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ANNOTATED LIST OF THE INSECTS AND MITES ASSOCIATED WITH STORED GRAIN AND CEREAL PRODUCTS, AND OF THEIR ARTHROPOD PARASITES AND PREDATORS

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By R. T. Cotton, *senior entomologist*, and N. E. Good, *assistant entomologist, Division of Cereal and Forage Insect Investigations, Bureau of Entomology and Plant Quarantine*

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INTRODUCTION

It has been conservatively estimated that the damage caused by insects to stored grain and cereal products in the United States amounts to at least $300,000,000 annually. A knowledge of the diverse kinds or species that cause this vast loss, of their habits, life histories, enemies, and environmental needs, is not only of interest but a fundamental necessity for formulating measures which may lead to their control.

Owing to the small size of many of these insects and the ease with which they can conceal themselves in their favorite foodstuff, many of them have been carried by commerce to all parts of the world and have become truly cosmopolitan in distribution. Others, capable of doing considerable damage, are fortunately as yet more or less restricted in their distribution.

This list has been prepared in an endeavor to supply information regarding the food habits, distribution, and relative importance of all the insects known or reported to be associated with stored grain or cereal products throughout the world. The insects have been divided into the following groups: Major pests (nos. 1–10), minor pests (nos. 11–51), incidental pests (nos. 52–193), and insects associated with stored grain and cereal pests (nos. 194–336). In these groups the orders are arranged systematically and the genera and species alphabetically within each order for ready reference. Records that in the opinion of the writers are doubtful or erroneous are so noted.

In preparing this list the writers have drawn freely from the writings of many workers. Much of the data and very many of the records have been taken from the literature. The publications of Zacher (*216*, *217*, *218*, *219*, *220*),[1] Chittenden (*35*, *36*, *37*, *38*), Patton (*139*), and Zvierezomb-Zubkovsky (*221*) have been particularly helpful. Other papers of a more general nature and of particular value to North American entomologists and to the layman are those of Herrick (*96*), Back and Cotton (*10*), Chapman and Shepherd (*32*), and Dean (*50*).

A list of the literature cited is included, but it is restricted to the more important references relating to the incidental and associated insects. It is felt unnecessary to include references to the more common pests.

By including, in the systematic list of species, the different synonyms and names under which each species has been referred to in economic literature during the last 50 years it is hoped that the confusion concerning the identity of many of these insects will be materially lessened. No attempt has been made to include all the synonyms of each species, since this would add greatly to the length of the publication without increasing its value to the class of readers for which it is intended.

In the systematic list all species within a genus are arranged in alphabetical order. With this exception the sequence adopted is based in general on that used by Banks (*12*) for the Acarina; on Leng for the Coleoptera; on Barnes and McDunnough for the Lepidoptera; on the works of Ashmead, Gahan, Muesebeck, and Cushman for the Hymenoptera, and on Leonard (*118*) for miscellaneous orders. Although all the works just referred to treat only of North American species, practically all of the genera listed in this publication are included in them. The scientific names and synonyms of the many species of exotic insects are scattered through a great number of foreign publications, and no attempt is made to list these publications here. Departures from the text of the above references are due to subsequent revisions of certain groups. The numbers

[1] Italic numbers in parentheses refer to Literature Cited, p. 63.

given the species in the systematic list refer to the numbers given those species in the preceding sections.

The writers are greatly indebted to the members of the Division of Insect Identification of the Bureau of Entomology and Plant Quarantine for their valuable assistance in correcting the synonymy, systematic arrangement, and geographical distribution of the species involved, and for their advice as to the authenticity of many of the records.

MAJOR PESTS

COLEOPTERA

*(1) ORYZAEPHILUS SURINAMENSIS L.[2]

(Family Silvanidae)

Common name: Saw-toothed grain beetle.
Distribution: Cosmopolitan; thrives in warm climates.
Habitat: Found breeding wherever foodstuffs are stored.
Food habits: Adults and larvae feed upon all types of dried vegetable foodstuffs.
Parasites and predators: *Cephalonomia carinata* Kieff., *C. meridionalis* Brèthes, *C. tarsalis* Ashm., *Parepyris sylvanidis* Brèthes, and the hemipteron *Xylocoris cursitans* Fallen.
Relative importance: One of the important pests of stored food products. Its small size enables this species to penetrate many types of packaged products. Its importance as a pest is due more to objection to its presence than to the actual amount of food it consumes.

*(2) RHIZOPERTHA DOMINICA F.

(Family Bostrichidae)

Common names: Lesser grain borer, Australian wheat weevil.
Distribution: Cosmopolitan.
Habitat: Found chiefly in stored grain.
Food habits: Adults and larvae bore in stored grain of all kinds.
Parasites: *Lariophagus distinguendus* Foerst.
Relative importance: This insect is important in the United States chiefly as a pest of stored wheat. At one time relatively scarce, it is now rather widely spread over grain centers in this country.

*(3) SITOPHILUS GRANARIUS L.

(Family Calandridae)

Common name: Granary weevil.
Distribution: Cosmopolitan, thrives in a temperate climate.
Habitat: Breeds in grain and solidified farinaceous material.
Food habits: Adults feed on all types of grain and grain products. Larvae feed only in whole grain or in solidified farinaceous material.
Parasites and predators: *Aplastomorpha calandrae* How., *Cephalonomia formiciformis* Westw., *Chaetospila elegans* Westw., *Chremylus rubiginosus* Nees, *Dibrachys* (*acutus* Thoms.?), *D. cavus* Walk., *Lariophagus distinguendus* Foerst., *Pteromalus tritici* Gour., and *Pediculoides ventricosus* Newp.
Relative importance: Next in importance to the rice weevil as a pest of stored grain in the Northern States.

*(4) SITOPHILUS ORYZAE L.

(Family Calandridae)

Common names: Rice weevil, corn weevil, black weevil.
Distribution: Cosmopolitan, thrives in warm climates.
Habitat: Breeds in whole grains or in solidified farinaceous materials.
Food habits: Adults feed in all types of grain and grain products, larvae feed in whole grain, macaroni, acorns, etc.

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[2] The species before which an asterisk is placed have been personally observed by the writers as associated with stored grain or cereal products or have been identified by them from specimens sent in by reliable observers.

Parasites and predators: *Aplastomorpha calandrae* How., *Cephalonomia formiciformis* Westw., *C. tarsalis* Ashm., *C. waterstoni* Gahan, *Cerocephala cornigera* Westw., *Chaetospila elegans* Westw., *Chremylus rubiginosus* Nees, *Lariophagus distinguendus* Foerst., *Meraporus requisitus* Tucker, *Pteromalus tritici* Gour. (?), *Zatropis incertus* Ashm., and the mite *Pediculoides ventricosus* Newp.

Relative importance: Without doubt the most important insect pest of stored grain in the United States.

*(5) TENEBROIDES MAURITANICUS L.

(Family Ostomidae)

Common name: Cadelle.

Distribution: Cosmopolitan.

Habitat: Found breeding in grain and cereal products. Larvae bore into woodwork of ships, bins, floors, etc.

Food habits: Adults and larvae feed upon grains and grain products, nut meats and similar foodstuffs. Adults are occasionally predacious on other insects.

Parasites: *Cephalonomia nigricornis* Sarra, *Sclerodermus immigrans* Brid. (?).

Relative importance: Of considerable importance in rice mills, in grain stored on the farm or carried in ships, and in flour in storage.

*(6) TRIBOLIUM CASTANEUM Hbst.

(Family Tenebrionidae)

Common name: Rust-red flour beetle.

Distribution: Cosmopolitan; the predominant species of flour beetle in warmer regions, not very common in colder regions.

Habitat: Usually found living indoors in any kind of stored cereal products, etc. Infrequently taken outdoors under bark of trees.

Food habits: Larvae and adults feed on any kind of dry stored cereals, dry insect specimens and dead insects, certain drugs and spices, soft-shelled or damaged seeds and nuts, and in dried fruits, herbarium specimens, chocolate, yeast, etc.

Parasites and predators: *Acarophenax tribolii* New. and Duv., *Lebia* sp., *Pediculoides ventricosus* Newp., *Rhabdepyris zeae* Turner and Waterston, and *Sclerodermus immigrans* Brid.

Relative importance: Second only to *T. confusum* as a pest in flour mills, etc. It largely replaces *T. confusum* in tropical regions.

*(7) TRIBOLIUM CONFUSUM J. du V.

(Family Tenebrionidae)

Common name: Confused flour beetle.

Distribution: Cosmopolitan. Especially numerous in temperate zones. Not so common in warmer regions as the preceding species.

Habitat: Same as *T. castaneum*.

Food habits: Same as *T. castaneum*.

Parasites and predators: *Acarophenax tribolii* New. and Duv., *Pediculoides ventricosus* Newp., *Rhabdepyris zeae* Turner and Waterston, and *Xylocoris cursitans* Fallen.

Relative importance: Probably the worst insect pest of flour mills in the United States today.

LEPIDOPTERA

*(8) EPHESTIA KUEHNIELLA Zell.

(Family Pyralididae)

Common name: Mediterranean flour moth.

Distribution: Cosmopolitan.

Habitat: Common in establishments handling milled cereal products and in milling machinery.

Food habits: Larvae feed on all types of milled cereal products.

Parasites and predators: *Angitia armillata* Grav., *Apanteles nephoptericis* Pack., *Chremylus rubiginosus* Nees; *Idechthis canescens* Grav.; *Limnerium ephestiae* Ashm. (?); *Mesostenus gracilis* Cress.; *Microbracon brevicornis* Wesm. (occasionally); *Microbracon crassicornis* Thoms. (?); *Microbracon hebetor* Say; and mites *Pediculoides ventricosus* Newp., *Seius* sp., *Seiulus muricatus* Koch, and *Typhlodromus tineivorus* Oud.

Relative importance: The most important lepidopterous insect pest of flour mills.

***(9) PLODIA INTERPUNCTELLA Hbn.**

(Family Pyralididae)

Common name: Indian-meal moth.

Distribution: Cosmopolitan.

Habitat: Found breeding in nearly all types of foodstuffs.

Food habits: Larvae feed on nut meats, dried fruit, candy, grain, and milled cereal products of all kinds.

Parasites and predators: *Angitia kiehtani* Vier., *Dibrachys cavus* Walk., *Ecphoropsis viennensis* Grav., *Holepyris hawaiiensis* Ashm., *Idechthis canescens* Grav., *Limnerium ephestiae* Ashm. (?), *Microbracon hebetor* Say, the predacious ants *Iridomyrmex detectus* Sm. and *I. rufoniger* Lowne, the predacious fly *Epigrimyia floridensis* Towns., the hemipteron *Xylocoris cursitans* Fallen, and the mite *Pediculoides ventricosus* Newp.

Relative importance: Not so important as *Ephestia kuehniella* as a pest in flour mills, but of great importance as a general pest of foodstuffs. Sometimes destructive as a surface feeder in elevator bins of grain.

***(10) SITOTROGA CEREALELLA Oliv.**

(Family Gelechiidae)

Common name: Angoumois grain moth.

Distribution: Cosmopolitan.

Habitat: Breeds in all kinds of grain.

Food habits: Larvae feed inside grain of all kinds.

Parasites and predators: *Caenacis* sp.; *Dibrachys cavus* Walk.; *D. clisiocampae* Fitch; *Habrocytus cerealellae* Ashm.; *Microbracon hebetor* Say; *Pteromalus pyrophilus* Kollar; and the mites *Pediculoides ventricosus* Newp., *Seius* sp., *Typhlodromus tineivorus* Oud., and *Tyroglyphus* sp.

Relative importance: The most important lepidopterous pest of stored grain.

MINOR PESTS

ACARINA

(11) HISTIOGASTER ENTOMOPHAGUS Lab.

(Family Tyroglyphidae)

Distribution: England.

Habitat: In farinaceous materials.

Food habits: Feeds in flour and farinaceous foodstuffs.

Relative importance: Frequently injurious in England.

***(12) TYROGLYPHUS FARINAE DeG.**

(Family Tyroglyphidae)

Common names: Flour mite, common forage mite, grain mite.

Distribution: Cosmopolitan.

Habitat: Infests farinaceous foodstuffs, dried vegetable materials, feeds, and cheese.

Food habits: Feeds in flour, corn, bran, cheese, grain, mustard, dried fruits, bulbs, and stored foods generally.

Predators: *Cheyletus eruditus* Latr., and other species of *Cheyletus;* also *Lestodiplosis raphani* Barnes, and possibly *Arthrocnodax farinicola* Barnes.

Relative importance: The most common of the flour mites; occasionally quite injurious.

***(13) TYROGLYPHUS LONGIOR Gerv.**

(Family Tyroglyphidae)

Common names: Cheese mite, sugar mite.
Distribution: Cosmopolitan.
Habitat: Found in houses and other places where cheese and farinaceous foods are kept.
Food habits: Infests cheese, farinaceous foods, flour, bran, chaff, copra, and dried fruits. Also reported from stacked oats and cotton waste.
Predators: Undoubtedly attacked by species of *Cheyletus* although there are no specific references.
Relative importance: Often found in flour, cheese, etc., but in much smaller numbers than *T. farinae.*

ORTHOPTERA

***(14) BLATTA ORIENTALIS L.**

(Family Blattidae)

Common names: Oriental cockroach, black roach, black beetle.
Distribution: Cosmopolitan.
Habitat: In dark corners and crevices in houses, mills, warehouses, etc. Common in basements of flour mills.
Food habits: Feeds on all types of foodstuffs.
Parasites: *Evania appendigaster* L., *E. dimidiata* Spin., *E. punctata* Brullé, *Systellogaster ovivora* Gahan, and *Tetrastichus hagenowi* Ratz.
Relative importance: This insect does very little actual damage but its presence is very annoying.

***(15) PERIPLANETA AMERICANA L.**

(Family Blattidae)

Common name: American cockroach.
Distribution: Cosmopolitan.
Habitat: Same as *Blatta orientalis;* very common in flour-mill basements.
Food habits: Same as *Blatta orientalis.*
Parasites: *Eulophus* sp., *Evania appendigaster* L., *E. crythraspis* Cam., *E. punctata* Brullé, *E. sericea* Cam., *Tetrastichus hagenowi* Ratz., and *Tetrastichus periplanetae* Cwfd.
Relative importance: One of the most important cockroaches in North America, due more to its repulsiveness than to the amount of food it consumes.

CORRODENTIA

***(16) TROCTES DIVINATORIA Müll.**

(Family Atropidae)

Common name: Book louse.
Distribution: Europe, North America, probably cosmopolitan.
Habitat: Found in houses, warehouses, flour mills, etc. This is a very common insect occurring almost everywhere indoors.
Food habits: Feeds on paste, flour, wheat, corn meal, cacao, zoological collections, and other stored products and organic matter.
Parasites and predators: *Alaptus globosicornis* Gir.; a pseudoscorpion, *Chelifer cancroides* L., is a predator.
Relative importance: Although very common it does very little damage to stored cereal products.

(17) TROGIUM PULSATORIUM L.

