Cronartium quercuum*
*Endothia parasitica*
*Fusarium oxysporum* var. *aurantiacum*
*Helicobasidium tanakae*
*Microsphaera alni*
*M. alni* var. *extensa*
*Sphaerotheca lanestris*
*Taphrina caerulescens*

**Quercus dilatata** Lindl. ———
*Polyporus obtusus*

**Quercus fabri** Hance ———
*Cronartium quercuum*
*Uncinula septata*

**Quercus faginea** Lam. ———
*Hypoxylon mediterraneum*

**Quercus frainetto** Tenore **Italian oak**
*Microsphaera alni* var. *extensa*

**Quercus fruticosa** Brotero ———
*Endothia gyrosa*
*Taphrina caerulescens*

**Quercus gilva** Blume ———
*Helicobasidium mompa*
*Polyporus patouillardii*

**Quercus glandulifera** Blume
**glandbearing oak**
*Cronartium quercuum*
*Dothiorella phomiformis*
*Helicobasidium mompa*
*H. tanakae*
*Marssonina martini*
*Microsphaera alni*
*M. alni* var. *extensa*
*Microstroma album* var. *japonicum*
*Nectria galligena*
*Sphaerotheca lanestris*
*S. wrightii*
*Uncinula septata*
*Uredo castaneae*

**Quercus glauca** Thunb.
**blue Japanese oak**
*Cronartium quercuum*
*Erysiphe polygoni*
*Hadronema orbiculare*
*Microstroma album* var. *japonicum*
*Polyporus patouillardii*
*Sphaerotheca lanestris*
*S. wrightii*

**Quercus griffithii** Hook. f. & Thom.
———
*Cornartium quercuum*

**Quercus ilex** L. **holly oak**
*Ascochyta quercus*
*Cronartium quercuum*
*Endothia parasitica*
*Epidochium ilicinum*
*Gnomonia quercus-ilicis*
*Hypoxylon mediterraneum*
*Microsphaera alni* var. *extensa*
*Polyporus cuticularis*
*Stereum gausapatum*
*Taphrina kruchii*
*Uredo quercus*

**Quercus leucotrichophora** A. Camus
———
*Fomes annosus*
*Pestalotia clavispora*
*Sphaerotheca lanestris*

**Quercus lusitanica** Lam.
**Portuguese oak**
*Endothia gyrosa*
*Microsphaera alni* var. *extensa*

**Quercus mongolica** Fisch.
**Mongolian oak**
*Armillaria mellea*
*Cronartium quercuum*
*Daedalea quercina*

**Quercus mongolica** Fisch.
(Continued) **Mongolian oak**
*D. unicolor*
*Fomes fomentarius*
*F. igniarius*
*F. pomaceus*
*Ganoderma applanatum*
*Hericium erinaceus*
*Lophodermium punctiforme*
*Microsphaera alni* var. *extensa*
*Polyporus hispidus*
*P. litschaueri*
*Poria obliqua*
*Taphrina caerulescens*

**Quercus mongolica** var. **grosseserrata** (Blume) Rehd. & Wils.
**shallowcup Mongolian oak**
*Cronartium quercuum*
*Erysiphe japonica*
*Fomes annosus*
*Ganoderma applanatum*
*Microsphaera alni*
*M. alni* var. *extensa*
*Microstroma album* var. *japonicum*
*Sphaerotheca lanestris*
*S. wrightii*
*Taphrina caerulescens*

**Quercus myrsinaefolia** Blume ———
*Cronartium quercuum*
*Ganoderma applanatum*
*Helicobasidium mompa*
*Oidium japonicum*
*Sphaerotheca wrightii*

**Quercus neostuxbergii** Koidz. ———
*Cronartium quercuum*

**Quercus nigra** L. **water oak**
*Cronartium quercuum*

**Quercus oocarpa** Liebm. ———
*Cronartium conigenum*

**Quercus palustris** Meunchh. **pin oak**
*Cronartium quercuum*

**Quercus peduncularis** Née ———
*Cronartium conigenum*

**Quercus petraea** L. **durmast oak**
*Actinopelte dryina*
*Armillaria mellea*
*Ciborinia candolleana*
*Cronartium quercuum*
*Diaporthe taleola*
*Discula quercina*
*Endothia parasitica*
*Fistulina hepatica*
*Fomes connatus*
*F. igniarius*
*Lophodermium punctiforme*
*Microsphaera alni* var. *extensa*
*Poria obliqua*
*Rosellinia quercina*
*Taphrina caerulescens*

**Quercus pubescens** Willd.
**pubescent oak**
*Diaporthe taleola*
*Endothia parasitica*
*Lophodermium punctiforme*
*Microsphaera alni*
*M. alni* var. *extensa*
*Phyllosticta bresadoleana*
*Taphrina caerulescens*

**Quercus pyrenaica** Willd.
**Pyrenees oak**
*Endothia gyrosa*
*Microsphaera alni* var. *extensa*
*Phytophthora cinnamomi*

**Quercus reparida** Humb. & Bonpl.
———
*Microsphaera alni* var. *extensa*

**Quercus robur** L. **English oak**
*Actinopelte dryina*
*Armillaria mellea*
*Ciborinia candolleana*
*Corticium odoratum*
*Cylindrosporium kelloggii*
*Diaporthe taleola*
*Discula quercina*
*Endothia parasitica*
*Fistulina hepatica*
*Fomes connatus*
*F. igniarius*
*Lophodermium punctiforme*
*Microsphaera alni* var. *extensa*
*Nectria cinnabarina*
*N. ditissima*
*Phyllosticta associata*
*Phytophthora cambivora*
*P. cinnamomi*
*Polyporus dryadeus*
*P. hispidus*
*P. sulphureus*
*P. zonatus*
*Rosellinia quercina*
*Septoria quercina*
*Taphrina caerulescens*
*Uredo quercus*

**Quercus rubra** L. **northern red oak**
*Ciborinia candolleana*
*Lophodermium punctiforme*
*Nectria galligena*

**Quercus schottkyana** Rehd. & Wils. ———
*Erysiphe polygoni*

**Quercus semicarpifolia** Sm. ———
*Ganoderma lucidum*
*Polyporus obtusus*
*Trametes mollis*

**Quercus spicata** Sm. ———
*Ceratocystis piceae*

**Quercus stenophylla** Makino ———
*Ganoderma applanatum*

**Quercus suber** L. **cork oak**
*Armillaria mellea*
*Auricularia mesenterica*
*Daedalea quercina*
*Endothia gyrosa*
*E. parasitica*
*Fomes fomentarius*
*F. igniarius*
*Hypoxylon mediterraneum*
*H. sertatum*
*Microsphaera alni* var. *extensa*
*Nummularia regia*
*Phytophthora cinnamomi*
*Polyporus cuticularis*
*P. giganteus*
*Stereum hirsutum*
*Uredo quercus*

**Quercus suber** var. **occidentalis** (Gay) Arcang. **biennial cork oak**
*Daedalea quercina*
*Endothia parasitica*
*Fomes fomentarius*
*Polyporus cuticularis*
*P. giganteus*
*Stereum hirsutum*