(Family Trogiidae)

Common names: Book louse, death watch.
Distribution: Europe, North America.
Habitat: Found in houses, warehouses, etc.

Food habits: Feeds on paste, carpets, upholstered furniture, stored grain, and farinaceous foods.
Relative importance: A common insect, but it does very little damage to cereal products.

COLEOPTERA

*(18) AHASVERUS ADVENA Waltl.

(Family Silvanidae)

Common name: Foreign grain beetle.
Distribution: Cosmopolitan.
Habitat: Commonly found in mills, warehouses, and granaries, and in grain and farinaceous material that is out of condition.
Food habits: Feeds on damp and moldy grain, flour, etc., and on the molds that develop in such foodstuffs.
Parasites: None recorded.
Relative importance: Of slight importance in the United States.

*(19) ALPHITOBIUS DIAPERINUS Panz.

(Family Tenebrionidae)

Common name: Lesser mealworm.
Distribution: Cosmopolitan.
Habitat: Commonly found in flour-mill basements, in damp or musty flour or grain; also under decaying vegetation.
Food habits: Feeds on grain, milled products, and many types of foodstuffs, especially when these are slightly out of condition.
Parasites: None recorded.
Relative importance: In the United States this species is much more abundant than *A. piceus*.

*(20) ALPHITOBIUS PICEUS Oliv.

(Family Tenebrionidae)

Common names: Black fungus beetle, grain mold beetle.
Distribution: Cosmopolitan.
Habitat: Same as *A. diaperinus*.
Food habits: Same as *A. diaperinus*.
Parasites: None recorded.
Relative importance: Fairly common but does very little damage to clean, dry grain or flour.

*(21) ALPHITOPHAGUS BIFASCIATUS Say

(Family Tenebrionidae)

Common name: Two-banded fungus beetle.
Distribution: Cosmopolitan.
Habitat: In damp or decaying grain and milled products.
Food habits: A general feeder on fungi and molds, a scavenger in waste grain and milled products.
Parasites: None recorded.
Relative importance: Of little economic importance.

*(22) ANTHRENUS VERBASCI L.

(Family Dermestidae)

Common names: Varied carpet beetle, small cabinet beetle.
Distribution: Cosmopolitan.
Habitat: Commonly found in houses and museums, and also in flour mills, warehouses, etc., breeding in dust and in grain.
Food habits: Mainly a scavenger feeding on dried animal matter, feathers, hair, dead insects, grain, seeds, flour, dust, chaff, etc. It also attacks woolen goods in houses.
Parasites: *Laelius anthrenivorus* Trani.
Relative importance: Of little economic importance to cereal products.

*(23) ARAECERUS FASCICULATUS DeG.

(Family Platystomidae)

Common name: Coffee-bean weevil.
Distribution: Cosmopolitan.
Habitat: Breeds in the open and in storehouses in seeds and seed pods of all kinds.
Food habits: Feeds on all kinds of seeds, corn, dried fruits, and many types of foodstuffs.
Parasites: *Apanteles araeceri* Wilk. (?), *Aximopsis javensis* Gir., *A. tephrosiae* Gir. (?), *Eupelmus cushmani* Cwfd., *E. javae* Gir., *Eurytoma tylodermatis* Ashm., *Eurytoma* sp., *Ptinobius texanus* Cwfd.
Relative importance: Of considerable importance in tropical and subtropical countries.

*(24) ATTAGENUS PICEUS Oliv.

(Family Dermestidae)

Common name: Black carpet beetle.
Distribution: Cosmopolitan.
Habitat: Commonly found breeding in flour mills, warehouses, granaries, grain elevators, and barns, in accumulations of milled products, in cracks in floors and woodwork, etc.
Food habits: Adults do not feed, larvae are nearly omnivorous, feeding on all types of dried animal matter, woolen or silk fabrics, grain, and milled products.
Parasites: None recorded.
Relative importance: Sometimes causes severe damage to the silk cloths of bolting reels and redressing machines that are allowed to stand idle.

*(25) CARPOPHILUS DIMIDIATUS F.

(Family Nitidulidae)

Common name: Corn sap beetle.
Distribution: Africa, Europe, North America.
Habitat: Lives in rice mills and in cornfields in the Southern States. Also common wherever dried fruit is kept, and is found in flour mills.
Food habits: Normally feeds in decaying fruit and vegetation, but is found also in rice, corn in the field and in storage, dried fruit, shelled nuts, cacao, stored copra, nutmegs, stored grain, and flour.
Parasites: None recorded.
Relative importance: Very numerous in rice mills in the Southern States, but the damage it does may not be in proportion to its numbers.

*(26) CATHARTUS QUADRICOLLIS Guér.

(Family Silvanidae)

Common name: Square-necked grain beetle.
Distribution: North America, Central America, South America, Europe, and Africa.
Habitat: Attacks corn in fields and in storage.
Food habits: Feeds on grain and grain products.
Parasites: None reported.
Relative importance: Causes damage to grain in the United States, principally in the Southern States.

*(27) CAULOPHILUS LATINASUS Say

(Family Curculionidae)

Common name: Broad-nosed grain weevil.
Distribution: West Indies, southern part of United States, Mexico, Central America, England, Germany, and Madeira.
Habitat: Breeds in seeds and roots in field and in storage.
Food habits: Feeds on grain, beans, nuts, acorns, ginger, avocado seeds, dasheen roots, etc.

Parasites and predators: *Aplastomorpha calandrae* How., *Chaetospila elegans* Westw., *Zatropis* sp., and the mite *Pediculoides ventricosus* Newp.
Relative importance: Sometimes a pest of soft, newly harvested corn in the Southern States.

***(28) GNATHOCERUS CORNUTUS F.**

(Family Tenebrionidae)

Common name: Broad-horned flour beetle.
Distribution: Cosmopolitan.
Habitat: Found in granaries, warehouses, and mills, in flour, meal, and grain.
Food habits: Feeds on grain and milled products of all kinds.
Parasites and predators: *Sclerodermus immigrans* Brid., and the mites *Acarophenax tribolii* New. and Duv., and *Pediculoides ventricosus* Newp.
Relative importance: Rarely found in sufficient numbers to be very destructive.

***(29) GNATHOCERUS MAXILLOSUS F.**

(Family Tenebrionidae)

Common name: Slender-horned flour beetle.
Distribution: Widely distributed in tropical and subtropical regions.
Habitat: Same as *G. cornutus*.
Food habits: Same as *G. cornutus*.
Parasites: None recorded.
Relative importance: Less common than *G. cornutus* and more or less confined to the Southern States.

***(30) LAEMOPHLOEUS FERRUGINEUS Steph.**

(Family Cucujidae)

Common name: Rust-red grain beetle.
Distribution: Cosmopolitan.
Habitat: Usually found in stored grain, but occasionally in other foodstuffs, and also under bark of trees.
Food habits: Feeds on grain and grain products.
Parasites: *Anisopteromalus mollis* Ruschka.
Relative importance: Less common than *L. minutus*.

***(31) LAEMOPHLOEUS MINUTUS Oliv.**

(Family Cucujidae)

Common name: Flat grain beetle.
Distribution: Cosmopolitan.
Habitat: Found in flour mills, warehouses, granaries, etc., in stored grain and milled products.
Food habits: Feeds on grain and cereal products and is occasionally reported as a predator on other grain insects.
Parasites: *Plastanoxus westwoodi* Kieff., *P. chittendenii* Ashm.
Relative importance: A very common pest of stored grain in the United States, and very common in flour mills. Its presence is often associated with the heating of grain. The actual damage caused by its feeding is slight.

***(32) LASIODERMA SERRICORNE F.**

(Family Anobiidae)

Common names: Cigarette beetle, tobacco beetle.
Distribution: Cosmopolitan.
Habitat: Breeds in dried vegetable material of many kinds.
Food habits: Larva feeds on tobacco, seeds, grain, milled products, and dried vegetable material.
Parasites and predators: *Aplastomorpha calandrae* How., *Catolaccus anthonomi* Ashm. (?), *Cephalonomia quadridentata* Duch., *Lariophagus distinguendus* Foerst., *Norbanus* sp., *Pteromalus* sp., and the clerids *Thanerocelerus buqueti* Lefevr., and *T. girodi* Chevr.

Relative importance: A serious pest of stored tobacco and tobacco products. Of very little importance in cereal products.

***(33) LATHETICUS ORYZAE Waterh.**

(Family Tenebrionidae)

Common name: Long-headed flour beetle.
Distribution: Cosmopolitan, often found in the Southern and Middle Western States.
Habitat: Breeds in mills and granaries in grain and grain products, and also in rotten wood and under bark.
Food habits: Feeds on grain and grain products and dried vegetable materials.
Parasites: *Acarophenax tribolii* New. and Duv.
Relative importance: Of little economic importance in United States except in the Southwest.

(34) NIPTUS HOLOLEUCUS Fald.

(Family Ptinidae)

Common name: Yellow or golden spider beetle.
Distribution: Nearly cosmopolitan, but absent in Tropics, not widespread in the United States.
Habitat: Found in houses, granaries, and warehouses breeding in a variety of foodstuffs.
Parasites: *Cephalonomia quadridentata* Duch.
Relative importance: Not important in the United States.

***(35) PALORUS RATZEBURGI Wissm.**

(Family Tenebrionidae)

Common name: Small-eyed flour beetle.
Distribution: Cosmopolitan.
Habitat: Breeds in grain and milled products, especially in flour-mill basements.
Food habits: Adults and larvae feed on grain, flour, chicken feed, milled products, etc.
Parasites: *Acarophenax tribolii* New. and Duv.
Relative importance: Common in flour mills in the United States.

***(36) PALORUS SUBDEPRESSUS Woll.**

(Family Tenebrionidae)

Common name: Depressed flour beetle.
Distribution: Cosmopolitan.
Habitat: Same as *P. ratzeburgi.*
Food habits: Same as *P. ratzeburgi.*
Parasites: None recorded.
Relative importance. Much less common in the United States than *P. ratzeburgi* except perhaps in the Great Plains region.

***(37) PTINUS FUR L.**

(Family Ptinidae)

Common name: White-marked spider beetle.
Distribution: Palearctic region and North America; well distributed in the Northern States.
Habitat: Lives in dwellings, warehouses, stores, etc., and breeds in grain, grain products, and dried vegetable material.
Food habits: Feeds in flour, seeds, grain, pepper, dried animal matter, and other foodstuffs.
Parasites: *Cephalonomia xambeui* Giard. *Cryptus ptinivorus* Rond. (?), *Hecabolus sulcatus* Curt., *Spathius exarator* L.
Relative importance: Of little importance in the United States.

***(38) PTINUS TECTUS Boield.**

(Family Ptinidae)

Common name: Australian spider beetle.
Distribution: Palearctic and Nearctic regions, and Australia; prefers cooler climates; not widely distributed in North America.
Habitat: Found in houses, warehouses, and stores, breeding in a variety of dried animal and vegetable material.
Food habits: Feeds on flour, grain, animal matter.
Parasites: *Cephalonomia quadridentata* Duch., *Dimachus discolor* Wlk.
Relative importance: Not important in the United States.

(39) PTINUS VILLIGER Reitt.

(Family Ptinidae)

Common name: Hairy spider beetle.
Distribution: Palearctic and nearctic regions. Often reported from Canada and the Northwestern States.
Habitat: Found in houses, warehouses, and granaries.
Food habits: Feeds in flour, farina, corn meal, stored wheat, etc.
Parasites: None recorded.
Relative importance: Not of economic importance in the United States.

***(40) STEGOBIUM PANICEUM L.**

(Family Anobiidae)

Common names: Drug-store beetle, bread beetle.
Distribution: Cosmopolitan.
Habitat: Found in houses, libraries, mills, warehouses, ships, etc., where it infests dried vegetable materials of all kinds.
Food habits: Feeds on grain, seeds, milled products, books, bread, drugs, and other foodstuffs.
Parasites and predators: *Aplastomorpha calandrae* How., *Cephalonomia quadridentata* Duch., *Cephalonomia* sp., *Dibrachys cavus* Walk., *Entedon longiventris* Ratz., *Habritys brevicornis* Ratz. (?), *Lariophagus distinguendus* Foerst., and the mite *Pediculoides ventricosus* Newp.
Relative importance: Not important as a pest of grain and milled products, but does considerable damage in libraries.

***(41) TENEBRIO MOLITOR L.**

(Family Tenebrionidae)

Common name: Yellow mealworm.
Distribution: Cosmopolitan.
Habitat: Found in dark stituations infesting grain and grain products, especially when these are slightly damp.
Food habits: Feeds on grain, milled products, and a variety of food products.
Predator: *Caloglyphus mycophagus* Megnin.
Relative importance: Only moderately important as a pest of stored grain and milled products.

***(42) TENEBRIO OBSCURUS F.**

(Family Tenebrionidae)

Common name: Dark mealworm.
Distribution: Cosmopolitan.
Habitat: Same as *T. molitor.*
Food habits: Same as *T. molitor.*
Parasites: None recorded.
Relative importance: Same as *T. molitor.*

(43) TROGODERMA GRANARIUM Everts

(Family Dermestidae)

Common name: Khapra beetle.
Distribution: Asia, Europe, Egypt, and Australia.
Habitat: Lives in warehouses, granaries, etc., breeding in stored grain and other foodstuffs.

Food habits: Feeds on stored grain, cereal products, and foodstuffs.
Parasites: None recorded.
Relative importance: Reported as a major pest in India, has several times been reported as destructive in Europe, but is not yet established in the United States.

*(44) TROGODERMA VERSICOLOR Creutz.

(Family Dermestidae)

Common name: Larger cabinet beetle.
Distribution: Cosmopolitan.
Habitat: Breeds in warehouses, granaries, etc., in grain and grain products.
Food habits: Feeds on grain, cereals, animal products, etc.
Parasite: *Laelius trogodermatis* Ashm. (?).
Relative importance: Often a serious pest of seed collections in the United States.

LEPIDOPTERA

(45) BORKHAUSENIA PSEUDOSPRETELLA Staint.

(Family Oecophoridae)

Common name: Seed moth.
Distribution: Europe, India, and North America.
Habitat: In dwellings and storerooms.
Food habits: The larvae feed on dried plants, cracked grain and seeds, carpets, clothing, hides, book bindings, and rubbish.
Predator: *Helina uliginosa* Fallen.
Relative importance: A common household pest in England, not recorded as particularly injurious elsewhere.

*(46) CORCYRA CEPHALONICA Staint.

(Family Pyralididae)

Common name: Rice moth.
Distribution: Cosmopolitan.
Habitat: Found breeding in rough rice in storage, and in chocolate factories.
Food habits: Larva feeds on rice, cocoa, chocolate, nut meats, and farinaceous materials.
Parasites and predators: *Antrocephalus aethiopicus* Masi (?), *A. mahensis* Masi, *Euponera sennaarensis* Meyr., *Holepyris hawaiiensis* Ashm., *Microbracon hebetor* Say.
Relative importance: This species is not very important in the United States, although it causes considerable damage to rice in the Southern States and to chocolate products.

*(47) EPHESTIA CAUTELLA Walk.

(Family Pyralididae)

Common names: Almond moth, fig moth, date moth.
Distribution: Cosmopolitan.
Habitat: Lives in storerooms, warehouses, and dwellings, breeding in dried fruit, etc.
Food habits: Feeds on dried fruit, especially figs and dates; also shelled nuts, grain, and seeds.
Parasites and predators: *Antrocephalus aethiopicus* Masi (?), *Idechthis canescens* Grav., *Limnerium ephestiae* Ashm. (?), *Microbracon hebetor* Say, *M. kitcheneri* Dudg. and Gough, the ant *Iridomyrmex detectus* Sm., and the mite *Pediculoides ventricosus* Newp.
Relative importance: A serious pest of dried fruits; of little importance in grain products.

*(48) EPHESTIA ELUTELLA Hbn.

(Family Pyralididae)

Common names: Tobacco moth, cacao-bean moth, chocolate moth.
Distribution: Cosmopolitan.
Habitat: In store rooms, warehouses, factories, and dwellings.

Food habits: Feeds on cacao beans, chocolate, tobacco, cereals and seeds, dried fruit, nuts, etc.
Parasites: *Holepyris hawaiiensis* Ashm.; *Idechthis canescens* Grav.; *Microbracon hebetor* Say; *Perisierola emigrata* Rohwer; the hemipteron *Xylocoris cursitans* Fallen; and the mites *Pediculoides ventricosus* Newp., *Seiulus muricatus* Koch, and *Seius* sp.
Relative importance: A serious pest of tobacco, cacao, and chocolate. Of little importance in grain and flour.

*(49) PYRALIS FARINALIS L.

(Family Pyralididae)

Common name: Meal snout moth.
Distribution: Cosmopolitan.
Habitat: Flour mills, grain elevators, and haylofts.
Food habits The larvae feed on flour, meal, damaged grain and seeds, hay, and straw.
Parasites and predators: *Apanteles carpatus* Say, *Metacoelus mansuetor* Grav., *Meteorus ictericus* Nees (?), *Tetrastichus* sp., and the Diptera *Lispidea tarsalis* Coq. and *Melanophora roralis* L.
Relative importance: Fairly common in flour mills, but prefers damp and spoiled flour and grain.

*(50) PYRODERCES RILEYI Wals.

(Family Cosmopterygidae)

Common name: Pink cornworm.
Distribution: Southern States, Australia, Mexico, Hawaii.
Habitat: Corn in the field and in cribs.
Food habits: The larvae feed on corn grains, husks, and cobs in the field, and on stored corn in corncribs and bins; also feed on scale insects in Florida.
Parasites: *Bassus hawaiicola* Ashm., *Cremastus flavoorbitalis* Cam., *Leucodesmia nigriventris* Gir., *Perisierola emigrata* Roh.
Relative importance: Not important as a pest of stored grain.

*(51) TINEA GRANELLA L.

(Family Tineidae)

Common names: Wolf moth, European grain moth.
Distribution: Europe, North Africa, Asia Minor, Japan, North America.
Habitat: Granaries, grain elevators, warehouses, and mills.
Food habits: The larvae breed in grain, seeds, and cereal products.
Parasites: *Apanteles* sp., *Chremylus rubiginosus* Nees, *Dibrachys cavus* Walk., *Hemiteles tineae* Rond., *Idechthis canescens* Grav., *Nemeritis caudatula* Thoms.
Relative importance: Not important as a pest of stored grain in the United States.

INCIDENTAL PESTS

ACARINA

(52) CALOGLYPHUS KRAMERII Berl.

(Family Tyroglyphidae)

Distribution: England, Java.
Habitat and food: Found in houses in bran and flour, and in hay.
Reference: Van der Goot (*87*).

(53) CALOGLYPHUS MICHAELI Oud.

(Family Tyroglyphidae)

Distribution: England, Norway, Union of Soviet Socialist Republics.
Habitat and food: Found in houses, barns, etc., in stored grain and seeds, flour, bran, hay, etc.
Predator: *Cheyletus eruditus* Latr.
References: Redikortzev (*149*), Schøyen (*166, p. 87*).

(54) CALOGLYPHUS MYCOPHAGUS Megnin

(Family Tyroglyphidae)

Distribution: England, France, Germany.
Habitat and food: Found in houses in cheese, flour, bran, etc., and also feeds on dead insects and in a great variety of organic foodstuffs. Also known to be predacious on *Tenebrio molitor* L.
References: Schulze (*169, pp. 170–177*); Zacher (*220, pp. 584–589*).

(55) CARPOGLYPHUS ANONYMUS Haller

(Family Tyroglyphidae)

Distribution: England, France.
Habitat and food: Infests cheese, flour, stored grain, and stored fruit. Has also been found on the surface of samples of port wine.
References: Eales (*55*); Theobald (*189, p. 345*).

(56) CHORTOGLYPHUS ARCUATUS Troup.

(Family Tyroglyphidae)

Distribution: England.
Habitat and food: Found in houses in stored cereals and flour, and in stored grain, bran, and hay.
Reference: Newstead and Duvall (*133*).

(57) GLYCIPHAGUS CADAVARUM Schrank

(Family Tyroglyphidae)

Distribution: England.
Habitat and food: Found in houses, barns, etc., in stored wheat, bran, flaxseed, chaff, etc.
References: Anonymous (*2*), Newstead and Duvall (*133*).

(58) GLYCIPHAGUS DOMESTICUS DeG.

(Family Tyroglyphidae)

Common names: Furniture mite; common house mite.
Distribution: Europe, North America (rare).
Habitat and food: Found in houses, warehouses, storerooms, and ships. Infests cheese, flour, farinaceous foods, stored grain and seeds, hay, straw, cotton fiber, hair, Algerian fiber, drugs, spices, dried animal matter, etc.
Predator: *Cheyletus eruditus* Latr.
References: Patton (*139, p. 669*); Siggaard (*173*).

(59) GLYCIPHAGUS FUSCUS Oud.

(Family Tyroglyphidae)

Distribution: England, France, Netherlands.
Habitat and food: Found in flour and meal.
Reference: Newstead and Morris (*134, pp. 10–11*).

(60) TARSONEMUS HORDEI Kishida

(Family Tarsonemidae)

Distribution: Japan.
Habitat and food: Found in stored grain and plant products.
Reference: Clausen (*39*).

(61) TYROGLYPHUS LINTNERI Osb.

(Family Tyroglyphidae)

Common names: Mushroom mite, mill mite, cereal mite.
Distribution: United States, Denmark.

Habitat and food: A serious pest of mushrooms and common in cheese. Infests grain and cereal products, flax, mustard, cotton and other seeds, and coconut; found in decaying fruit and vegetables of many kinds, cane roots, on blossoms of flowers, on dead larvae of many insects, in houses, etc.
References: Banks (*11, p. 16*), Essig (*60, p. 38*), Miller (*126*), Wilson (*212*).

(62) TYROGLYPHUS PUTRESCENTIA Schr.

(Family Tyroglyphidae)

Distribution: Denmark, Netherlands, Sumatra.
Habitat and food: Infests stored seeds; sometimes predacious.
Predator: *Cheyletus eruditus* Latr.
Reference: Siggaard (*173*).

***(63) TYROGLYPHUS SIRO L.**

(Family Tyroglyphidae)

Common name: Cheese mite.
Distribution: Cosmopolitan.
Habitat and food: Recorded commonly in cheese, also in dried fruit, stored wheat, flour, and stored products in general.
References: Lintner (*121*), Newstead and Morris (*134*).

THYSANURA

***(64) LEPISMA SACCHARINA L.**

(Family Lepismatidae)

Common names: Silverfish, fish moth, slicker.
Distribution: Cosmopolitan.
Habitat and food: Found in houses, warehouses, and flour mills. Feeds on book bindings, paper, cloth, starchy foods, etc.
References: Back (*8*), Morita (*128*).

***(65) THERMOBIA DOMESTICA Pack.**

(Family Lepismatidae)

Common name: Firebrat.
Distribution: Cosmopolitan.
Habitat: Found in houses, warehouses, laundries, bakeries, flour mills, etc. Prefers warm locations.
Reference: Adams (*4, pp. 557–562*).

COLLEMBOLA

(66) SIRA BUSKI Lubb.

(Family Entomobryidae)

Distribution: Europe, North America, Siberia.
Habitat and food: Found in houses in meal, dust, etc., and also outdoors in garbage cans and under bark.
Reference: Mills (*127*).

(67) SIRA PLATANI Nicolet

(Family Entomobryidae)

Distribution: North America.
Habitat and food: Found in houses in meal, and also in garbage.
Reference: Mills (*127*).

ORTHOPTERA

*(68) BLATTELLA GERMANICA L.

(Family Blattidae)

Common names: German cockroach, croton bug, water bug.
Distribution: Cosmopolitan.
Habitat and food: Found in dark corners and crevices in houses and buildings of all kinds. Feeds on almost all types of foodstuffs.
Parasite and predator: *Evania appendigaster* L. and the house centipede *Cermatia forceps* Raf.
References: Laing (*116*), Wille (*210*).

*(69) GRYLLUS ASSIMILIS F.

(Family Gryllidae)

Common name: Field cricket.
Distribution: North America, South America, West Indies.
Habitat and food: A common outdoor species which does damage to growing crops. It has also been found attacking stored foodstuffs, seeds, maize, cloth, etc.
References: Howard and Marlatt (*98, pp. 53–56*), Severin (*172, pp. 16, 17*).

*(70) GRYLLUS DOMESTICUS L.

(Family Gryllidae)

Common name: House cricket.
Distribution: Europe, northern Africa, North America, southern Asia.
Habitat and food: Common in houses and bakeries, and also outdoors. Feeds on woolen and silk materials, stored products, rubbish, garbage, etc.
References: Gibson and Twinn (*81, pp. 43–45*), Patton (*139, p. 387*).

*(71) PERIPLANETA AUSTRALASIAE F.

(Family Blattidae)

Common name: Australian cockroach.
Distribution: Cosmopolitan.
Habitat and food: Found in houses, greenhouses, ships, etc. Feeds on various foodstuffs.
Parasites: *Evania appendigaster* L., *E. sericea* Cam., and *Tetrastichus australasiae* Gahan.
Reference: Marlatt (*123*).

(72) PYCNOSCELUS SURINAMENSIS L.

(Family Blattidae)

Common name: Surinam roach.
Distribution: Cosmopolitan.
Habitat and food: Occurs in greenhouses, etc., and has been reported from stored cereals and bread.
References: Chittenden (*36, pp. 1–7*), Patton (*139, p. 378*)

CORRODENTIA

(73) CAECILIUS NIGROTUBERCULATUS Curran

(Family Caeciliidae)

Distribution: Argentina.
Habitat and food: Found in maize.
Reference: Curran (*48*).

(74) LACHESILLA PEDICULARIA L.

(Family Caeciliidae)

Distribution: North America, Germany.
Habitat and food: Occasionally found in houses and granaries, and in wheat middlings, although it usually lives outdoors.
References: Chapman (*31, pp. 354–357*), Zacher (*218, p. 57*).

(75) PSOQUILLA MARGINEPUNCTATA Hagen

(Family Psoquillidae)

Distribution: England, West Africa.
Habitat and food: Found infesting cacao in warehouses, also found in granaries.
Reference: Zacher (*218, p. 54*).

(76) TROCTES CORRODENS Heym.

(Family Atropidae)

Distribution: Germany.
Habitat and food: Occasionally found in houses; recorded damaging buckwheat meal and stored cereals.
References: Heymons (*97, pp. 452–455*), Reichardt and Rimsky-Korsakov (*151, p. 389*).

EMBIIDINA

(77) EMBIA VAYSSIEREI Navas

(Family Embiidae)

Distribution: Senegal.
Habitat and food: Occurs in stored peanuts and stored cereals.
Reference: Vayssiere (*202*).

COLEOPTERA

(78) ANOBIUM PUNCTATUM DeG.

(Family Anobiidae)

Distribution: Europe, North America.
Habitat and food: A borer in wood. Taken in waste grain in the Union of Soviet Socialist Republics (probably accidental).
Parasites: *Entedon longiventris* Ratz., *Habritys brevicornis* Ratz., *Metacoelus mansuetor* Grav., *Spathius exarator* L. (The many other parasites of this species are too remote in their connection with stored cereals to be included here.)
Reference: Zvierezomb-Zubkovsky (*221*).

(79) ANTHICUS ELEGANS Lea

(Family Anthicidae)

Distribution: Australia.
Habitat and food: Recorded from samples of stored wheat.
References: Durrant (*54, pp. 34–35*), Patton (*139, p. 506*).

(80) ANTHICUS FLORALIS L.

(Family Anthicidae)

Distribution: Cosmopolitan.
Habitat and food: Recorded from water chestnuts, stored wheat, straw, and dried fruit.
Reference: Durrant (*54, p. 34*).

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(81) ANTHRENUS MUSEORUM L.

(Family Dermestidae)

Common name: Museum beetle.
Distribution: Europe, North America.
Habitat and food: Found in houses, museums, etc., where the larvae feed on grain, wool, fur, feathers, and dried insects and other animal matter. The adults are also found outdoors on blossoms. (It seems probable that this species has been confused with other dermestids and its importance overrated.)
Parasites: *Hemiteles museorum* Rond. (?), *Laelius anthrenivorus* Trani, *Sclerodermus domesticus* Latr.
References: Patton (*139, p. 461*), Zvierezomb-Zubkovsky (*221*).

(82) ANTHRENUS SCROPHULARIAE L.

(Family Dermestidae)

Common names: Common carpet beetle, buffalo moth.
Distribution: Europe, North America, Australia.
Habitat and food: The larvae are especially injurious to carpets, rugs, and overstuffed furniture; also to museum specimens, woolen materials, and feathers. Recorded from wheat and rye flour. Adults found on flowers.
Reference: Lukjanovitsh and Reichardt (*122, p. 398*).

(83) ATTAGENUS PELLIO L.

(Family Dermestidae)

Distribution: Europe, North America (?).
Habitat and food: Found in houses feeding on carpets, woolen goods, hair, feathers, etc. Reported feeding in grain damaged by the granary weevil.
Reference: Kunike (*112*).

(84) ATTAGENUS UNDULATUS Motsch.

(Family Dermestidae)

Distribution: Oriental regions, Madagascar, Mauritius.
Habitat and food: Recorded as injurious to stored wheat in India, although such records may refer to *Trogoderma granaria* misidentified.
Reference: Cotes (*42*).

(85) BLAPS LETHIFERA Marsh.

(Family Tenebrionidae)

Distribution: Europe, western Asia, eastern North America.
Habitat and food: Found in cellars and outhouses among rubbish and organic matter. Also found in bakeries and in stored grain.
References: Patton (*139, p. 498*), Zvierezomb-Zubkovsky (*221*).

(86) BLAPS MORTISAGA L.