**Quercus thalassica** Hance ———
*Uleomyces decipiens*

**Quercus variabilis** Blume **Oriental oak**
*Cronartium quercuum*
*Taphrina caerulescens*

**Quercus velutina** Lam. **black oak**
*Cronartium quercuum*

**Quercus virginiana** Mill. **live oak**
*Cronartium strobilinum*

**Randia** sp. **randia**
*Aecidium randiae*
*Irenina glabra*

**Randia aculeata** L. **box-briar**
*Aecidium abscedens*
*Elsinoë puertoricensis*

**Randia armata** (Sw.) DC. ———
*Angiopsora melaena*

**Randia brandisii** Gamble ———
*Dasturella divina*

**Randia candolleana** Wight & Arn. ———
*Dasturella divina*

**Randia dumetorum** Lam. **malabar randia**
*Dasturella divina*

**Randia longiflora** Lam. ———
*Endophyllum griffitsiae*

**Randia uliginosa** Poir. ———
*Hemileia thomasii*

**Rapanea** sp. **rapanea**
*Echidnodella cedralensis*
*Schiffnerula robusta*

**Rapanea ferruginea** (Ruiz & Pav.) Mez ———
*Schiffnerula monotheca*

**Rapanea melanophloeos** (R. Br.) Mez ———
*Corynelia fructicola*
*Coryneliospora fructicola*

**Rhaphiolepis umbellata** (Thunb.) Makino **Yeddo rhaphiolepis**
*Helicobasidium mompa*

**Rhopalostylis baueri** (Hook.) H. Wendl. & Drude **Bauer rhopalostylis**
*Phytophthora palmivora*

**Rhytidophyllum auriculatum** Hook. ———
*Asterina dilabens*

**Robinia** sp. **locust**
*Daedalea unicolor*
*Fomes connatus*
*F. robiniae*
*Gibberella lateritia*

**Robinia pseudoacacia** L. **black locust**
*Armillaria mellea*
*Erysiphe polygoni*
*Ganoderma lucidum*
*Pellicularia filamentosa*
*Phomopsis oncostoma*
*Phyllosticta robiniae*
*Phytophthora cactorum*

**Rondeletia cordata** Benth. **heartleaf rondeletia**
*Uredo rondeletiae*

**Rondeletia odorata** Jacq. ———
*Phyllosticta rondeletiae*

**Roupala montana** Aubl. **Trinidad roupala**
*Catacauma rhopalinum*

**Rourea glabra** H. B. K. ———
*Phyllachora panamensis*

**Roystonea regia** (H. B. K.) O. F. Cook **Cuban royalpalm**
*Xanthomonas vasculorum*
*Ceratocystis paradoxa*
*Phyllachora roystoneae*

**Sabal causiarum** (O. F. Cook) Beccari **Puerto Rico palmetto**
*Graphiola phoenicis*
*Phytophthora palmivora*

**Sageretia pycnophylla** Schneid. **woollytwig sageretia**
*Aecidium sageretiae*

**Salix** sp. **willow**
*Armillaria mellea*
*Collybia velutipes*
*Corticium bombycinum*
*Cytidia salicina*
*Cytospora ambiens*
*Daedalea unicolor*
*Fistulina hepatica*
*Fomes conchatus*
*F. fomentarius*
*F. igniarius*
*Fusamen amentorum*
*Ganoderma lucidum*
*Helicobasidium tanakae*
*Lentinus tigrinus*
*Leptosphaeria coniothyrium*
*Melampsora salicis-albae*
*Nectria galligena*
*Pholiota destruens*
*Phyllosticta salicicola*
*Physalospora salicis*
*Pleurotus dryinus*
*P. salignus*
*Polyporus squamosus*
*P. sulphureus*
*Rhytisma salicinum*
*Septoria salicicola*
*Stereum purpureum*
*Valsa sordida*
*Venturia chlorospora*

**Salix acmophylla** Boiss. ———
*Uredo salicis-acmophyllae*

**Salix acutifolia** Willd. **sharpleaf willow**
*Melampsora epitea*
*M. salicina*

**Salix alba** L. **white willow**
*Erwinia salicis*
*Pseudomonas saliciperda*
*Armillaria mellea*
*Cryptomyces maximus*
*Cytospora salicis*
*Fomes conchatus*
*F. connatus*
*F. igniarius*
*Ganoderma applanatum*
*Melampsora epitea*
*M. salicis-albae*
*Monostichella salicis*
*Myxofusicoccum salicis*
*Nectria ditissima*
*N. galligena*
*Phomopsis salicina*
*Physalospora miyabeana*
*Polyporus sulphureus*
*Scleroderris fuliginosa*
*Trametes suaveolens*
*Uncinula adunca*
*Venturia chlorospora*

**Salix alba** var. **calva** G. F. Mey. **cricket bat willow**
*Erwinia salicis*
*Armillaria mellea*
*Cryptomyces maximus*
*Marssonina salicicola*
*Valsa sordida*

**Salix alba** var. **vitellina** (L). Stokes ———
*Aposphaeria pulviscula*
*Discella carbonacea*
*Melampsora salicis-albae*
*M. vitellinae*
*Nectria ditissima*
*Physalospora miyabeana*
*P. salicis*
*Venturia chlorospora*

**Salix ×ambigua** Ehrh. **puzzle willow**
*Melampsora repentis*

**Salix amygdalina** L. **almondleaf willow**
*Pseudomonas saliciperda*
*Coniophora puteana*
*Melampsora amygdalinae*
*M. epitea*
*M. vitellinae*

*Nectria galligena*
*Phyllosticta salicicola*
*Physalospora gregaria*
*P. miyabeana*
*Scleroderris fuliginosa*
*Septoria salicicola*
*Uncinula adunca*
*Venturia chlorospora*

**Salix amygdalina** var. **glaucophylla** (Ser.) Seemen ———
*Melampsora chelidonii-pierotii*
*M. microsora*

**Salix arctica** Pall. **Arctic willow**
*Melampsora arctica*
*M. epitea*

**Salix atrocinerea** Brot. ———
*Melampsora epitea*
*M. evonymi-caprearum*
*M. larici-capraearum*

**Salix aurita** L. **round-ear willow**
*Cytidia salicina*
*Fusamen amentorum*
*Melampsora capraearum*
*M. epitea*
*M. larici-capraearum*
*M. larici-epitea*
*Rhytisma salicinum*
*Venturia chlorospora*

**Salix babylonica** L. **weeping willow**
*Armillaria mellea*
*Cercospora salicina*
*Cytospora salicis*
*Marssonina salicicola*
*Melampsora coleosporioides*
*M. epitea*
*Pleurotus ostreatus*
*Sphaceloma murrayae*
*Uncinula salicis*
*Venturia chlorospora*

**Salix bakko** Kimura ———
*Helicobasidium mompa*
*Melampsora larici-capraearum*
*Rhytisma salicinum*
*Uncinula salicis*

**Salix × blanda** Anderss. **Wisconsin weeping willow**
*Venturia chlorospora*

**Salix bonplandiana** H. B. K. **Bonpland willow**
*Melampsora paradoxa*
*M. ribesii-purpureae*

**Salix candida** Fluegge **sage willow**
*Cryptomyces maximus*

**Salix caprea** L. **goat willow**
*Armillaria mellea*
*Ascochyta translucens*
*Botryosphaeria ribis*
*Cytidia salicina*
*Daedalea unicolor*
*Fomes conchatus*
*F. igniarius*
*F. igniarius* var. *laevigatus*
*Fusamen deformans*
*Melampsora abieti-capraearum*
*M. capraearum*
*M. epitea*
*M. evonymi-caprearum*
*M. larici-capraearum*
*M. larici-epitea*
*M. salicina*
*Monostichella salicis*
*Phomopsis salicina*
*Rhytisma salicinum*
*Scleroderris fuliginosa*
*Septogloeum salicinum*
*Trametes suaveolens*
*Uncinula adunca*
*U. salicis*
*Venturia chlorospora*

**Salix cinerea** L. **gray willow**
*Fomes connatus*
*Fusamen amentorum*
*Marssonina kriegeriana*
*Melampsora abieti-capraearum*
*M. capraearum*
*M. evonymi-caprearum*
*M. larici-capraearum*
*M. larici-epitea*
*M. salicina*
*Phyllosticta salicicola*
*Rhytisma salicinum*
*Trametes suaveolens*
*Venturia chlorospora*

**Salix cinerea** var. **latifolia** A. & E. G. Camus ———
*Uncinula salicis*

**Salix cuneata** Turcz. ———
*Melampsora epitea*

**Salix daphnoides** Vill. **daphne willow**
*Cryptomyces maximus*
*Melampsora epitea*
*M. larici-capraearum*
*M. larici-epitea*
*M. salicina*
*Scleroderris fuliginosa*
*Uncinula salicis*