(Family Tenebrionidae)

Distribution: Europe, Asia.
Habitat: Found in cellars, woodsheds, etc., and troublesome in bakeries.
Reference: Zacher (*218, p. 112*).

(87) BLAPS MUCRONATA Latr.

(Family Tenebrionidae)

Distribution: Europe, eastern North America.
Habitat and food: Found in cellars and outhouses among rubbish. Also in bakeries and in stored grain.
References: Garman (78), Zacher (*220, pp. 463–466*).

(88) BRACHYTARSUS ALTERNATUS Say

(Family Platystomidae)

Distribution: Eastern North America.
Habitat and food: Larvae and adults reported as injurious to stored corn, cowpeas, and "English peas."
Parasites: (Parasites listed for this species have almost no connection with stored cereals.)
Reference: Quaintance (*146, pp. 380–381*).

(89) BRACHYTARSUS STICTICUS Boh.

(Family Platystomidae)

Distribution: Eastern North America.
Habitat and food: Has been taken in wheat and velvetbeans and in a flour mill.
Reference: Lintner (*120, pp. 139–141*).

(90) CARPOPHILUS DECIPIENS Horn

(Family Nitidulidae)

Distribution: Western North America, Germany.
Habitat and food: Found in dried fruit, cacao beans, wheat, peanuts, etc.
Reference: Zacher (*219*).

***(91) CARPOPHILUS HEMIPTERUS L.**

(Family Nitidulidae)

Common name: Dried fruit beetle.
Distribution: Australia, Europe, North America.
Habitat and food: A serious pest of dried fruit, also found in stored corn, wheat, and rice, copra, nuts, drugs, bread, beans, etc.
Parasite: *Pseudisobrachium flavinervis* Fouts.
References: Gurney (*90*), Patton (*139, p. 435*).

(92) CARPOPHILUS LIGNEUS Murray

(Family Nitidulidae)

Distribution: Europe, North America.
Habitat and food: Found in dried fruit, cacao beans, wheat, peanuts, etc.
Reference: Zacher (*219*).

(93) CARPOPHILUS OBSOLETUS Er.

(Family Nitidulidae)

Distribution: Taiwan.
Habitat and food: Attacks rice, wheat, peanuts, dried maize, and seeds of *Sesamum*, causing damage in both larval and adult stages.
Parasite: *Aplastomorpha calandrae* How. (?).
Reference: Okuni (*137*).

***(94) CARPOPHILUS PALLIPENNIS Say**

(Family Nitidulidae)

Distribution: Europe, northern Africa, North America.
Habitat and food: Usually found outdoors. Said to be injurious to grain in warehouses in northern Africa and Germany. The record from stored corn in Mississippi (*208*) may refer to *C. dimidiatus*.
References: Weed (*208, p. 9*), Zacher (*219*).

***(95) CARTODERE COSTULATA Reitt.**

(Family Lathridiidae)

Distribution: Europe, eastern North America, Japan.
Habitat and food: Found in apartment houses, cellars of houses, in drug stores, etc., infesting foodstuffs, flour, macaroni, drugs, herbarium material, etc.
Reference: Office records.

(96) CARTODERE FILIFORMIS Gyll.

(Family Lathridiidae)

Distribution: Europe, Japan, eastern part of United States.
Habitat and food: Found in houses, drug stores, barns, etc., infesting yeast, drugs, moldy plant material, and in grain and flour barrels.
References: Schwarz (*170, p. 147*), Zacher (*220, pp. 409–413*).

(97) CARTODERE FILUM Aubé

(Family Lathridiidae)

Distribution: Europe, North America, Algeria.
Habitat and food: Occurs in houses, etc.; injurious in yeast, cereals, wheat, corn, and rye.
References: Lukjanovitsh and Reichardt (*122, p. 403*); Koltermann (*110*); Zacher (*220, pp. 409–413*).

***(98) CARTODERE RUFICOLLIS Marsh.**

(Family Lathridiidae)

Distribution: Europe, northern Africa, Canary Islands, North America, Central America.
Habitat and food: Found in flour mills, houses, museums, and barns. Has been taken in flour, grain, etc.
References: Cooley (*40*), Wolff (*214*).

(99) CATORAMA MEXICANA Chevr.

(Family Anobiidae)

Distribution: Hawaii.
Habitat and food: Bred from stored grain.
Parasite: *Aplastomorpha calandrae* How.
Reference: Fullaway (*69*).

(100) CATORAMA PUNCTULATA Lec.

(Family Anobiidae)

Distribution: Florida.
Habitat and food: Found in corn meal, flour, corn, etc.
Reference: Quaintance (*146, pp. 381–382*).

(101) CATORAMA ZEAE Waterh.

(Family Anobiidae)

Distribution: England, Barbados.
Food: Attacks corn.
Reference: Waterhouse (*207*).

***(102) CORTICARIA FERRUGINEA Marsh.**

(Family Lathridiidae)

Distribution: North America, Europe, Caucasia, Siberia.
Habitat and food: Has been found in flour in a house in Missouri.
Reference: Office records.

(103) CORTICARIA FULVA Com.

(Family Lathridiidae)

Distribution: Cosmopolitan.
Habitat and food: Has been taken in a corn shop, a granary, wine cellars, and in cacao and spice warehouses.
Reference: Fowler and Donesthorpe (*68, p. 263*).

(104) CRYPTOPHAGUS ACUTANGULUS Gyll.

(Family Cryptophagidae)

Distribution: Europe, North America, Mexico, Greenland, Siberia.
Habitat and food: Recorded from hides, straw, tobacco, furniture, decaying vegetable refuse, in warehouses, and in stored grain.
Reference: Kunike (*112*).

(105) CRYPTOPHAGUS AFFINIS Sturm

(Family Cryptophagidae)

Distribution: Europe, Madeira, Australia, northern Africa.
Habitat and food: Taken from a granary and also recorded from dried fruit, decaying vegetable refuse, and in a haystack.
Reference: Wollaston (*215*).

(106) CRYPTOPHAGUS CELLARIS Scop.

(Family Cryptophagidae)

Distribution: Europe and North America.
Habitat and food: A common species in flour mills and in cellars; also in vegetable refuse, bread, dried fruit, stored rice, etc.
References: Patton (*139, p. 445*), Van Poeteren (*143, p. 55*).

(107) CRYPTOPHAGUS CROCEUS Zimm.

(Family Cryptophagidae)

Distribution: Eastern North America.
Habitat and food: Found in old flour barrels, on apples in a cellar, and in rubbish.
Reference: Schwarz (*170, p. 147*).

(108) CRYPTOPHAGUS DENTATUS Hbst.

(Family Cryptophagidae)

Distribution: Europe, Madeira, Japan.
Habitat and food: Recorded as injurious to flour in Germany and also reported from a granary, from dried fruit, and from decaying vegetable refuse.
References: Anonymous (*1*), Wollaston (*215*).

(109) CRYPTOPHAGUS DISTINGUENDUS Sturm

(Family Cryptophagidae)

Distribution: Europe, England, northern Africa, Oregon (?).
Habitat and food: Recorded from granaries, bakeries, warehouses, in dried fruit, and also outdoors.
Reference: Fowler and Donesthorpe (*68, p. 265*).

(110) CRYPTOPHAGUS SCANICUS L.

(Family Cryptophagidae)

Distribution: Europe.
Habitat and food: Recorded from dried fruit, vegetable refuse, and samples of grain.
References: Kunike (*112*), Richards and Herford (*152, p. 372*).

(111) DINODERUS BIFOVEOLATUS Woll.

(Family Bostrichidae)

Distribution: Europe, Asia, Africa, Central America, South America, West Indies, New Guinea, Seychelles Islands, Malaya.
Habitat and food: Attacks stored grain, flour, stored derris, and bamboo.
References: Dupont (*53*), Laing (*115*).

***(112) DINODERUS MINUTUS F.**

(Family Bostrichidae)

Common name: Bamboo borer.
Distribution: Widespread in Tropics and South Temperate Zone.
Habitat and food: A well-known pest of bamboo. Also recorded from drugs, spices, cacao, corn, rice, and other stored grain, flour, tobacco, dried bananas, chestnuts, etc.
Parasites and predators: *Cerocephala dinoderi* Gahan, *Spathius bisignatus* Walk., and the beetle *Tillus notatus* Klug.
References: Emmerez de Charmoy (*59*), Rutgers (*163, p. 34*).

(113) ENICMUS MINUTUS L.

(Family Lathridiidae)

Distribution: Cosmopolitan.
Habitat and food: Common in houses, recorded from flour, grits, barley, and grain.
References: Portchinsky (*144*), Zacher (*218, p. 70*).

(114) EPAULAECUS UNICOLOR Piller

(Family Ptinidae)

Distribution: Europe, Transcaucasia.
Habitat and food: Has been found on grain in bread stores, and also in moist skins.
Reference: Zacher (*218, p. 109*).

(115) GIBBIUM BOIELDIEU Levr.

(Family Ptinidae)

Distribution: Southern Europe, Caucasus, Persia, Malay Archipelago.
Habitat and food: Found in houses feeding on various organic products, bread, pastry, cork, and insect collections.
References: Lukjanovitsh and Reichardt (*122, p. 396*), Zacher (*220, pp. 452–453*).

***(116) GIBBIUM PSYLLOIDES Czemp.**

(Family Ptinidae)

Distribution: Cosmopolitan.
Habitat and food: Fairly common in houses, hotels, etc. Feeds on stored wheat, cereals, opium cakes, paste, cayenne pepper, hay, bread, and animal material.
Reference: Fletcher and Ghosh (*66, p. 719*).

(117) GONOCEPHALUM HOFFMANNSEGGI Steph.

(Family Tenebrionidae)

Distribution: Dutch East Indies.
Habitat and food: The larvae attack corn and rice and also the roots of cereals and vegetables.
Reference: Keuchenius (*106, p. 50*).

(118) HARPALUS RUFIPES DeG.

(Family Carabidae)

Distribution: Palearctic region.
Habitat and food: Has been reported injuring flour in houses.
Reference: Zacher (*218, p. 61*).

(119) HENOTICUS CALIFORNICUS Mann.

(Family Cryptophagidae)

Distribution: Europe, North America.
Habitat and food: Recorded in dried fruit, jam, corks, bread, cacao, spice.
References: Keys (*107*), Richards and Herford (*152*).

(120) HOLOPARAMECUS SINGULARIS Beck

(Family Lathridiidae)

Distribution: Europe, North America.
Habitat and food: Recorded from ginger, flour, and in hotbeds.
Reference: Patton (*139, p. 446*).

(121) HYPOPHLOEUS FLORICOLA Mais.

(Family Tenebrionidae)

Distribution: Japan.
Habitat and food: Found in stored grain and plant products.
Reference: Clausen (*39*).

(122) LAEMOPHLOEUS ATER Oliv.

(Family Cucujidae)

Distribution: Europe, Azores, Canary, and Cape Verde Islands, and Madeira.
Habitat and food: Under natural conditions living in dead trees. Also found in warehouses in flour, bran, and middlings.
References: Patton (*139, p. 444*), Zacher (*218, p. 67*).

(123) LAEMOPHLOEUS JANETI Grouv.

(Family Cucujidae)

Distribution: East and central Africa, Madagascar, India.
Habitat and food: Breeds in cacao, stored grain, rice, flour, and cottonseed.
Reference: Ghesquiére (*80*).

(124) LAEMOPHLOEUS TURCICUS Grouv.

(Family Cucujidae)

Distribution: Cosmopolitan.
Habitat and food: Taken in flour mills, waste grain, cacao, spices, dried fruits, and copra.
References: Joy (*104, p. 123*), Richards and Herford (*152, p. 370*).

(125) LAEMOTMETUS RHIZOPHAGOIDES Walk.

(Family Cucujidae)

Distribution: Africa, Ceylon, Celebes, Timor, New Guinea, Taiwan, and introduced into Germany.
Habitat and food: Found in stored rice.
Reference: Zacher (*218, p. 68*).

(126) LATHRIDIUS BERGROTHI Reitt.

(Family Lathridiidae)

Distribution: Europe.
Habitat and food: Found in houses in flour and dates.
Reference: Portchinsky (*144*).

(127) LITARGUS BALTEATUS Lec.

(Family Mycetophagidae)

Distribution: Central America, North America, Hawaii, Germany, New South Wales.
Habitat and food: Found in corn and stored grain.
References: Zacher (*217*) (*218, p. 71*).

***(128) LOPHOCATERES PUSILLUS Klug**

(Family Ostomidae)

Common name: Siamese grain beetle.
Distribution: Wide spread in Tropics and South Temperate zones. In the United States it is confined to the Southern States.
Habitat and food: Breeds in all kinds of stored grain. Also recorded from flour, seeds, spices, dried apples, beans, and macaroni.
References: Chittenden (*36, pp. 14–18*), Roepke (*158*).

***(129) MELANOPHTHALMA AMERICANA Mann.**

(Family Lathridiidae)

Distribution: North America, Taiwan.
Habitat and food: Found in flour mills in Virginia.
Reference: Good, N. E. (office records).

***(130) MEZIUM AMERICANUM Laporte**

(Family Ptinidae)

Distribution: North America, Central America, South America, Europe, Canary Islands.
Habitat and food: Occurs in dwellings in dried animal products. It is known to infest tobacco seed, cayenne pepper, opium, grain, etc.
Reference: Office records.

(131) MONANUS CONCINNULUS Walk.

(Family Silvanidae)

Distribution: Cosmopolitan.
Habitat and food: Recorded in bran and flour in Mauritius.
Reference: Emmerez de Charmoy (*59*).

(132) MONOTOMA QUADRIFOVEOLATA Aubé

(Family Monotomidae)

Distribution: Union of Soviet Socialist Republics, middle Europe, northern Africa, central Asia, Japan, Chile, Canary Islands, and Caucasia.
Habitat and food: Under floors of grain stores in waste grain.
Reference: Zvierezomb-Zubkovsky (*221*).

***(133) MURMIDIUS OVALIS Beck**

(Family Murmidiidae)

Distribution: Europe, North America, East Indies, Japan.

Habitat and food: Found in numbers in dry shelled corn in Washington, D. C., in stored wheat in Kansas, and also recorded from rice, dried apples, vegetable foodstuffs, Aleppo gall nuts, and hay.
References: Good, N. E. (office notes), Zacher (*218, p. 73*).

(134) MYCETAEA HIRTA Marsh.

(Family Mycetaeidae)

Common name: Hairy cellar beetle.
Distribution: Europe and North America.
Habitat and food: Lives in wine cellars feeding on corks and fungi. Also recorded from grain in the Union of Soviet Socialist Republics.
Reference: Patton (*139, p. 445*).

***(135) MYCETOPHAGUS BIPUSTULATUS Melsh.**

(Family Mycetophagidae)

Distribution: Eastern and central parts of United States.
Habitat and food: Found in basements of flour mills, among waste grain, and also recorded from old flour barrels.
References: Good, N. E. (office notes), Schwarz (*170*).

(136) MYCETOPHAGUS QUADRIGUTTATUS Müll.

(Family Mycetophagidae)

Distribution: Europe, Caucasia.
Habitat: Occasionally taken in granaries.
References: Kunike (*112*), Zacher (*218, p. 71*).

(137) NAUSIBIUS CLAVICORNIS Kug.

(Family Silvanidae)

Distribution: Cosmopolitan.
Habitat and food: Common among ships' stores and occasionally found in houses. Recorded from sugar, rice, dried apples, ginger, logwood, and cassia husk.
References: Blatchley (*17, p. 564*), Patton (*139, p. 442*).

(138) PAGIOCERUS FRONTALIS F.

(Family Scolytidae)

Distribution: Peru.
Habitat and food: Damages stored corn.
References: Wille (*211, p. 5*), Zacher (*220, p. 521*).

(139) PAGIOCERUS RIMOSUS Eich.

(Family Scolytidae)

Distribution: Central America, South America, Cuba, Mexico, and Florida.
Habitat and food: Recorded boring in corn, and in seeds of *Persea borbonia*, *Anona glabra*, and *A. cherimolia*.
Reference: Barber (*13*).

(140) PAGIOCERUS ZEAE Eggers

(Family Scolytidae)

Distribution: Colombia, Guadeloupe.
Habitat and food: Works in corn and corncobs.
References: Bekman (*16*), Zacher (*220, p. 520*).

(141) PALORUS DEPRESSUS F.

(Family Tenebrionidae)

Distribution: Europe, Caucasia, northern Asia.
Habitat and food: Usually found in rotting tree trunks. Also occurs in warehouses in grain and flour.
References: Lukjanovitsh and Reichardt (*122, p. 406*), Patton (*139, p. 505*).

(142) PHARAXONOTHA KIRSCHI Reitt.

(Family Cryptophagidae)

Common name: The Mexican grain beetle.
Distribution: Guatemala, Mexico, Germany, Texas, Illinois.
Habitat and food: Attacks stored corn and other stored grain, corn meal, and edible tubers.
Predator: The mite *Pediculoides ventricosus* Newp.
References: Chittenden (*36, pp. 8–13*), Zacher (*217*).

***(143) PLATYDEMA RUFICORNE Sturm**

(Family Tenebrionidae)

Distribution: United States.
Habitat and food: Found attacking shelled corn and shorts in Kansas.
Reference: Office records.

***(144) PROSTEPHANUS TRUNCATUS Horn**

(Family Bostrichidae)

Common name: Larger grain borer.
Distribution: California, Texas, District of Columbia, Mexico, Guatemala, Brazil.
Habitat and food: Lives in warehouses, etc., breeding in corn and other stored grains and in tubers.
References: Chittenden (*37*), Zacher (*220, pp. 436–437*).

(145) PTINUS BICINCTUS Sturm

(Family Ptinidae)

Distribution: Europe, Canada, Massachusetts, Nebraska.
Habitat and food: Found breeding in bags of flour in storage in Nebraska.
Reference: Bureau records.

***(146) PTINUS BRUNNEUS Dufts.**

(Family Ptinidae)

Common name: Brown spider beetle.
Distribution: Cosmopolitan.
Habitat and food: Mainly a scavenger. Breeds in dried vegetable materials, animal matter, grain, flour, milled products, etc.
References: Boieldieu (*20*), Patton (*139, p. 492*).

(147) PTINUS LATRO F.

(Family Ptinidae)

Distribution: Europe, England, western Asia, northern Africa, Madagascar.
Habitat and food: Recorded from houses, warehouses, and granaries, in stored grain, bran, cacao, and sugar.
References: Boieldieu (*20*), Zacher (*218, p. 111*).

(148) PTINUS PUSILLUS Sturm

(Family Ptinidae)

Distribution: Northern and central Europe.
Habitat and food: Found in waste grain in England.
Reference: Joy (*105*).

(149) PTINUS RAPTOR Sturm

(Family Ptinidae)

Distribution: Northern Europe, New York.
Habitat and food: Found in warehouses damaging stored grain, in houses, and recorded from beehives.
References: Patton (*139, p. 497*), Tullgren (*197*).

(150) RHIZOPERTHA HORDEUM Mats.

(Family Bostrichidae)

Distribution: Taiwan.
Habitat and food: Found in stored grain and plant products.
Reference: Clausen (*39*).

(151) RHYNCOLUS ORYZAE Gyll.

(Family Curculionidae)

Distribution: Sweden.
Habitat and food: Described from specimens found between grains of rice at Stockholm. Not recorded since then.
Reference: Schoenherr (*165, p. 1075*).

(152) SITOPHAGUS HOLOLEPTOIDES Cast.

(Family Tenebrionidae)

Distribution: Europe, South Africa, Texas, Central America.
Habitat and food: Found in nutmegs in a warehouse and recorded from stored cereals.
Reference: Chittenden (*36, p. 5*).

(153) SITOPHILUS SASAKII Takah.

(Family Calandridae)

Distribution: Japan.
Habitat and food: Attacks stored rice.
Reference: Takahashi (*187*).

(154) TEMNOCHILA COERULEA Oliv.

(Family Ostomidae)

Distribution: Southern Europe, Asia.
Habitat: Occurs in decaying willow and fir and also in granaries.
Reference: Zacher (*218, p. 62*).

(155) TENEBRIO PICIPES Hbst.

(Family Tenebrionidae)

Distribution: Cosmopolitan.
Habitat and food: Usually found in rotting tree trunks. Reported from stored cereals in the United States and from stored grain in Japan.
Reference: Chittenden (*36, p. 4*).

(156) TENEBRIO SYRIACUS Zouf.

(Family Tenebrionidae)

Distribution: Egypt, Syria, Spain.
Habitat: Found in flour in mills, stores, etc.
Reference: Andres (*6, p. 124*).

(157) TENEBROIDES CORTICALIS Melsh.

(Family Ostomidae)

Distribution: Mexico, United States.
Habitat and food: Taken in stored grain in Mexico. Also predacious on the codling moth.
Reference: Ramirez (*147*).

(158) TENEBROIDES NANUS Melsh.

(Family Ostomidae)

Distribution: Alabama, District of Columbia, Pennsylvania, Texas.
Habitat and food: Taken in stored grain in Washington, D. C.
Reference: Office records.

(159) THORICTODES HEYDENI Reitt.

(Family Thorictidae)

Distribution: England, France, Germany, Dutch East Indies, Dutch Guiana, Sudan.
Habitat and food: Found in stored grain, rice, millet, sesame seeds, kapok seeds, peanuts, and other vegetable matter.
References: Van Emden (*57*), Walker (*206*).

(160) TRIBOLIUM DESTRUCTOR Uyttenb.

(Family Tenebrionidae)

Distribution: Germany, Netherlands.
Habitat and food: Found in seed houses, warehouses, flour mills, etc. Destructive locally in Germany to seeds. Also found in flour, meal, and animal products.
References: Uyttenboogaart (*199*).

***(161) TRIBOLIUM MADENS Charp.**

(Family Tenebrionidae)

Common name: Black flour beetle.
Distribution: Northern and Western States, southern Canada, central and northern Europe, Egypt.
Habitat and food: Usually found under the bark of trees but occasionally taken in flour, meal, seeds, and grain.
References: Good (*85*), Zacher (*220, p. 472*).

(162) TRIGONOGENIUS GLOBULUS Solier

(Family Ptinidae)

Distribution: California, Oregon, Chili, Colombia, England, Germany, Tasmania.
Habitat and food: Recorded from dried pears, drugs, and in flour mills, corn mills, granaries, houses, etc.
References: Scott (*171*), Tomlin (*191*).

***(163) TROGODERMA ORNATA Say**

(Family Dermestidae)

Distribution: Widely distributed in North America.
Habitat and food: Feeds on grain, seeds, and a great variety of foodstuffs.
Parasite: *Laelius trogodermatis* Ashm. (?).
References: Patton (*139, p. 465*), Wodsedalek (*213*).

(164) TROGODERMA STERNALIS Jayne

(Family Dermestidae)

Distribution: California, Texas, Arizona.
Habitat and food: Reported by Chittenden and others to feed on cereals, seeds, drugs, nuts, insect and plant museum specimens, and other dry animal and

vegetable matter. Mr. Barber's comments on this species are as follows: "As I would like to know what *sternalis* Jayne may be like (the name being incorrectly applied to the Chittenden specimens in our National Collection), some samples from these many cited infestations would be much appreciated. * * * Chittenden specimens do not agree with the description of *sternalis* Jayne and, I believe, his infestation was of exotic origin."
Reference: Chittenden (*35, pp. 21–22*).

***(165) TYPHAEA STERCOREA L.**

(Family Mycetophagidae)

Common name: Hairy fungus beetle.
Distribution: Cosmopolitan.
Habitat and food: Found in dwellings, warehouses, stores, flour mills, and outdoors. Infests stored grain and seeds, tobacco, peanuts, cacao, etc.
References: Durrant (*54, p. 34*), Gurney (*90*).

(166) ULOMA CULINARIS L.

(Family Tenebrionidae)

Distribution: Europe.
Habitat: Taken in hotels, meat shops, and granaries, also recorded from burrows of wood-boring beetles.
Reference: Zacher (*218, p. 113*).

(167) UROPHORUS HUMERALIS F.

(Family Nitidulidae)

Distribution: Tropical and South Africa, tropical Asia and Europe, Florida, and California.
Habitat and food: Normally feeds in decaying fruit or vegetation, but is also found in corn in the field and in storage.
References: Zacher (*218, p. 64; 219*).

LEPIDOPTERA

(168) ACHROIA GRISELLA F.

(Family Pyralididae)

Common name: Lesser bee moth.
Distribution: Cosmopolitan.
Habitat and food: Found in beehives and is injurious to beeswax. Also eats dried apples and raisins, and sometimes attacks grain.
References: Forbes (*67, p. 535*), Filipjev (*61, p. 429*).

(169) AGLOSSA DIMIDIATA Haw.

(Family Pyralididae)

Distribution: Japan, China (?), India (?).
Habitat and food: A pest of stored rice, and an enemy of silkworms.
Reference: Kuwayama (*114*).

(170) AGLOSSA PINGUINALIS L.

(Family Pyralididae)

Distribution: England, Europe, central and western Asia, India.
Habitat and food: Found in barns, and reported to attack stored barley.
Reference: Theobald (*189, p. 343*).

(171) ALUCITA sp.

(Family Pterophoridae)

Distribution: Algeria.
Habitat and food: Listed as one of the chief pests of stored grain in Algeria in 1923. According to Busck this record must be wrong since Pterophoridae do not affect stored grain.
Reference: Bouclier-Maurin (*22*).

(172) ANCHONOMA XERAULA Meyr.

(Family Oecophoridae)

Distribution: Japan.
Habitat and food: Attacks stored grain and plant products.
Reference: Clausen (*39*).

(173) APHOMIA GULARIS Zell.

(Family Pyralididae)

Distribution: North America, Europe, China, India, Japan, Hawaii.
Habitat and food: Occasionally found in warehouses attacking stored rice, nuts, meats, dried fruit, etc.
Parasite: *Microbracon hebetor* Say.
References: Ehrhorn (*56*), Jenner (*100*).

(174) ARISTOTELIA AUSTEROPA Meyr.

(Family Gelechiidae)

Distribution: India.
Habitat and food: Infests stored rice.
Reference: Fletcher (*65, p. 29*).

(175) CELAMA SORGHIELLA Riley

(Family Nolidae)

Distribution: Florida, Mississippi, Texas, North Carolina, Tennessee, District of Columbia, Maryland, Missouri, Iowa, and Nebraska.
Habitat and food: Usually recorded as feeding on seeds of sorghum and sugarcane. Found infesting stored corn in Nebraska.
Reference: Swenk (*183*).

(176) CIRPHIS ZEAE Dup.

(Family Noctuidae)

Distribution: Italy, southern France, Spain, Dalmatia, Greece, Egypt, western Turkestan.
Habitat and food: Found in stored corn in Italy.
References: Petri (*141*), Rocci and Turati (*157*).

(177) ENDROSIS LACTEELLA D. and S.

(Family Oecophoridae)

Distribution: Cosmopolitan.
Habitat and food: Found in houses, barns, and storehouses, infesting stored grains, feeds, seeds, etc.
Parasites: (Relation of its parasites to stored cereal products too remote for them to be included here.)
References: Spencer (*177*), Zacher (*220, pp. 539–540*).

(178) EPHESTIA FIGULILELLA Gregs.

(Family Pyralididae)

Common names: Fig moth, raisin moth.
Distribution: Cosmopolitan.
Habitat and food: Found in warehouses and granaries feeding on grain, rice, meal, corn, oatmeal, dried fruits, etc.
Reference: Richards and Thomson (*153, pp. 194–196*).

(179) EPITHECTIS STUDIOSA Meyr.

(Family Gelechiidae)

Distribution: India.
Habitat and food: Infests stored rice.
Reference: Fletcher (*65, p. 29*).

(180) HYPSOPYGIA COSTALIS F.

(Family Pyralididae)

Common name: Clover hay worm.
Distribution: North America, central and southern Europe, Turkestan.
Habitat and food: Breeds in stored hay and grain.
Reference: Surface (*182, p. 7*).

(181) MUSSIDIA NIGRIVENELLA Rag.

(Family Pyralididae)

Distribution: Africa.
Habitat and food: Feeds in stored corn, cereals, cacao, etc.
Reference: Lamborn (*117, pp. 209, 211*).

(182) PYRALIS LIENIGIALIS Zell.

(Family Pyralididae)

Distribution: Northern Europe.
Habitat and food: Feeds on grain and cereals that are slightly out of condition.
Reference: Zacher (*218, p. 233*).

***(183) PYRALIS MANIHOTALIS Guen.**

(Family Pyralididae)

Distribution: Florida, West Indies, South America, Central America, India, Japan.
Habitat and food: Breeds in rice and meal, stored grain, peas, dried fruits, chocolate, etc.
References: Patton (*139, p. 541*), Office records (R. T. Cotton).

(184) PYRALIS PICTALIS Curt.

(Family Pyralididae)

Distribution: India, Indo-China.
Habitat and food: Commonly found feeding in rice and stored grain.
References: Fletcher and Ghosh (*66, p. 715*), Zacher (*220, p. 569*).

(185) SETOMORPHA INSECTELLA F.

(Family Tineidae)

Common name: Insect moth.
Distribution: Widely distributed in the warmer regions of the world.
Habitat and food: Feeds in stored grain, dried vegetable material, dried insects, etc.
References: Fullaway (*69*), Morstatt (*130*).

(186) SETOMORPHA MARGALOESTRIATA Keuch.

(Family Tineidae)

Distribution: Dutch East Indies.
Habitat and food: Feeds on stored grain, tobacco, seeds, wool, leather, etc.
References: Keuchenius (*106, p. 53*), Patton (*139, pp. 535–536*).

(187) THAGORA FIGURANA Walk.

(Family Pyralididae)

Distribution: Dutch East Indies, Japan.
Habitat and food: Breeds in stored rice, stored cereals, and on rotting vegetation.
Reference: Roepke (*158*).