**Salix daphnoides** var. **pomeranica** (Willd.) Koch
**Pomeranian daphne willow**
*Melampsora salicina*

**Salix dasyclados** Wimm.
**woollytwig willow**
*Fusamen amentorum*

**Salix delavayana** Hand.-Mazz. ———
*Melampsora larici-epitea*

**Salix elaeagnos** Scop.
**elaeagnus willow**
*Melampsora epitea*
*M. evonymi-incanae*

**Salix formosa** Willd. ———
*Lophodermium versicolor*
*Melampsora epitea*
*Rhytisma salicinum*

**Salix fragilis** L. **crack willow**
*Asteroma salicis*
*Cryptomyces maximus*
*Cytospora salicis*
*Fomes connatus*
*F. igniarius*
*Macrophoma salicis*
*Marssonina salicicola*
*Melampsora allii-fragilis*
*M. vitellinae*
*Monostichella salicis*
*Scleroderris fuliginosa*
*Sphaceloma murrayae*
*Venturia chlorospora*

**Salix fragilis** var. **decipiens** (Hoffm.) Koch ———
*Venturia chlorospora*

**Salix fuscescens** Ands. × **sachalinensis** F. Schmidt ———
*Melampsora epitea*

**Salix gilgiana** Seem. **Gilg willow**
*Rhytisma salicinum*

**Salix glauca** L. **grayleaf willow**
*Lophodermium versicolor*
*Melampsora epitea*
*Ramulaspera salicina*
*Rhytisma salicinum*

**Salix glauca** × **myrsinites** L. ———
*Melampsora epitea*

**Salix gracilistyla** Miq.
**big-catkin willow**
*Uncinula salicis*

**Salix grandifolia** Ser. **bigleaf willow**
*Fomes connatus*

**Salix hastata** L. **halberd willow**
*Lophodermium versicolor*
*Melampsora epitea*
*M. larici-epitea*
*M. salicina*
*Ramulaspera salicina*
*Rhytisma salicinum*

**Salix herbacea** L. **pygmy willow**
*Lophodermium versicolor*
*Melampsora arctica*
*M. epitea*
*Rhytisma salicinum*

**Salix** ×**heteromera** Hand.-Mazz. ———
*Melampsora coleosporioides*

**Salix hultenii** Flod. ———
*Melampsora epitea*

**Salix humboldtiana** Willd.
**Humboldt willow**
*Cercospora salicina*
*Melampsora abieti-caprearum*
*Ramularia rosea*

**Salix humboldtiana** var. **stipulacea** (Mart. & Gal.) Schneid. ———
*Melampsora paradoxa*

**Salix integra** Thunb. ———
*Melampsora humilis*
*Rhytisma salicinum*
*Uncinula salicis*

**Salix japonica** Thunb. ———
*Venturia chlorospora*

**Salix lanata** L. **woolly willow**
*Melampsora epitea*
*Ramulaspera salicina*

**Salix lanata** × **hastata** L. ———
*Septoria salicicola*

**Salix lapponum** L. **Lapland willow**
*Melampsora epitea*
*M. lapponum*

**Salix lapponum** × **herbacea** L. ———
*Ramulaspera salicina*

**Salix latifolia** Forb. **broadleaf willow**
*Melampsora larici-epitea*
*M. ribesii-purpureae*

**Salix longiflora** Anderss. ———
*Melampsora larici-epitea*
*M. yezoensis*

**Salix macrolepis** Turcz. ———
*Melampsora epitea*

**Salix matsudana** Koidz.
**Hankow willow**
*Cercospora salicina*
*Melampsora coleosporioides*

**Salix mesneyi** Hance ———
*Melampsora coleosporioides*

**Salix meyeriana** Rostk. **Meyer willow**
*Venturia chlorospora*

**Salix miyabeana** Seem. **Miyabe willow**
*Melampsora larici-epitea*
**Salix ×mollissima** Ehrh. **soft willow**
*Melampsora epitea*
*M. larici-epitea*
*M. salicina*
*Venturia chlorospora*
**Salix ×multinervis** Doell **Japanese pussy willow**
*Melampsora vitellinae*
*Uncinula salicis*
**Salix myrsinifolia** Salisb. ———
*Fomes igniarius*
*Melampsora epitea*
*M. larici-epitea*
*Ocellaria ocellata*
*Rhytisma salicinum*
*Venturia chlorospora*
**Salix myrsinites** L. **myrtle willow**
*Melampsora epitea*
*Rhytisma salicinum*
**Salix myrtilloides** L. **whortleberry willow**
*Melampsora epitea*
**Salix oxycarpa** Anderss. ———
*Melampsora larici-epitea*
**Salix parallelinervis** Flod. ———
*Melampsora epitea*
**Salix parallelinervis** Flod. × **sachalinensis** F. Schmidt ———
*Melampsora epitea*
**Salix pentandra** L. **laurel willow**
*Cytospora salicis*
*Fomes igniarius*
*Melampsora allii-fragilis*
*M. larici-pentandrae*
*M. salicina*
*Trametes suaveolens*
*Venturia chlorospora*
**Salix pentandra** var. **pseudopentandra** (L.) Flod. ———
*Melampsora larici-pentandrae*
**Salix phanera** Schneid. ———
*Uncinula salicis*
**Salix phlomoides** Bieb. ———
*Melampsora capraearum*
*Rhytisma silicinum*
**Salix phylicifolia** L. **tealeaf willow**
*Cryptomyces maximus*
*Melampsora epitea*
*Rhytisma salicinum*
**Salix pierotii** Miq. **Pierrot willow**
*Melampsora chelidonii-pierotii*
**Salix polaris** Wahlenb. **poplar willow**
*Melampsora arctica*
*M. epitea*
*Rhytisma salicinum*
**Salix pseudopolaris** Flod. ———
*Melampsora epitea*
**Salix psilostigma** Anderss. ———
*Melampsora larici-epitea*
**Salix purpurea** L. **purple-osier willow**
*Bacillus harai*
*Pseudomonas saliciperda*
*Cryptomyces maximus*
*Cytospora salicis*
*Marssonina salicicola*
*Melampsora abieti-capraearum*
*M. epitea*
*M. humilis*
*M. larici-epitea*
*M. ribesii-purpureae*
*M. salicina*
*Nectria galligena*
*Physalospora miyabeana*
*Rhytisma salicinum*
*Uncinula salicis*
*Venturia chlorospora*
**Salix purpurea** f. **gracilis** (Gren. & Godr.) Schneid. **slender purple-osier willow**
*Rhytisma salicinum*
**Salix purpurea** f. **pendula** Dipp. ———
*Helicobasidium purpureum*
**Salix pyrolaefolia** Ledeb. **shinleaf willow**
*Rhytisma salicinum*
*Uncinula adunca*
**Salix reinii** Franch. & Sav. ———
*Melampsora arctica*
*Rhytisma salicinum*
**Salix repens** L. **creeping willow**
*Cryptomyces maximus*
*Fusamen amentorum*
*Melampsora capraearum*
*M. epitea*
*M. repentis*
*Rhytisma salicinum*
*Uncinula adunca*
**Salix repens** var. **rosmarinifolia** (L.) Wimm. & Grab. **rosemary creeping willow**
*Melampsora capraearum*
*M. repentis*