(188) TINEA CLOACELLA Haw.

(Family Tineidae)

Common name: Cork moth.
Distribution: Cosmopolitan.
Habitat and food: Breeds in stored grain, corks in wine flasks, dried vegetable material, prefers foodstuffs with a high moisture content.
Parasites: Several parasites are listed for this species but they are too remotely related to stored cereals to be included here.
References: Patton (*139, p. 534*), Zacher (*220, p. 526*).

(189) TINEA FUSCIPUNCTELLA Haw.

(Family Tineidae)

Distribution: Europe, North America.
Habitat and food: Breeds in stored seeds, dried animal matter, and dried fruits.
Parasite: *Metacoelus mansuetor* Grav.
Reference: Zacher (*220, p. 522*).

(190) TINEA MISELLA Zell.

(Family Tineidae)

Distribution: Europe, North America.
Habitat and food: Attacks stored grain and peas.
References: Schütze (*167, p. 211*), Zacher (*220, p. 521*).

(191) TINEA PALLESCENTELLA Haw.

(Family Tineidae)

Distribution: Europe.
Food: Larva is granivorous.
Reference: Stainton (*178*).

(192) TINEOLA BISELLIELLA Humm.

(Family Tineidae)

Common name: Webbing clothes moth.
Distribution: Cosmopolitan.
Habitat and food: Breeds in woolen materials and dried animal matter. Occasionally found in stored grain and farinaceous materials.
Parasites: *Apanteles carpatus* Say. (Several other parasites listed for this species are too distantly related to stored cereals to be included here.)
References: Swenk (*183, p. 10*), Zacher (*220, p. 530*).

(193) TRACHEA BASILINEA D. and S.

(Family Noctuidae)

Distribution: Europe, central Asia to China and Japan.
Habitat and food: Damages stored grain as well as standing grain.
Parasites: (The several parasites listed for this species are of too remote connection to stored cereals to be included here.)
References: Fulmek (*71*), Fillipjev (*61, p. 433*), Stanchinskii (*179*).

ASSOCIATED INSECTS AND OTHER ARTHROPODS

ACARINA

***(194) ACAROPHENAX TRIBOLII New. and Duv.**

(Family Tarsonemidae)

Distribution: England, United States.
Hosts: *Gnathocerus cornutus* F. (*85*), *Latheticus oryzae* Waterh. (*85*), *Palorus ratzeburgi* Wissm. (*85*), *Tribolium castaneum* Hbst. (*85, 133*), *T. confusum* J. du V. (*85, 133*).

(195) CHEYLETUS AUDAX Banks

(Family Cheyletidae)

Distribution: Illinois.
Prey: Probably predacious on *Tyroglyphus* spp.
Reference: Banks (*12, p. 27*).

(196) CHEYLETUS ERUDITUS Latr.

(Family Cheyletidae)

Distribution: England, Denmark, Union of Soviet Socialist Republics.
Prey: *Caloglyphus michaeli* Oud. (*149*), *Glyciphagus domesticus* DeG. (*173*), *Tyroglyphus farinae* DeG. (*149, 173*), *T. putrescentia* Schr. (*173*), *Tyroglyphus* sp. (*139, p. 675*).

(197) CHEYLETUS SEMINIVORUS Pack.

(Family Cheyletidae)

Distribution: New York, Ohio, Illinois.
Prey: Probably predacious on *Tyroglyphus* spp.
Reference: Essig (*60, p. 23*).

***(198) PEDICULOIDES VENTRICOSUS Newp.**

(Family Pediculoididae)

Common name: Grain itch mite.
Distribution: Cosmopolitan.
Hosts and prey: *Caulophilus latinasus* Say (*44*), *Ephestia cautella* Walk. (*36, pp. 8–13*), *E. elutella* Hbn. (*220*), *E. kuehniella* Zell. (*29; 95; 220, p. 555*), *Gnathocerus cornutus* F. (*220*), *Microbracon hebetor* Say, *Pharaxonotha kirschi* Reitt. (*36, pp. 8–13*), *Plodia interpunctella* Hbn. (*192, 220*), *Sitophilus granarius* L. (*9*), *S. oryzae L.* (*43*), *Sitotroga cerealella* Oliv. (*64; 220, p. 547*), *Stegobium paniceum* L. (*220, p. 447*), *Tineola biselliella* Humm. (*95; 220, p. 537*), *Tribolium castaneum* Hbst. (*85*), *T. confusum* J. du V. (*85*).

(199) SEIULUS MURICATUS Koch

(Family Parasitidae)

Distribution: Germany.
Food: *Ephestia elutella* Hbn. (eggs) (*220, p. 564*), *E. kuehniella* Zell. (eggs) (*28*).

(200) SEIUS sp.

(Family Parasitidae)

Distribution: Virginia.
Host: *Ephestia elutella* Hbn.
Reference: Reed and others (*150*).

(201) SEIUS sp.

(Family Parasitidae)

Distribution: Barbados.
Hosts: *Ephestia kuehniella* Zell., *Habrocytus cerealella* Ashm., *Sitotroga cerealella* Oliv.
Reference: Tucker (*196*).

(202) TYPHLODROMUS TINEIVORUS Oud.

(Family Parasitidae)

Distribution: Germany, Illinois.
Hosts and food: *Anthrenus* spp. (*94*), *Ephestia kuehniella* Zell. (*94*), *Sitotroga cerealella* Oliv. (*138*). (Eggs in first two cases.)

(203) TYROGLYPHUS sp.

(Family Tyroglyphidae)

Distribution: California.
Food: Eggs of *Sitotroga cerealella* Oliv.
Reference: Flanders (*64*).

CHELONETHIDA

(204) CHELIFER CANCROIDES L.

(Family Chernetidae)

Distribution: Europe, North America.
Prey: Predacious on *Troctes divinatoria* Müll. (*125*), other small insects, and mites, in houses, flour mills, etc. (*81*).

SCUTIGEROMORPHIDA

(205) CERMATIA FORCEPS Raf.

(Family Scutigeridae)

Common name: House centipede.
Distribution: Cosmopolitan.
Prey: *Blattella germanica* L. (*98*) and other cockroaches, clothes moths, house flies, and other household insects (*60*).

NEUROPTERA

(206) CROCE FILIPENNIS Westw.

(Family Nemopteridae)

Distribution: India.
Prey: Larva feeds on silverfish, booklice, and almost all insects found in houses.
Reference: Imms (*99*).

HEMIPTERA

*(207) LYCTOCORIS CAMPESTRIS F.

(Family Anthocoridae)

Distribution: Europe, North America.
Prey: Predacious on insects living in stored grain, etc.
References: Richards and Herford (*152, p. 386*), Zvierezomb-Zubkovsky (*221*).

(208) ORIUS FRUMENTI Zacher

(Family Anthocoridae)

Distribution: La Plata River. (South America.)
Prey: Predacious on immature stages of stored-grain pests.
Reference: Zacher (*218*).

(209) ORIUS MADEIRENSIS Reut.

(Family Anthocoridae)

Distribution: Egypt.
Prey: Predacious on immature stages of stored-grain pests.
Reference: Zacher (*218*).

*(210) REDUVIUS PERSONATUS L.

(Family Reduviidae)

Common names: Masked bedbug hunter, cannibal bug.
Distribution: Europe and North America.

Prey: This insect is quite common in flour mills and attacks practically any flour-mill insect.
References: Good, N. E. (office notes), Herrick (*96, p. 419*).

***(211) XYLOCORIS CURSITANS Fallen**

(Family Anthocoridae)

Distribution: Europe, North America, Senegal.
Prey: Found to be a predator on larvae of *Ephestia elutella* Hbn. and *Plodia interpunctella* Hbn. (*153, p. 229*), *Oryzaephilus* spp. (*156, p. 63*), *Tribolium confusum* J. du V. (*85*), and probably feeds on many other flour-mill insects.

COLEOPTERA

(212) AECHMITES TERRICOLA Hbst.

(Family Carabidae)

Distribution: Europe, North America.
Prey: Predacious on larvae of stored-grain insects.
Reference: Dieuzeide and Tempère (*52*).

***(213) CARCINOPS QUATUORDECIMSTRIATA Steph.**

(Family Histeridae)

Distribution: Cosmopolitan.
Habitat and food: Taken in stored grain, flour, and from waste grain in flour-mill basements where it is common. It is predacious on various grain insects and also feeds on excrement and small carcasses.
References: Good, N. E. (office notes), Joy (*105, p. 85*).

(214) CORYNETES COERULEUS Dej.

(Family Corynetidae)

Distribution: Germany.
Prey and habitat: Larvae and adults prey on larvae of Dermestidae, Anobiidae, Ptinidae, etc., living in bones, meat, flour, grain, etc.
Reference: Zacher (*218, p. 90*).

(215) DENDROPHILUS PUNCTATUS Hbst.

(Family Histeridae)

Distribution: Europe.
Habitat: Inhabits birds' nests and recorded from waste grain, where it is probably predacious on grain insects.
Reference: Zvierezomb-Zubkovsky (*221*).

***(216) DENDROPHILUS PUNCTULATUS Say**

(Family Histeridae)

Distribution: Eastern and Central States.
Habitat: Found frequently in waste grain in flour-mill basements. It is predacious on the insects living there.
Reference: Good, N. E. (office notes).

(217) LEBIA sp.

(Family Carabidae)

Distribution: Taiwan.
Prey: *Tribolium castaneum* Hbst.
Reference: Okuni (*137*).

(218) PHYLLODREPA PLANA F.

(Family Staphylinidae)

Distribution: Union of Soviet Socialist Republics.
Prey and habitat: Recorded from waste grain and is probably predacious on grain insects.
Reference: Zvierezomb-Zubkovsky (*221*).

(219) SAPRINUS SEMISTRIATUS Scriba

(Family Histeridae)

Distribution: Eurasia.
Habitat: A very abundant species sometimes found in cellars and grain storage houses and may be predacious on grain insects.
Reference: Zacher (*218, p. 62*).

(220) THANEROCLERUS BUQUETI Lefevr.

(Family Cleridae)

Distribution: England, India.
Prey and habitat: Said to prey on *Lasioderma serricorne* F. (*68, p. 280*). Probably attacks other insects living in cacao, etc., from which it has been recorded (*152, p. 375*).

(221) THANEROCLERUS GIRODI Chevr.

(Family Cleridae)

Distribution: Florida, Cuba, France.
Prey: *Lasioderma serricorne* F.
Reference: Zacher (*218, p. 90*).

(222) TILLUS NOTATUS Klug

(Family Cleridae)

Distribution: Dutch East Indies.
Prey and habitat: Recorded attacking *Dinoderus minutus* F. in stored grain.
Reference: Rutgers (*163, p. 34*).

DIPTERA

(223) ARTHROCNODAX FARINICOLA Barnes

(Family Cecidomyiidae)

Distribution: Italy.
Prey: The larvae are predacious on mites in macaroni, flour, and other provisions.
References: Barnes (*14*), Candura (*30, p. 192*).

(224) EPIGRIMYIA FLORIDENSIS Towns.

(Family Tachinidae)

Distribution: California, New Mexico, Eastern States.
Host: *Plodia interpunctella* Hbn.
Reference: Hamlin, Reed, and Phillips (*91*).

(225) HELINA ULIGINOSA Fallen

(Family Anthomyiidae)

Distribution: Europe, North America.
Prey: The larva feeds on the larvae of *Borkhausenia*, etc.
Reference: Chevalier (*33*).

(226) LESTODIPLOSIS RAPHANI Barnes

(Family Cecidomyiidae)

Distribution: Denmark, Germany, England.
Habitat and prey: The larva has been found in seed infested with *Tyroglyphus* sp. and is probably predacious on it.
Reference: Barnes (*14*).

(227) LISPIDEA TARSALIS Coq.

(Family Tachinidae)

Distribution: Maryland, New Hampshire, Illinois.
Host: *Pyralis farinalis* L.
Reference: Chittenden (*35*).

(228) MELANOPHORA RORALIS L.

(Family Dexiidae)

Distribution: Europe and North America.
Host: *Pyralis farinalis* L.
Reference: Brauer (*24*).

***(229) SCENOPINUS FENESTRALIS L.**

(Family Scenopinidae)

Distribution: Europe and North America.
Habitat and prey: Common in flour mills, grain elevators, and warehouses. The larva is a predator on stored-grain and flour insects.
References: Back and Cotton (*10*), Candura (*30*).

***(230) SCENOPINUS GLABRIFRONS Meig.**

(Family Scenopinidae)

Distribution: Europe and eastern North America.
Habitat and prey: Common in flour mills, grain elevators, and warehouses. The larva is a predator on stored-grain and flour insects.
Reference: Good, N. E. (office notes).

HYMENOPTERA

(231) ALAPTUS GLOBOSICORNIS Gir.

(Family Mymaridae)

Distribution: Florida, Hawaii, and Australia.
Hosts: Eggs of *Troctes divinatoria* Müll.
References: Swezey (*186*), Timberlake (*190*).

(232) ANGITIA ARMILLATA Grav.

(Family Ichneumonidae)

Distribution: Europe.
Host: *Ephestia kuehniella* Zell. (In laboratory.)
Reference: Beling (*15*).

(233) ANGITIA KIEHTANI Vier.

(Family Ichneumonidae)

Distribution: Connecticut.
Host: *Plodia interpunctella* Hbn.
Reference: Viereck and others (*204, p. 265*).

(234) ANISOPTEROMALUS MOLLIS Ruschka

(Family Pteromalidae)

Distribution: Germany.
Host: *Laemophloeus ferrugineus* Steph.
Reference: Ruschka and Fulmek (*162, p. 410*).

(235) ANTROCEPHALUS AETHIOPICUS Masi

(Family Chalcididae)

Distribution: Italian Somaliland.
Hosts: *Corcyra cephalonica* Staint. (?), *Ephestia cautella* Walk. (?).
Reference: Chiaromonte (*34*).

(236) ANTROCEPHALUS MAHENSIS Masi

(Family Chalcididae)

Distribution: India and Seychelles Islands.
Host: *Corcyra cephalonica* Staint.
Reference: Krishna Ayyar (*111*).

(237) APANTELES ALETIAE Riley

(Family Braconidae)

Recorded as parasite of *Trogoderma tarsale* Melsh. (*T. ornatum* Say) by Dalla Torre (*49, v. 4, p. 163*), who cites Riley as authority. However, in neither of the two Riley papers listed by Dalla Torre is reference made to *Trogoderma* as a host of this parasite. According to experts of the Division of Insect Identification of the Bureau of Entomology and Plant Quarantine, the only definitely known host is *Alabama argillacea* Hbn., and as there are no authentic records of any species of *Apanteles* having been reared from Coleoptera, the record of *Apanteles aletiae* from *Trogoderma* is certainly erroneous.

(238) APANTELES ARAECERI Wilk.

(Family Braconidae)

Distribution: Java.
Host: *Araecerus fasciculatus* DeG. (According to Muesebeck this record is in all probability incorrect.)
Reference: Wilkinson (*209, p. 118*).