**Salix reptans** Rupr. ——
*Melampsora arctica*
**Salix reticulata** L. **netleaf willow**
*Melampsora arctica*
*M. capraearum*
*M. epitea*
*Rhytisma salicinum*
**Salix reticulata var. subrotunda** A. & E. G. Camus **round netleaf willow**
*Melampsora epitea*
**Salix retusa** L. **notchleaf willow**
*Lophodermium versicolor*
*Melampsora arctica*
**Salix rotundifolia** Trautv. **least willow**
*Melampsora arctica*
**Salix rubens** Schrank **whitecrack willow**
*Erwinia salicis*
*Melampsora salicis-albae*
*Monostichella salicis*
*Polyporus sulphureus*
*Scleroderris fuliginosa*
*Uncinula adunca*
**Salix rubens var. viridis** (Fries) Rehd. ——
*Polyporus squamosus*
**Salix ×rubra** Huds. **red willow**
*Marssonina kriegeriana*
*Melampsora epitea*
*Physalospora salicis*
**Salix sachalinensis** F. Schmidt **Sakhalin willow**
*Melampsora epitea*
*M. larici-epitea*
**Salix shikokiana** Makino ——
*Melampsora epiphylla*
**Salix ×smithiana** Willd. **Smith willow**
*Cryptomyces maximus*
*Fusamen amentorum*
*Melampsora epitea*
*M. larici-capraearum*
*Rhytisma salicinum*
*Scleroderris fuliginosa*
*Uncinula salicis*
**Salix stipularis** Sm. **stipule willow**
*Uncinula salicis*
**Salix taxifolia** H. B. K. **yewleaf willow**
*Melampsora abieti-capraearum*
**Salix taxifolia var. microphylla** (Schlecht. & Cham.) Schneid. ——
*Melampsora arctica*
**Salix tetrasperma** Roxb. ——
*Marssonina kriegeriana*
*Melampsora larici-capraearum*
*Rhytisma salicinum*
**Salix undulata** Ehrh. **wavyleaf willow**
*Melampsora salicina*
*Scleroderris fuliginosa*
**Salix urbaniana** Seemen ——
*Ganoderma applanatum*
*Uncinula salicis*
**Salix viminalis** L. **basket willow**
*Pseudomonas saliciperda*
*Cytospora salicis*
*Discella carbonacea*
*Fomes igniarius*
*Fusamen amentorum*
*Melampsora abieti-capraearum*
*M. epitea*
*M. larici-epitea*
*M. ribesii-viminalis*
*Phomopsis salicina*
*Physalospora gregaria*
*P. miyabeana*
*P. salicis*
*Septogloeum salicinum*
*Sphaceloma murrayae*
*Uncinula salicis*
*Venturia chlorospora*
**Salix vulpina** Anderss. ——
*Helicobasidium mompa*
*Rhytisma salicinum*
*Uncinula salicis*
**Salix wallichiana** Anderss. **Wallich willow**
*Uncinula salicis*
**Salix wilsonii** Seemen ——
*Melampsora capraearum*
*M. ribesii-purpureae*
**Salix xerophila** Flod. ——
*Melampsora epitea*
**Santalum album** L. **white sandalwood**
Virus, leaf-curl mosaic
Virus, Sandal spike
*Asterina congesta*
*Phytophthora palmivora*
*Sphaceloma santali*
**Sapindus bifoliatus** Hiern. ——
*Skierka petchii*

**Sapindus mukorossii** Gaertn. **Chinese soapberry**
*Cercospora sapindicola*
*Helicobasidium mompa*

**Sapindus saponaria** L. **wingleaf soapberry**
*Cercospora sapindi*

**Sapindus trifoliatus** L. **threeleaf soapberry**
*Cercospora sapindi-emarginati*

**Sapium aucuparium** Jacq. var. **salicifolium** H. B. K. ———
*Cercospora sapiicola*

**Sapium japonicum** (Sieb. & Zucc.) Pax & K. Hoffm. **Japanese sapium**
*Helicobasidium mompa*

**Saurauja oldhamii** Hemsl. ———
*Fomes lamaoensis*

**Schinus dependens** Orteg. **Peru peppertree**
*Trametes trogii*

**Schinus molle** L. **peppertree**
*Botryosphaeria ribis* var. *chromogena*
*Ganoderma applanatum*
*Myxosporella schini*
*Phytophthora cactorum*
*P. parasitica*

**Schleichera oleosa** (Lour.) Merr. **Malay lactree**
*Corticium salmonicolor*
*Rosellinia bunodes*

**Schotia latifolia** Jacq. **elephant-hedge kafirbean-tree**
*Fomes robiniae*

**Schrebera swietenioides** Roxb. **muccaady schrebera**
*Cercospora schreberae*

**Sciadopitys verticillata** (Thunb.) Sieb. & Zucc. **umbrella-pine**
*Fusarium oxysporum* var. *aurantiacum*

**Sclerocarya caffra** Sond. **kafir marvalonut**
*Cercospora caffra*

**Scolopia mundtii** (Arn.) Warb. ———
*Fomes robiniae*
*Polyporus patouillardii*

**Scutia myrtina** (Burm. f.) Kurz ———
*Elsinoë bitancourtiana*

**Securinega suffruticosa** (Pall.) Rehd. ———
*Cercospora securinegae*
*Nothoravenelia japonica*

**Semiarundinaria fastuosa** (Mitf.) Makino ———
*Puccinia kusanoi*

**Shorea** sp. **shorea**
*Corticium salmonicolor*

**Shorea javanica** Koord. & Valet. ———
*Agrobacterium tumefaciens*

**Shorea polysperma** (Blanco) Merr. **tangile**
*Asterinella luzonensis*

**Shorea robusta** Gaertn. f. **sal**
*Corticium repens*
*Fomes badius*
*F. caryophylli*
*F. fastuosus*
*F. lamaoensis*
*F. ribis*
*F. robiniae*
*F. senex*
*F. tricolor*
*Ganoderma applanatum*
*G. lucidum*
*Hexagonia sulcata*
*Hymenochaete rubiginosa*
*Macrophoma shoreae*
*Polyporus adustus*
*P. gilvus*
*P. shoreae*
*Schizophyllum commune*
*Trametes cubensis*
*T. incerta*
*Xylaria polymorpha*