(239) APANTELES CARPATUS Say

(Family Braconidae)

Distribution: United States, Europe, Japan.
Hosts: *Pyralis farinalis* L. (*35*), *Tineola biselliella* Humm., etc. (*118, p. 906*).

(240) APANTELES NEPHOPTERICIS Pack.

(Family Braconidae)

Distribution: United States.
Host: *Ephestia kuehniella* Zell.
Reference: Richards and Thomson (*153, p. 227*).

(241) APANTELES sp.

(Family Braconidae)

Distribution: Germany (?).
Host: *Tinea granella* L.
Hyperparasite: *Hemiteles bipunctator* Thunb.
Reference: Schütze and Roman (*168*).

***(242) APLASTOMORPHA CALANDRAE How.**

(Family Pteromalidae)

Distribution: Cosmopolitan.
Hosts: *Carpophilus obsoletus* Er. (?) (*137, p. 105*), *Catorama mexicana* Chevr. (*190*), *Caulophilus latinasus* Say (*45*), *Lasioderma serricorne* F., *Sitophilus granarius* L. (*45*), *S. oryzae* L. (*45, 60, 204*), *Stegobium paniceum* L. (*60, 204*).

(243) AXIMOPSIS JAVENSIS Gir.

(Family Eurytomidae)

Distribution: Java, Malaya (?).
Host: *Araecerus fasciculatus* DeG.
References: Girault (*84*), Van der Goot (*88*).

(244) AXIMOPSIS TEPHROSIAE Gir.

(Family Eurytomidae)

Distribution: Java.
Host: *Araecerus fasciculatus* DeG. (parasite uncertain).
Reference: Girault (*84*).

(245) BASSUS HAWAIICOLA Ashm.

(Family Braconidae)

Distribution: Hawaii.
Host: *Pyroderces rileyi* Wals. (outdoors).
Reference: Swezey (*184, pp. 30, 31*).

(246) CAENACIS sp.

(Family Pteromalidae)

Distribution: Austria.
Host: *Sitotroga cerealella* Oliv.
Reference: Ruschka and Fulmek (*162, p. 399*).

(247) CATOLACCUS ANTHONOMI Ashm.

(Family Pteromalidae)

Distribution: Southern States.
Host: *Lasioderma serricorne* F. (?).
Reference: Johnson (*102, p. 493*).

(248) CEPHALONOMIA CARINATA Kieff.

(Family Bethylidae)

Distribution: Australia, Europe.
Host: *Oryzaephilus surinamensis* L.
References: Myers (*132*), Richards and Herford (*152, p. 382*).

(249) CEPHALONOMIA FORMICIFORMIS Westw.

(Family Bethylidae)

Distribution: England.
Hosts: *Sitophilus granarius* L., *S. oryzae* L.
Reference: Fitch (*62*).

(250) CEPHALONOMIA MERIDIONALIS Brèthes

(Family Bethylidae)

Distribution: Argentina.
Host: *Oryzaephilus surinamensis* L.
Reference: Brèthes (*25, p. 87*).

(251) CEPHALONOMIA NIGRICORNIS Sarra

(Family Bethylidae)

Distribution: Italy.
Host: *Tenebroides mauritanicus* L.
Reference: Sarra (*164*).

(252) CEPHALONOMIA QUADRIDENTATA Duch.

(Family Bethylidae)

Distribution: Germany.
Hosts: *Stegobium paniceum* L., also bred from *Lasioderma serricorne* F., *Niptus hololeucus* Fald., and *Ptinus tectus* Boield.
Reference: Van Emden (*58*).

***(253) CEPHALONOMIA TARSALIS Ashm.**

(Family Bethylidae)

Distribution: Australia, Italy, and entire United States.
Hosts: *Oryzaephilus surinamensis* L., *Sitophilus oryzae* L.
Reference: Gahan (*76*).

(254) CEPHALONOMIA WATERSTONI Gahan

(Family Bethylidae)

Distribution: North America, Australia.
Hosts: *Sitophilus oryzae* L. (?), other grain beetles.
Reference: Gahan (*76*).

(255) CEPHALONOMIA XAMBEUI Giard

(Family Bethylidae)

Distribution: France.
Host: *Ptinus fur* L.
Reference: Nielsen (*135, p. 7*).

(256) CEPHALONOMIA sp.

(Family Bethylidae)

Distribution: Italy.
Host: *Stegobium paniceum* L.
Reference: Gahan (*76, p. 221*).

(257) CEROCEPHALA CORNIGERA Westw.

(Family Pteromalidae)

Distribution: Europe.
Hosts: *Sitophilus granarius* L., *S. oryzae* L.
Reference: Vassiliev (*201*).

(258) CEROCEPHALA DINODERI Gahan

(Family Pteromalidae)

Distribution: Philippine Islands.
Host: *Dinoderus minutus* F.
Reference: Gahan (*74*).

***(259) CHAETOSPILA ELEGANS Westw.**

(Family Pteromalidae)

Distribution: Probably cosmopolitan.
Hosts: *Caulophilus latinasus* Say, *Sitophilus granarius* L., *S. oryzae* L.
References: Back and Cotton (*9, p. 29*), Cotton (*43, 44*).

(260) CHREMYLUS RUBIGINOSUS Nees

(Family Braconidae)

Distribution: Europe.
Hosts: *Ephestia kuehniella* Zell. (*35, 155*), *Sitophilus oryzae* L. (*176*), *Tinea granella* L. (*35; 63, p. 141*).

(261) CREMASTUS FLAVOORBITALIS Cam.

(Family Ichneumonidae)

Distribution: Fiji Islands, Hawaii.
Host: *Pyroderces rileyi* Wals. (outdoors).
Reference: Swezey (*185*).

(262) CRYPTUS PTINIVORUS Rond. (manuscript name?)

(Family Ichneumonidae)

Distribution: Italy.
Host: *Ptinus fur* L. (?).
Reference: Leonardi (*119, p. 171*).

(263) DIBRACHYS sp. (probably ACUTUS Thoms.)

(Family Pteromalidae)

Distribution: Sweden, Italy.
Host: *Sitophilus granarius* L.
Reference: Zacher (*220, p. 513*).

***(264) DIBRACHYS CAVUS Walk.**

(Family Pteromalidae)

Distribution: Europe, North America, Sudan.
Hosts: *Plodia interpunctella* Hbn. (*180, 220*), *Sitophilus granarius* L. (*220*), *Sitotroga cerealella* Oliv. (*64, 175*), *Stegobium paniceum* L. (*180*), *Tinea granella* L. (*161, 220*), and many out-of-doors Lepidoptera and their primary parasites.

(265) DIBRACHYS CLISIOCAMPAE Fitch

(Family Pteromalidae)

Distribution: Eastern States.
Hosts: *Sitotroga cerealella* Oliv., etc.
Reference: Viereck (*204, pp. 473-474*).

(266) DIMACHUS DISCOLOR Walk.

(Family Pteromalidae)

Distribution: Europe.
Host: *Ptinus tectus* Boield.
Reference: Zacher (*220, p. 462*).

(267) ECPHOROPSIS VIENNENSIS Grav.

(Family Ichneumonidae)

Distribution: England.
Host: *Plodia interpunctella* Hbn.
Reference: Morley and Rait-Smith (*129*).

(268) ENTEDON LONGIVENTRIS Ratz.

(Family Eulophidae)

Distribution: Germany.
Hosts: *Anobium punctatum* DeG. (*148, v. 2, p. 116*), *Stegobium paniceum* L. (*220, p. 447*).

(269) EUPELMUS CUSHMANI Cwfd.

(Family Eupelmidae)

Distribution: Texas.
Host: *Araecerus fasciculatus* DeG.
Reference: Tucker (*194, p. 63*).

(270) EUPELMUS JAVAE Gir.

(Family Eupelmidae)

Distribution: Java, Malaya (?).
Host: *Araecerus fasciculatus* DeG.
References: Corbett and Miller (*41*), Girault (*84*).

(271) EUPONERA SENNAARENSIS Mayr.

(Family Formicidae)

Distribution: Italian Somaliland.
Prey: A predator on larvae of *Corcyra cephalonica* Staint.
Reference: Chiaromonte (*34*).

(272) EURYTOMA sp.

(Family Eurytomidae)

Distribution: Malay States (?).
Host: *Araecerus fasciculatus* DeG.
Reference: Corbett and Miller (*41*).

(273) EURYTOMA TYLODERMATIS Ashm.

(Family Eurytomidae)

Distribution: United States.
Host: *Araecerus fasciculatus* DeG.
Reference: Tucker (*194*).

***(274) EVANIA APPENDIGASTER L.**

(Family Evaniidae)

Distribution: Cosmopolitan.
Hosts: Egg capsules of *Blatta orientalis* L. (*30, 82*), *Blattella germanica* L. (*82*), *Periplaneta americana* L. (*82*), and *Periplaneta australasiae* F. (*82*).
Hyperparasite: *Tetrastichus hagenowi* Ratz. (*30*).

(275) EVANIA DIMIDIATA Spin.

(Family Evaniidae)

Distribution: Egypt.
Host: Egg capsules of *Blatta orientalis* L.
Reference: Alfieri (*5*).

(276) EVANIA ERYTHRASPIS Cam.

(Family Evaniidae)

Distribution: British Guiana.
Host: Egg capsules of *Periplaneta americana* L.
Reference: Bodkin (*19, p. 320*).

***(277) EVANIA PUNCTATA Brullé**

(Family Evaniidae)

Distribution: New York, Maryland, Europe.
Hosts: *Blatta orientalis* L. (eggs) (Good, N. E. (office notes, 1930)), *Periplaneta americana* L. (eggs) (*18, p. 390*).

(278) EVANIA SERICEA Cam.

(Family Evaniidae)

Distribution: Hawaii.
Hosts: Egg cases of *Periplaneta americana* L. and *Periplaneta australasiae* F.
Reference: Swezey (*186*).

***(279) GONIOZUS COLUMBIANUS Ashm.**

(Family Bethylidae)

Distribution: Maryland, Virginia, Pennsylvania, New York.
Hosts: Bred from cottonseed meal containing *Pyralis farinalis* L., *Pyroderces rileyi* Wals., *Tenebrio obscurus* F., *Tenebroides mauritanicus* L., *Tinea granella* L., and possibly *Oryzaephilus surinamensis* L.
Reference: Good, N. E. (office notes, 1930).

(280) HABRITYS BREVICORNIS Ratz.

(Family Pteromalidae)

Distribution: Europe.
Hosts: *Anobium punctatum* DeG. (*49, v. 5, p. 88*), *Stegobium paniceum* L. (*148, v. 2, p. 200*).

(281) HABROCYTUS CEREALELLAE Ashm.

(Family Pteromalidae)

Distribution: United States, Argentina.
Hosts: *Sitotroga cerealella* Oliv., etc.
Predator: *Seius* sp.
Reference: Noble (*136*).

(282) HECABOLUS SULCATUS Curt.

(Family Braconidae)

Distribution: Italy, England (?), Finland, Sweden.
Hosts: *Ptinus fur* L., etc.
Reference: Leonardi (*119, p. 171*).

(283) HEMITELES MUSEORUM Rond. (manuscript name?)

(Family Ichneumonidae)

Distribution: Italy.
Probable host: *Anthrenus museorum* L.
Reference: Leonardi (*119, p. 157*).

(284) HEMITELES TINEAE Rond. (manuscript name?)

(Family Ichneumonidae)

Distribution: Italy (?).
Host: *Tinea granella* L.
Reference: Chittenden (*35, p. 43*).

(285) HOLEPYRIS HAWAIIENSIS Ashm.

(Family Bethylidae)

Distribution: Hawaii, West Africa, Ceylon, Venezuela.
Hosts: *Corcyra cephalonica* Staint. (*153, p. 228*), *Ephestia elutella* Hbn. (*153*), *Plodia interpunctella* Hbn. (*27, 153*).

(286) HYPOPTEROMALUS TABACUM Fitch

(Family Pteromalidae)

Viereck (*204, p. 474*) says that this species is "Listed as an American parasite of the cosmopolitan insect *Calandra oryzae*." According to Gahan this species

is a hyperparasite on *Apanteles*, *Meraporus*, etc., and is not a parasite of *Sitophilus oryzae* L.

(287) HYPOSOTER FUGITIVUS Say

(Family Ichneumonidae)

Viereck (*204, p. 267*) lists *Ephestia kuehniella* Zell. as one of the hosts of this species, but gives no authority for its inclusion. According to Cushman, *H. fugitivus* is a parasite of the tent caterpillars and other leaf-feeding Lepidoptera and certainly would not attack *Ephestia*.

***(288) IDECHTHIS CANESCENS Grav.**

(Family Ichneumonidae)

Distribution: Cosmopolitan.
Hosts: *Ephestia cautella* Walk. (*35, 153*), *E. elutella* Hbn. (*220, p. 564*), *E. kuehniella* Zell. (*154, 205*), *Plodia interpunctella* Hbn. (*35, 153*), *Tinea granella* L. (*160, p. 169*).
Hyperparasite: *Lariophagus distinguendus* Foerst. (*205*).

(289) IRIDOMYRMEX DETECTUS Sm.

(Family Formicidae)

Distribution: Australia.
Prey: Predacious on *Plodia interpunctella* Hbn. and *Ephestia cautella* Walk.
Reference: Myers (*132*).

(290) IRIDOMYRMEX RUFONIGER Lowne

(Family Formicidae)

Distribution: Australia, Samoa.
Prey: Predacious on *Plodia interpunctella* Hbn.
Reference: Zacher (*220, p. 567*).

(291) LAELIUS ANTHRENIVORUS Trani

(Family Bethylidae)

Distribution: France, Italy.
Hosts: *Anthrenus museorum* L. (*193*), *A. verbasci* L. (*200*).

(292) LAELIUS TROGODERMATIS Ashm.

(Family Bethylidae)

Distribution: United States.
Host: *Trogoderma* sp. (This record from "*Trogoderma tarsale*" may refer to either *T. versicolor* Creutz. or *T. ornata* Say).
Reference: Ashmead (*7*).

***(293) LARIOPHAGUS DISTINGUENDUS Foerst.**

(Family Pteromalidae)

Distribution: Europe, India, United States, probably cosmopolitan.
Hosts: *Idechthis canescens* Grav. (*205*), *Lasioderma serricorne* F. (*23, p. 30*), *Microbracon hebetor* Say (*93*), *Rhizopertha dominica* F. (*86*), *Sitophilus granarius* L. (*201*), *S. oryzae* L. (*142, p. 80*), *Stegobium paniceum* L. (*109, p. 275*).

(294) LEUCODESMIA NIGRIVENTRIS Gir.

(Family Eulophidae)

Distribution: Florida.
Host: *Pyroderces rileyi* Wals. (outdoors).
Reference: Girault (*83, p. 46*).

(295) LIMNERIUM EPHESTIAE Ashm.