**Shorea talura** Roxb. ———
*Asterina pleuriporus*
*Cercospora shoreae*

**Sickingia erythroxylon** Willd. ———
*Angiopsora venezuelana*

**Sideroxylon** sp. ———
*Asterina diaphorella*

**Sideroxylon angustifolium** Merr. ———
*Asterina laxiuscula*

**Sideroxylon apoensis** Elmer ———
*Asterina laxiuscula*

**Sideroxylon ferrugineum** Hook. & Arn. ———
*Asterina diaphorella*
*A. laxiuscula*

**Sideroxylon foetidissimum** Jacq. **false-mastic**
*Puccinia johnstonii*
**Simaba** sp. ———
*Irene glabroides*
**Sindora supa** Merr. **supa sindora**
*Pellicularia rolfsii*
**Sophora** sp. ———
*Polyporus hispidus*
**Sophora angustifolia** Sieb. & Zucc. ———
*Uromyces sophorae-flavescentis*
**Sophora davidii** (Franch.) Skeels **vetchleaf sophora**
*Aecidium anningense*
**Sophora flavescens** Ait. ———
*Botrytis cinerea*
*Sclerotinia sclerotiorum*
*Uromyces sophorae-flavescentis*
**Sophora japonica** L. **Chinese scholartree**
*Polyporus hispidus*
*Stemphylium sarciniforme*
*Uncinula sinensis*
*Uromyces truncicola*
*Verticillium albo-atrum*
**Sorbus** sp. **mountain-ash**
*Fomes igniarius*
*Leptosphaeria sorbi*
*Polyporus hispidus*
*P. squamosus*
*Venturia aucupariae*
**Sorbus alnifolia** (Sieb. & Zucc.) K. Koch **densehead mountain-ash**
*Gymnosporangium nipponicum*
*G. solenoides*
*Taphrina piri*
**Sorbus americana** Marsh **American mountain-ash**
*Gymnosporangium cornutum*
**Sorbus aria** (L.) Crantz **whitebeam mountain-ash**
*Cercospora ariae*
*Gymnosporangium clavariiforme*
*G. solenoides*
*G. tremelloides*
*Nectria galligena*
*Ochropsora ariae*
**Sorbus aucuparia** L. **European mountain-ash**
*Armillaria mellea*
*Cercospora ariae*
*Cucurbitaria sorbi*
*Daedalea unicolor*
*Fomes annosus*
*F. connatus*
*Gymnosporangium cornutum*
*G. nipponicum*
*G. tremelloides*
*Hendersonia sorbi*
*Hericium coralloides*
*Lophodermium hysterioides*
*L. punctiforme*
*L. tumidum*
*Nectria ditissima*
*Ochropsora ariae*
*Phyllactinia guttata*
*Podosphaera oxyacanthae*
*Polyporus dryophilus*
*P. squamosus*
*Poria obliqua*
*Stereum purpureum*
*Venturia aucupariae*
**Sorbus chamaemespilus** (L.) Crantz ———
*Gymnosporangium tremelloides*
**Sorbus cuspidata** (Spach) Hedl. ———
*Polyporus squamosus*
**Sorbus ×hybrida** L. **oakleaf mountain-ash**
*Gymnosporangium cornutum*
*Melanophora sorbi*
*Polyporus zonatus*
**Sorbus intermedia** (Ehrh.) Pers. **Swedish mountain-ash**
*Fomes annosus*
*Gymnosporangium clavariiforme*
**Sorbus intermedia** var. **arranensis** (Hedl.) Rehd. ———
*Gymnosporangium cornutum*
**Sorbus kamtschatcensis** Komarov. ———
*Gymnosporangium cornutum*
**Sorbus sambucifolia** (Cham. & Schlecht.) Roem. **Siberian mountain-ash**
*Gymnosporangium cornutum*
**Sorbus torminalis** (L.) Crantz **checkertree mountain-ash**
*Gymnosporangium torminali-juniperinum*
*Ochropsora ariae*
**Spathodea campanulata** Beauv. **bell flambeau-tree**
*Armillaria mellea*

*Calonectria rigidiuscula*
*Pellicularia rolfsii*
*Poria hypobrunnea*
**Sterculia rhinopetala** K. Schum.
———
Virus, swollen shoot
*Calonectria rigidiuscula*
**Sterculia tragacantha** Lindl. ———
Virus, swollen shoot
*Calonectria rigidiuscula*
**Stereospermum acuminatissimum** K. Schum. **padritree**
*Phragmidiella africana*
**Stereospermum chelonoides** (L. f.) DC.
———
*Uredo stereospermi*
**Stereospermum junthianum** Cham.
———
*Phragmidiella africana*
**Stereospermum suaveolens** (Roxb.) DC. ———
*Mehtamyces stereospermi*
**Stranvaesia nussia** (D. Don) Decne. **Himalayan stransvaesia**
*Aecidium stranvaesiae*
**Styrax benzoin** Dry. **Sumatra snowbell**
*Fomes lamaoensis*
**Styrax japonica** Sieb. & Zucc. **Japanese snowbell**
*Cercospora fukuokaensis*
*Microsphaera alni*
*Pucciniastrum styracinum*
**Styrax leprosa** Hook. & Arn. ———
*Asterostomella dispar*
**Styrax obassia** Sieb. & Zucc. **fragrant snowbell**
*Daedalea unicolor*
*Pucciniastrum styracinum*
**Styrax shiraiana** Makino **strigila snowbell**
*Helicobasidium mompa*
**Swietenia macrophylla** King **Honduras mahogany**
*Corticium salmonicolor*
*Fomes lamaoensis*
*Sclerotium delphinii*
**Swietenia mahagoni** Jacq. **West Indies mahogany**
*Cercospora subsessilis*
*Corticium salmonicolor*
*Fomes lamaoensis*
*Pellicularia rolfsii*
*Phyllosticta swietenia*

**Symplocos** sp. **sweetleaf**
*Asterina indica*
**Symplocos theaefolia** D. Don ———
*Exobasidium indicum*
**Syncarpia glomerulifera** (Sm.) Niedenzu **Burramurra turpentine-myrtle**
*Armillaria mellea*
**Tabebuia** sp. ———
*Prospodium suppressum*
**Tabebuia haemantha** (Bert.) DC.
———
*Mycosphaerella tabebuiae*
**Tabebuia heterophylla** (DC.) Britton
———
*Physalospora tabebuiae*
**Tabebuia rosea** (Bertol.) DC. ———
*Aecidium simplicius*
*Cercospora jahnii*
*Glomerella cingulata*
**Tabebuia serratifolia** (Vahl) Nicholson **yellowpoui**
*Cercospora stenolobiicola*
**Tabernaemontana** sp. **tabernaemontana**
*Cercospora tabernaemontanae*
*Puccinia engleriana*
**Tabernaemontana amygdalifolia** Jacq.
———
*Aecidium ochraceum*
**Tabernaemontana coronaria** Willd. **crape-jasmine**
*Corticium salmonicolor*
**Tabernaemontana divaricata** R. Br.
———
*Uredo manilensis*
**Tabernaemontana heyneana** Wall.
———
*Puccinia engleriana*
**Tabernaemontana holstii** K. Schum.
———
*Dothiorella holstii*
**Tabernaemontana pandacaqui** Poir.
———
*Cercospora tabernaemontanae*
*Fomes pectinatus*
*Puccinia engleriana*
**Tabernaemontana polygama** Blanco
———
*Uredo manilensis*
**Tabernaemontana sphaerocarpa** Blume
———
*Fomes pectinatus*

**Talauma villariana** Rolfe ——
*Meliola diplochaete*

**Talisia esculenta** (St. Hil.) Radlk. ——
*Elsinoë talisiae*

**Tamarindus indica** L. **tamarind**
*Corticium salmonicolor*
*Fomes annularis*
*Ganoderma lucidum*

**Tamarix gallica** L. **French tamarisk**
*Botryosphaeria tamaricis*

**Taxus** sp. **yew**
*Cryptocline taxicola*
*Polyporus squamosus*

**Taxus baccata** L. **English yew**
*Cryptocline taxicola*
*Ganoderma lucidum*
*Physalospora gregaria* var. *foliorum*
*P. gregaria* f. *taxi*
*Phytophthora cinnamomi*
*Polyporus squamosus*
*P. sulphureus*
*Sphaerulina taxi*

**Tectona grandis** L. f. **teak**
*Pseudomonas solanacearum*
*P. tectonae*
*Xanthomonas melhusi*
*Armillaria mellea*
*Cercospora tectonae*
*Chaconia tectonae*
*Corticium salmonicolor*
*Fomes lamaoensis*
*Helicobasidium compactum*
*Nectria haematococcus*
*Olivea tectonae*
*Phyllactinia guttata*
*Phyllosticta tectonae*
*Uncinula tectonae*
*Uredo tectonae*
*Xylaria thwaitesii*

**Terminalia** sp. **terminalia**
*Armillaria mellea*

**Terminalia arjuna** Wight & Arn. **Arjan terminalia**
*Armillaria mellea*

**Terminalia baumii** Engl. & Gilg ——
*Phyllosticta terminaliae*

**Terminalia bellerica** Roxb. **belleric terminalia**
*Aecidium terminaliae*
*Corticium repens*
*Fomes robiniae*
*Sphaceloma terminaliae*

**Terminalia catappa** L. **tropical Indian-almond**
*Cercospora catappae*
*C. geraisensis*
*Pellicularia rolfsii*
*Polyporus gilvus*
*Ramularia catappae*
*Sphaceloma terminaliae*

**Terminalia hylobates** Eichl. ——
*Uredo terminaliae*

**Terminalia tomentosa** Wight & Arn. **woolly terminalia**
*Corticium repens*
*Fomes robiniae*

**Tetrapanax papyriferus** (Hook.) K. Koch **ricepaper-plant**
*Aecidium fatsiae*

**Tetrazygia elaeagnoides** (Sw.) DC. ——
*Asterina dilabens*
*Bagnisiopsis peribebuyensis*

**Theobroma bicolor** Humb. & Bonpl. **Nicaragua chocolate-tree**
Virus, swollen shoot
*Marasmius perniciosus*

**Theobroma cacao** L. **cacao**
Virus, red mottle
Virus, swollen shoot
*Agrobacterium tumefaciens*
*Armillaria mellea*
*Calonectria rigidiuscula*
*Calostilbe striispora*
*Ceratocystis fimbriata*
*C. paradoxa*
*Choanephora cucurbitarum*
*Colletotrichum gloeosporioides*
*Corticium salmonicolor*
*Eutypa erumpens*
*Fomes lamaoensis*
*F. lignosus*
*Fusarium javanicum*
*Ganoderma pseudoferreum*
*Glomerella cingulata*
*Helicobasidium longisporium*
*Irenopsis guianensis*
*Macrophomina phaseoli*
*Marasmius equicrinis*
*M. perniciosus*
*M. scandens*
*Meliola guianensis*
*M. theobromae*
*Pellicularia filamentosa*
*P. koleroga*
*Phyllosticta theobromae*

*Physalospora rhodina*
*Phytophthora cactorum*
*P. palmivora*
*Polyporus zonalis*
*Poria hypobrunnea*
*Ramularia necator*
*Rosellinia arcuata*
*R. bunodes*
*R. paraguayensis*
*R. pepo*
*Thyridaria tarda*
*Trachysphaera fructigena*
*Ustulina deusta*

**Theobroma grandiflora** (Willd.) K. Schum. ——
Virus, swollen shoot
*Marasmius perniciosus*

**Theobroma pentagona** Bernoulli ——
*Marasmius perniciosus*

**Thouinidium decandrum** (Humb. & Bonpl.) Radlk. ——
*Skierka holwayi*

**Thuja** sp. **aborvitae**
*Phomopsis juniperovora*
*Phytophthora cinnamomi*

**Thuja koraiensis** Nakai **Korean arborvitae**
*Armillaria mellea*

**Thuja occidentalis** L. **northern white-cedar**
*Ceratocystis piceae*

**Thuja orientalis** L. **oriental arborvitae**
*Cladosporium herbarum*
*Diplodia pinea*
*Fusarium oxysporum* var. *aurantiacum*
*Pestalotia funerea*

**Thuja standishii** (Gord.) Carr. **Japanese arborvitae**
*Caeoma deformans*
*Pestalotia funerea*

**Thujopsis dolobrata** (L. f.) Sieb. & Zucc. **hiba false arborvitae**
*Caeoma deformans*
*Fomes robustus*
*Hysterium thujopsidis*

**Tilia** sp. **basswood; linden**
*Cercospora microsora*
*Collybia velutipes*
*Discula quercina*
*Fomes connatus*
*F. fomentarius*
*Ganoderma applanatum*
*Mycosphaerella maculiformis*
*Nectria ditissima*
*N. galligena*
*Phyllosticta tiliae*
*Polyporus squamosus*
*Steccherinum septentrionale*

**Tilia americana** L. **American basswood**
Virus, little leaf

**Tilia amurensis** Rupr. **Amur linden**
*Pucciniastrum tiliae*

**Tilia cordata** Mill. **littleleaf linden**
Virus, little leaf
Virus, mosaic
*Asteroma tiliae*
*Caliciopsis tiliae*
*Cercospora microsora*
*Discula quercina*
*Fomes connatus*
*Nectria ditissima*
*Phyllosticta tiliae*
*Placosphaeria tiliae*
*Pyrenochaeta filarszkyi*
*Verticillium albo-atrum*

**Tilia dasystyla** Stev. **Caucasian linden**
*Ascochyta tiliae*
*Cercospora microsora*

**Tilia ×euchlora** K. Koch **Crimean linden**
*Verticillium albo-atrum*

**Tilia ×europaea** L. **European linden**
*Cercospora microsora*
*Discula quercina*
*Elsinoë tiliae*
*Fomes igniarius*
*Ganoderma applanatum*
*Nectria cinnabarina*
*N. coccinea*
*Phyllosticta tiliae*
*Polyporus dryadeus*
*P. squamosus*
*Ustulina deusta*

**Tilia japonica** (Miq.) Simonk. **Japanese linden**
*Ganoderma applanatum*
*Pucciniastrum tiliae*

**Tilia mandshurica** Rupr. & Maxim. **Manchurian linden**
*Pucciniastrum tiliae*

**Tilia platyphyllos** Scop. **bigleaf linden**
Virus, little leaf
*Ascochyta tiliae*
*Cercospora microsora*
*Nectria cinnabarina*
*Phyllosticta tiliae*

**Tilia tomentosa** Moench **silver linden**
*Cercospora microsora*
*Verticillium albo-atrum*

**Tilia tuan** Szyszyl. **tuan linden**
*Pucciniastrum tiliae*

**Tipuana tipu** (Benth.) Kuntze **common tipu-tree**
*Ganoderma lucidum*

**Toona ciliata** M. Roem. **Burma toon**
*Armillaria mellea*
*Ganoderma applanatum*
*G. lucidum*
*Polyporus zonalis*

**Toona serrata** M. Roem. **Himalaya toon**
*Nyssopsora cedrelae*
*Uromyces cedrelae*

**Toona sinensis** M. Roem. **Chinese toon**
*Diaporthe oncostoma*
*Nyssopsora cedrelae*
*Pestalotia japonica*
*Phakopsora cheoana*
*Phyllactinia guttata*
*Triphragmium cedrelae*
*Uncinula delavayi*

**Toona sureni** (Blume) Merr. ———
*Ganoderma pseudoferreum*

**Torreya nucifera** (L.) Sieb. & Zucc. **Japanese torreya**
*Helicobasidium mompa*

**Trattinickia aspera** (Standl.) Swart ———
*Erikssonia protii*

**Trichilia emetica** Vahl **Mafura bitterwood**
*Campsotrichum cladosporioides*

**Trichilia pallida** Sw. ———
*Uredo trichiliae*

**Triplochiton scleroxylon** K. Schum. ———
*Calonectria rigidiuscula*

**Tsuga** sp. **hemlock**
*Polyporus sulphureus*

**Tsuga chinensis** (Franch.) Pritz. **Chinese hemlock**
*Fomes pini*

**Tsuga diversifolia** (Maxim.) Mast. ———
*Echinodontium tinctorium*
*Poria subacida*
*P. tsugina*
*P. weirii*

**Tsuga sieboldii** Carr. **Siebold hemlock**
*Fomes pinicola*
*Phacidiopycnis pseudotsugae*
*Poria tsugina*

**Tsuga yunnanensis** (Franch.) Pritz. **Yunnan hemlock**
*Chrysomyxa tsugae-yunnanensis*
*Fomes pini*

**Ulmus** sp. **elm**
Virus, little leaf
Virus, mosaic
*Pseudomonas lignicola*
*Armillaria mellea*
*Ceratocystis ulmi*
*Collybia velutipes*
*Cytospora ambiens*
*Diplodia melaena*
*Exosporium ulmi*
*Fistulina hepatica*
*Fomes annularis*
*F. connatus*
*F. fomentarius*
*F. fraxineus*
*F. igniarius*
*F. ribis*
*F. ulmarius*
*Ganoderma applanatum*
*G. lucidum*
*Mycosphaerella maculiformis*
*M. ulmi*
*Nectria coccinea*
*Phyllosticta bellunensis*
*Pleurotus ulmarius*
*Polyporus hispidus*
*P. litschaueri*
*P. schweinitzii*
*P. squamosus*
*P. zonatus*
*Steccherinum septentrionale*
*Ustulina deusta*
*Verticillium albo-atrum*

**Ulmus buisman** ? ———
*Ceratocystis ulmi*

**Ulmus carpinifolia** Gleditsch **smoothleaf elm**
*Asteroma ulmi*
*Ceratocystis ulmi*
*Nectria cinnabarina*
*Taphrina ulmi*

**Ulmus carpinifolia** var. **italica** (Henry) Rehd. **Italian smoothleaf elm**
*Ceratocystis ulmi*

**Ulmus carpinifolia f. propendens** (Schneid.) Rehd. ———
*Ceratocystis ulmi*

**Ulmus carpinifolia f. sarniensis** (Loud.) Rehd. **Sarnia smoothleaf elm**
*Ceratocystis ulmi*
*Nectria cinnabarina*

**Ulmus carpinifolia var. umbraculifera** (Trautv.) Rehd. ———
*Nectria cinnabarina*

**Ulmus carpinifolia f. wredei** (Juehlke) Rehd. ———
*Ceratocystis ulmi*

**Ulmus glabra** Huds. **Scotch elm**
*Asteroma ulmi*
*Ceratocystis ulmi*
*Cucurbitaria naucosa*
*Cytospora ambiens*
*Diplodia melaena*
*Fomes annosus*
*F. connatus*
*F. igniarius*
*Mycosphaerella ulmi*
*Nectria ditissima*
*Physalospora mutila*
*Polyporus squamosus*
*Taphrina ulmi*
*Verticillium albo-atrum*
*V. dahliae*

**Ulmus ×hollandica** Mill. **Dutch elm**
*Ceratocystis ulmi*
*Nectria cinnabarina*

**Ulmus ×hollandica var. belgica** (Burgsd.) Rehd. ———
*Ceratocystis ulmi*
*Pythium intermedium*

**Ulmus ×hollandica var. vegeta** Rehd. ———
*Ceratocystis ulmi*

**Ulmus japonica** (Rehd.) Sarg. **Japanese elm**
*Gnomonia oharana*
*Polyporus hispidus*
*Uncinula clandestina*

**Ulmus laciniata** (Trautv.) Mayr **var. nikkoensis** Rehd. **Nikko Manchurian elm**
*Ceratocystis ulmi*

**Ulmus laevis** Pall. **Russian elm**
*Ceratocystis ulmi*
*Fomes connatus*
*Mycosphaerella ulmi*
*Phyllosticta bellunensis*
*Steccherinum septentrionale*
*Taphrina ulmi*

**Ulmus parvifolia** Jacq. **Chinese elm**
*Gnomonia oharana*
*Uncinula clandestina*

**Ulmus procera** Salisb. **English elm**
*Asteroma ulmi*
*Ceratocystis ulmi*
*Phyllosticta ulmicola*
*Uncinula clandestina*
*Ustulina deusta*

**Ulmus pumila** L. **Siberian elm**
*Ceratocystis ulmi*
*Cercospora sphaeriaeformis*
*Discula quercina*
*Gnomonia oharana*
*Helicobasidium mompa*
*Nectria cinnabarina*

**Ulmus rubra** Mühl. **slippery elm**
*Cercospora ulmicola*

**Ulmus wallichii** Planch. **Himalayan elm**
*Fomes conchatus*

**Virgilia capensis** Lam. **lilac virgilia**
*Fomes ulmarius*

**Wallaceodendron celebicum** Koord. **Celebes wallacetree**
*Ganoderma lucidum*

**Washingtonia filifera** (Linden) H. Wendl. **California washingtonia**
*Diplodia epicocos*

**Widdringtonia whytei** Rendle **Mlanji widdringtonia**
*Armillaria mellea*

**Xylia xylocarpa** Taub. **Burma pyingado**
*Fomes pomaceus*

**Xylopia** sp. ———
*Dasyspora gregaria*
*Fusarium tumidum*

**Xylopia frutescens** Aubl. ———
*Dasyspora gregaria*

**Xylopia grandiflora** St. Hil. ———
*Dasyspora gregaria*

**Xymalos monospora** (Harv.) Baill. ———
*Fomes robiniae*
*F. robustus*

**Zanthoxylum** sp. **prickly-ash**
*Aecidium rickii*
*A. spissum*

**Zanthoxylum** sp. **prickly-ash** (Continued)
*A. xanthoxylinum*
*Helicobasidium tanakae*

**Zanthoxylum ailanthoides** Sieb. & Zucc. **ailanthus prickly-ash**
*Cercospora fagarae*

**Zanthoxylum alatum** Roxb. **wingleaf prickly-ash**
*Aecidium zanthoxyli-schinifolii*

**Zanthoxylum coco** Gill. ———
*Phytophthora citrophthora*
*Sphaceloma fagarae*

**Zanthoxylum hyemale** St. Hil. ———
*Sphaceloma fagarae*

**Zanthoxylum melanorachis** (Hoyle) Little ———
*Fomes lignosus*

**Zanthoxylum piperitum** (L.) DC. **Japanese prickly-ash**
*Aecidium zanthoxyli-schinifolii*

**Zanthoxylum rhoifolium** Lam. ———
*Aecidium xanthoxylinum*

**Zanthoxylum riedelianum** Engl. ———
*Sphaceloma fagarae*

**Zanthoxylum simulans** Hance **flatspine prickly-ash**
*Aecidium zanthoxyli-schinifolii*

**Zelkova** sp. ———
*Pseudomonas lignicola*

**Zelkova serrata** (Thunb.) Makino **Japanese zelkova**
*Cercospora zelkowae*
*Helicobasidium mompa*
*Septoria abeliceae*
*Uncinula clintonii*

**Ziziphus mucronata** Willd. ———
*Ganoderma lucidum*

**Ziziphus oenoplia** Mill. ———
Virus, Sandal spike

# FOREIGN DISEASES POTENTIALLY MOST DANGEROUS TO NORTH AMERICAN FORESTS

Some of the most destructive forest tree diseases in North America were introduced from abroad—white pine blister rust, chestnut blight, and elm wilt, for example. One of the most effective ways to prevent similar importations in the future is to direct attention to those diseases in other continents that, on the basis of available information, appear to have an especially high capacity for damage should they become established in North American forests.

It is obviously impossible to predict what specific pathogens will do if and when introduced on new hosts or into new and different environments. Some that are very serious on one continent may be relatively harmless on another, and some that are held in check by biotic factors in their native locale may, when freed of these natural controls, quickly become epidemic. It is possible, nevertheless, to indicate a few organisms that, because of their known pathogenicity and the importance of hosts known to be susceptible, merit special efforts to exclude them. Diseases yet unknown or unreported may prove equally or more important, but the following known diseases are considered especially serious threats to North American forests. They are listed in the order in which they appear in the preceding text.

## *Viruses*

**Virus, Mosaic** **conifer mosaic**

A mosaic disease of spruces and pines, believed to be virus caused, has been reported in Czechoslovakia. So far as known, little or no research has been done on it. Affected trees have mottled yellowish needles, especially where *Chermes* develop abundantly.

## *Bacteria*

**Erwinia salicis** **willow watermark disease**

The willow watermark disease of England appears, in early stages, to be similar to the wetwood of various species of conifers and hardwoods in American forests. It is more aggressive, however, and causes death of large trees. It should be rigidly excluded.

**Pseudomonas rimaefaciens** **poplar canker**

[=*P. syringae* f. *populea*. See both *Pseudomonas rimaefaciens* and *Micrococcus populi* in section on Bacteria in text; work to clarify the identity and synonomy of the bacterium or bacteria causing poplar canker is continuing.]

This bacterial canker is the most serious disease of poplars in northwestern Europe and Great Britain. Prior to their selection and

certification for resistance, it threatened commercial growing of poplars. No effort should be spared to prevent its international spread.

**Pseudomonas saliciperda** — **willow wilt**

A serious disease of willows in the Netherlands. Insect transmission is suspected but not proved. Use of infected cuttings must be avoided.

**Pseudomonas savastanoi** var. **fraxini** — **ash canker**

A nongirdling canker of stems and branches present only in Great Britain and central and southern Europe. Causes grain distortion and reduces quality of wood.

**Xanthomonas acernea** — **maple leaf spot**

A serious leaf, twig, and branch wilt of maple and buckeye in Japan.

## *Fungi*

**Acanthostigma parasiticum** — **blight**

This fungus is reported only in a single American locality near Halifax, Nova Scotia; otherwise, in Europe and Japan. The needles of fir, spruce, and hemlock are attacked. A 100-year-old stand of *Abies alba* was badly damaged on the Danish island of Bornholm. Disease development is much favored by quiet moist air in dense stands and thickets.

**Brunchorstia pini** — **dieback**

Causes stem and branch cankers of hard pines in Turkey and Austria. Damage heavy in both young and old stands. Epidemics are apparently associated with droughts that reduce tree vigor.

**Caeoma deformans** — **rust**

Causes witches'-brooms of *Thuja* and *Thujopsis* in Japan. Capable of causing serious losses in forest nurseries, plantations, and natural stands.

**Cenangium kazachstanicum** — **pine dieback**

Known only in Russia where it has caused heavy losses in Scotch pine stands. All American hard pines may be susceptible.

**Cercospora pini-densiflorae** — **pine leaf blight**

A serious needle disease of hard pines in Japan and Formosa. Heavy infection kills seedlings.

**Chrysomyxa abietis** — **spruce needle cushion rust**

Common on spruce throughout northern Europe. Occasionally causes serious defoliation. Probably does not require an alternate host.

**Chrysomyxa deformans** — **spruce twig and needle rust**

Reported on spruce from India, Pakistan, and Siberia. Probably does not require an alternate host. This rust along with *Chrysomyxa abietis* could cause heavy losses in North American spruce forests.

**Chrysomyxa himalensis** **rhododendron-spruce needle rust**

This rust is considered to be the cause of occasional serious defoliation of spruce in India and Pakistan. It infects the petioles, lower midribs, and leaf blades of rhododendron and the needles of spruce.

**Cronartium flaccidum** **felt rust**

[=*Peridermium pini* var. *corticola*]

A needle and twig rust of hard pines throughout Europe and Asia, particularly serious on Scotch pine in Europe where it causes forking, stem distortion, and death of the leader or large part of the upper bole. Trees of all ages are affected. In northern Europe as high as 90 percent of the trees in a pure stand have been observed to be stagheaded from this disease. This rust fungus is particularly dangerous because it can spread directly from pine to pine.

**Cronartium himalayense** **pine-Swertia felt rust**

This rust of India and Pakistan, with *Pinus roxburghii* and *Swertia* spp. as alternate hosts, acts much as does *Cronartium ribicola* in North America. The pine host is a pitch pine as are our important southern species. Numerous *Swertia* species are widely distributed over the United States. If the species of *Swertia* and pitch pines found in this country should prove susceptible, introduction of this rust could be disastrous. (cf. Spaulding, Perley. A stem rust of *Pinus roxburghii* in India potentially dangerous to the United States. Plant Dis. Rptr. 36 : 159–161. 1952.)

**Cronartium quercuum** **Asian pine-oak blister rust**

This rust fungus, causing galls on hard pines in Asia, greatly resembles the American *Cronartium cerebrum*. Oaks are the principal alternate hosts of both species. *C. quercuum* is definitely known in China and Japan. Presumably the same species is the one found in Siberia, India, Korea, and Pakistan. A similar rust fungus is known in Europe.

**Cucurbitaria piceae** **spruce bud blight**

Spruce bud blight is widely distributed in central and western Europe on native spruce and on planted blue spruce from North America. Appreciable damage has been reported. This blight is potentially very destructive to our several widely distributed spruces.

**Helicobasidium mompa** **violet root rot**

This fungus, found in Japan, Formosa, and China, forms purple rhizomorphs on roots and bases of trees. A mycelial mat develops on the soil surface and upward on the stems of trees. This mat has a powdery-white surface until July when it turns brown. Leaves of diseased trees are smaller and fall prematurely, and the tree dies. This fungus attacks many food plants as well as woody-stemmed plants. It can live saprophytically in plant debris and is difficult to eliminate in regions newly infected.

**Hypodermella sulcigena** **leaf cast**

A leaf cast of pitch pines destructive over northern and central Europe and having high potential for damage in North America. It

forms elliptical to elongate black fruiting bodies on discolored areas of living green needles.

**Melampsora pinitorqua** **pine-poplar rust**

This disease, locally called the pine twister, causes distortion of the juvenile shoots of hard pines in Europe, particularly *Pinus sylvestris*. Young pines are appreciably damaged. The alternate stage is on leaves of *Populus*, especially *P. tremula*.

**Pestalotia populi-nigrae** **shoot blight**

Associated with severe wilt of current year shoots of *Populus nigra* planted as windbreaks and shelterbelts in Japan. The fungus spreads rapidly in stems, forming lesions, and often girdling and killing them. Losses may be heavy.

**Phytophthora cambivora** **root rot**

Root rot, especially of chestnut, in Europe. Known as ink disease from the black exudate from cankered roots and bases of diseased trees. This fungi is distributed widely in chestnut-growing regions of Europe, and has killed many chestnut trees in Corsica and Coruna Provinces, Spain. It is also reported in Mauritius. In Europe it occurs also on beech, walnut, and oak. Might be serious on these commercially important genera in North America.

**Poria rhizomorpha** **root rot**

Endemic in India and Pakistan on numerous broad-leaved trees, causing friable cubical rot. Forms extensive rhizomorphs extending as much as 100 feet from diseased to healthy trees. The fungus attacks at the base of the stem, girdles the tree, and quickly kills it. Infected soil or wood should not be moved into uninfected areas.

**Pucciniastrum areolatum** **cherry-spruce rust**

Old World in distribution and endemic in Santo Domingo. Heteroecious, alternating between leaves of *Prunus* and green cone scales of *Picea*. Seeds of rusted spruce cones may be so aborted as to seriously reduce crop viability.

**Rhizoctonia lamellifera** **root rot**

A fungus attacking many broad-leaved trees in Uganda and conifers in South Africa. This parasite occurs as fungus strands and webs largely buried in decayed roots or covering their surfaces, with no organized conks. The first symptoms are wilted and brown leaves, and are followed by staghead and death.

**Rosellinia** spp. **root rot**

There are several species of *Rosellinia* not now known in North America that cause root rot of trees, mostly of younger ages. They look much alike and attack both conifers and broadleaves. All are favored by wet soils. Wilting, soon followed by death of the plant, is the chief signal of trouble. Dead roots have strands of mycelium between the bark and wood or on the outside of the bark. Small sclerotia form on the strands and finally small globular fruiting bodies.

*Rosellinia arcuata* kills numerous broad-leaved trees in Ceylon, India, Java, Sumatra, and the Gold Coast. *R. quercina* is known as a root rot of young broad-leaved trees in Japan and Europe, especially Denmark and England. *R. radiciperda* appears to be confined to New Zealand where it occurs on orchard trees, true firs, and native forest trees.

**Scleroderris abietina** **pine dieback**

Distributed generally in Europe. It is associated with dieback of shoots and branches of *Pinus*, killing trees in severe outbreaks.

**Sphaeropsis necatrix** **pine cone blight**

Damaging in Italy where it attacks young cones of *Pinus pinea* during May or June. Chestnut-colored lesions appear between adjacent cone scales. A day or two later one-third of the spotted cone may turn brown and the whole surface become affected; the seeds shrink and become wrinkled and dry. The fungus is favored by wet years and is worse on older trees.

**Trichoscyphella willkommii** **larch canker**

[=*Dasyscypha willkommii*]

This fungus attacks only *Larix* spp. and *Pseudolarix amabilis*.

In North America the true larch canker has been known only in eastern Massachusetts. All known diseased trees have been destroyed. It is hoped that it has been eliminated. In Europe it is considered the worst enemy of larch.

In Denmark, the American *Larix occidentalis* is so susceptible that it should not be planted in that country. This may indicate special danger if the fungus ever reaches this tree within its native range.

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