(Family Ichneumonidae)

Distribution: Missouri.
Hosts: *Ephestia cautella* Walk. (?) (*38, p. 18*) (parasite uncertain), *E. kuehniella* Zell. (*153, p. 224*) (parasite uncertain), *Plodia interpunctella* Hbn. (*35, p. 41*), host uncertain.

(296) MERAPORUS GRAMINICOLA Walk.

(Family Pteromalidae)

Distribution: England.
Host: *Sitophilus* spp.
Reference: Fitch (*62, p. 48*).

(297) MERAPORUS REQUISITUS Tucker

(Family Pteromalidae)

Distribution: Louisiana.
Host: *Sitophilus oryzae* L.
Reference: Tucker (*195, p. 344*).

(298) MESOSTENUS GRACILIS Cress.

(Family Ichneumonidae)

Distribution: United States, Mexico.
Hosts: *Ephestia kuehniella* Zell., etc.
Reference: Johnson (*101*).

(299) METACOELUS MANSUETOR Grav.

(Family Ichneumonidae)

Distribution: Cosmopolitan.
Hosts: *Anobium punctatum* DeG. (*119, p. 173*), *Pyralis farinalis* L. (*35*), *Tinea fuscipunctella* Haw. (*35*).

(300) METEORUS ICTERICUS Nees

(Family Braconidae)

Said by Bouché (*21, p. 148*), Rondani (*159, p. 58*), and Marshall (*124, p. 101*) to have *Pyralis farinalis* L. as a host. A number of recent authors have quoted these references.

Mr. Muesebeck's comments on the subject are as follows: "Nearly all of the literature records of *Meteorus ictericus* from *Pyralis farinalis* appear to refer back to Bouché's report of this host association. But Marshall (*124*), while quoting the record, states that 'there must be a mistake here'. However, we cannot be altogether certain of the identity of *ictericus* Nees, the type apparently having disappeared, and it may be that Bouché, who was a contemporary and a correspondent of Nees, was correct and that most subsequent records of *ictericus* have been based on misidentification . . . it seems rather surprising that the rearing from *P. farinalis* has not been repeated . . ."

(301) MICROBRACON BREVICORNIS Wesm.

(Family Braconidae)

Distribution: Europe, Egypt, India, North America.
Hosts: Pyralid larvae outdoors. Reared in the laboratory on *Ephestia kuehniella* Zell. (*145, p. 247*), and on *Plodia interpunctella* Hbn. (*198*). According to Richards and Thomson (*153*), "*Ephestia* is only a relative unimportant host, and then only in countries like Egypt where the moth maintains itself out of doors."

This species has been very generally confused with *M. hebetor*, and experts of the Division of Insect Identification of the Bureau of Entomology and

Plant Quarantine are of the opinion that the numerous references to this insect as a parasite of stored grain pests are the result of misidentification and refer to *M. hebetor*.
Other references: Genieys (*79*), Muesebeck (*131*).

(302) MICROBRACON CRASSICORNIS Thoms.

(Family Braconidae)

Distribution: Yugoslavia, Sweden.
Host: *Ephestia kuehniella* Zell. ("This record is almost certainly incorrect"—Muesebeck.)
Reference: Anonymous (*3*).

***(303) MICROBRACON HEBETOR Say**

(Family Braconidae)

Distribution: Cosmopolitan.
Hosts: *Aphomia gularis* Zell. (*51*), *Corcyra cephalonica* Staint. (*203, p. 116*), *Ephestia cautella* Walk. (*38*), *E. elutella* Hbn. (*150*), *E. kuehniella* Zell. (*92*), *Plodia interpunctella* Hbn. (*51, 174*), *Sitotroga cerealella* Oliv. (*131*).
Hyperparasites and predators: *Lariophagus distinguendus* Foerst. (*93*), *Tetrastichus doteni* Cwfd. (*60, p. 783*), *Pediculoides ventricosus* Newp.

(304) MICROBRACON KITCHENERI Dudg. and Gough

(Family Braconidae)

Distribution: Egypt.
Hosts: *Ephestia cautella* Walk., etc.
Reference: Gough (*89*).

(305) NEMERITIS CAUDATULA Thoms.

(Family Ichneumonidae)

Distribution: Europe.
Host: *Tinea granella* L.
Reference: Tosi (*192*).

(306) NORBANUS sp.

(Family Pteromalidae)

Distribution: Philippine Islands, Malay Archipelago.
Host: *Lasioderma serricorne* F.
Reference: Jones (*103, p. 10*).

(307) OPIUS CARINATUS Thoms.

(Family Braconidae)

Tosi (*192*) states that this species attacks larvae of *Plodia interpunctella* Hbn. According to Muesebeck, species of this group are parasites of dipterous leaf miners and fruitflies, and the record of this species from *Plodia* is undoubtedly incorrect.

(308) OPIUS SICULA De St.

(Family Braconidae)

Recorded as a parasite of *Ephestia cautella* in Italy by De Stefani (*180*) under the name of *Diachasma sicula*. According to Muesebeck, the species of *Diachasma* are parasites of dipterous leaf miners and fruitflies, and the above record is undoubtedly wrong unless that author's placement of the species in *Diachasma* is incorrect.

(309) PAREPYRIS SYLVANIDIS Brèthes

(Family Bethylidae)

Distribution: Argentina.
Host: *Oryzaephilus surinamensis* L.
Reference: Brèthes (*25, p. 87*).

(310) PERISIEROLA EMIGRATA Rohwer

(Family Bethylidae)

Distribution: Hawaii.
Hosts: *Ephestia elutella* Hbn., *Pyroderces rileyi* Wals.
Reference: Bridwell (*26*).

(311) PLASTANOXUS CHITTENDENI Ashm.

(Family Bethylidae)

Distribution: District of Columbia, New York.
Host: *Laemophloeus minutus* Oliv.
Reference: Office notes.

(312) PLASTANOXUS WESTWOODI Kieff.

(Family Bethylidae)

Distribution: Africa, Australia, Brazil, North America.
Host: *Laemophloeus minutus* Oliv.
Reference: Gahan (*76*).

(313) PLATYGONATOPUS PEDESTRIS Dalm.

(Family Bethylidae)

Listed by Leonardi (*119, p. 171*) as a parasite of *Ptinus fur* L. According to Muesebeck, records associating members of Anteoninae with stored-product pests are undoubtedly incorrect. He says: "So far as known, all the members of the entire subfamily Anteoninae to which *Platygonatopus* belongs, are parasites of Homoptera. The only authentic records for *P. pedestris* show it to be a parasite of species of *Athysanus*, a genus of Cicadellidae."

(314) PSEUDISOBRACHIUM FLAVINERVIS Fouts

(Family Bethylidae)

Distribution: California.
Host: *Carpophilus hemipterus* L.
Reference: Simmons, Reed, and M'Gregor (*174, p. 26*).

(315) PTEROMALUS PYROPHILUS Kollar

(Family Pteromalidae)

Distribution: Austria.
Host: *Sitotroga cerealella* Oliv.
Reference: Zacher (*220, p. 547*).

(316) PTEROMALUS sp.

(Family Pteromalidae)

Distribution: Hawaii.
Host: *Lasioderma serricorne* F.
Reference: Fullaway (*70*).

(317) PTEROMALUS TRITICI Gour.

(Family Pteromalidae)

Distribution: France, Union of Soviet Socialist Republics (?).
Hosts: *Sitophilus granarius* L., *S. oryzae* L. (identity of parasite doubtful).
Reference: Vassiliev (*201*).

(318) PTINOBIUS TEXANUS Cwfd.

(Family Cleonymidae)

Distribution: Texas.
Host: *Araecerus fasciculatus* DeG.
Reference: Crawford (*47*).

(319) RHABDEPYRIS ZEAE Turner and Waterston

(Family Bethylidae)

Distribution: Africa, Indiana, Louisiana, Texas, Florida.
Hosts: *Tribolium castaneum* Hbst. (*75*), *T. confusum* J. du V. (*75, 76*).

(320) SCLERODERMUS DOMESTICUS Latr.

(Family Bethylidae)

Distribution: Europe, northern Africa.
Host: *Anthrenus museorum* L.
Reference: Leonardi (*119, p. 157*).

(321) SCLERODERMUS IMMIGRANS Brid.

(Family Bethylidae)

Distribution: Hawaii.
Hosts: *Gnathocerus cornutus* F., *Tenebroides mauritanicus* L. (?), *Tribolium castaneum* Hbst.
Reference: Bridwell (*27, p. 301*).

(322) SPATHIUS BISIGNATUS Walk.

(Family Braconidae)

Distribution: India, Ceylon, Philippine Islands.
Host: *Dinoderus minutus* F.
Reference: Gahan (*74*).

(323) SPATHIUS EXARATOR L.

(Family Braconidae)

Distribution: Europe.
Hosts: *Anobium punctatum* DeG., *Ptinus fur* L.
Reference: Leonardi (*119, p. 173*).

(324) SYSTELLOGASTER OVIVORA Gahan

(Family Pteromalidae)

Distribution: Illinois, Maryland.
Host: *Blatta orientalis* L. (eggs).
Reference: Gahan (*72, p. 209*).

(325) TETRASTICHUS AUSTRALASIAE Gahan

(Family Eulophidae)

Distribution: Sumatra.
Host: *Periplaneta australasiae* F. (eggs).
Reference: Gahan (*73, p. 50*).

(326) TETRASTICHUS DOTENI Cwfd.

(Family Eulophidae)

Distribution: Nevada.
Hosts: Hyperparasite on *Microbracon hebetor* Say (from *Ephestia kuehniella* Zell.), *Meraporus* sp., and *Pteromalus* sp.
Reference: Essig (*60, p. 819*).

(327) TETRASTICHUS HAGENOWI Ratz.

(Family Eulophidae)

Distribution: Cosmopolitan.
Hosts: Egg capsules of *Blatta orientalis* L. (*119, p. 10*), *Periplaneta americana* L. (*18, p. 390*), and hyperparasitic on *Evania appendigaster* L. (*98, p. 95*).

(328) TETRASTICHUS PERIPLANETAE Cwfd.

(Family Eulophidae)

Distribution: Africa and Jamaica.
Host: *Periplaneta americana* L. (eggs).
Reference: Crawford (*46*).

(329) TETRASTICHUS sp.

(Family Eulophidae)

Distribution: Kansas.
Host: *Pyralis farinalis* L. (in alfalfa hay).
Reference: Payne (*140*).

(330) TRICHOGRAMMA AUSTRALICUM Gir.

(Family Trichogrammidae)

Distribution: Japan, Java, Australia.
Hosts: Reared in laboratory on eggs of *Sitotroga cerealella* Oliv. and *Ephestia cautella* Walk.
Reference: Takano (*188*).

(331) TRICHOGRAMMA EROSICORNIS Westw.

(Family Trichogrammidae)

Distribution: Ceylon.
Hosts: Reared in laboratory on eggs of *Corcyra cephalonica* Staint. and *Sitotroga cerealella* Oliv.
Reference: King (*108, p. 29*).

(332) TRICHOGRAMMA EVANESCENS Westw.

(Family Trichogrammidae)

Distribution: Europe.
Hosts: Reared in laboratory on eggs of *Corcyra cephalonica* Staint. (*108, Bull. 10*), *Ephestia kuehniella* Zell. (*108*), *Lasioderma serricorne* F. (*77, p. 49*), and *Sitotroga cerealella* Oliv. (*220, p. 547*).

(333) TRICHOGRAMMA JAPONICUM Ashm.

(Family Trichogrammidae)

Distribution: Japan.
Hosts: Reared in laboratory on eggs of *Ephestia cautella* Walk. (*188*), *Pyralis farinalis* L. (*113*), and *Sitotroga cerealella* Oliv. (*188*).

(334) TRICHOGRAMMA MINUTUM Riley

(Family Trichogrammidae)

Distribution: United States.
Hosts: Reared in laboratory on eggs of *Corcyra cephalonica* Staint., *Ephestia cautella* Walk., and *Sitotroga cerealella* Oliv.
References: Flanders (*64*), Subramaniam (*181*).

(335) ZATROPIS INCERTUS Ashm.

(Family Pteromalidae)

Distribution: United States.
Hosts: *Sitophilus oryzae* L., etc.
Reference: Pierce (*142, p. 80*).

(336) ZATROPIS sp.

(Family Pteromalidae)

Distribution: Florida (?).
Host: *Caulophilus latinasus* Say.
Reference: Cotton (*44*).

SYSTEMATIC LIST OF SPECIES

ARACHNIDA

ACARINA

Trombidoidea

CHEYLETIDAE

(195) *Cheyletus audax* Banks, Illinois.
(196) *Cheyletus eruditus* Latr., England, Denmark, Union of Soviet Socialist Republics.
(197) *Cheyletus seminivorus* Pack., Illinois, New York, Ohio.

Parasitoidea

PARASITIDAE

(Gamasidae)

(199) *Seiulus muricatus* Koch (generic name sometimes misspelled, *Seilus* or *Sejulus*), Germany.
(200) *Seius* sp., Virginia.
(201) *Seius* sp., Barbados.
(202) *Typhlodromus tineivorus* Oud., Germany, Illinois.

Sarcoptoidea

TARSONEMIDAE

(194) *Acarophenax tribolii* New. and Duv., England, United States.
(60) *Tarsonemus hordei* Kishida, Japan.

PEDICULOIDIDAE

(198) *Pediculoides ventricosus* Newp. (*Heteropus ventricosus* Newp.), cosmopolitan.

TYROGLYPHIDAE

(57) *Glyciphagus cadavarum* Schr. (*Glyciphagus privatus* Oud.) (generic name sometimes spelled *Glycyphagus*), England.
(58) *Glyciphagus domesticus* DeG. (species sometimes credited to Linnaeus), Europe, North America.
(59) *Glyciphagus fuscus* Oud., England, France, Netherlands.
(56) *Chortoglyphus arcuatus* Troup., England.
(12) *Tyroglyphus farinae* DeG. (*Aleurobius farinae* DeG.) (*Acarus farinae* DeG.) (species sometimes credited to Linnaeus or Koch), cosmopolitan.
(61) *Tyroglyphus lintneri* Osb. (*Tyroglyphus americanus* Banks), United States, Denmark.
(13) *Tyroglyphus longior* Gerv., cosmopolitan.

(62) *Tyroglyphus putrescentia* Schr. (*Tyroglyphus* (*Tyrophagus*) *putrescentiae* Schr.), Denmark, Netherlands, Sumatra.
(63) *Tyroglyphus siro* L. (species sometimes credited to Gervais), cosmopolitan.
(203) *Tyroglyphus* sp., California.
(52) *Caloglyphus krameri* Berl. (*Tyroglyphus krameri* Berl.), England, Java.
(53) *Caloglyphus michaeli* Oud. (*Glyciphagus michaelis* Oud.) (*Glyciphagus spinipes* Koch), England. Norway, Union of Soviet Socialist Republics.
(54) *Caloglyphus mycophagus* Megnin (*Tyroglyphus mycophagus* Megnin), England, France, Germany.
(11) *Histiogaster entomophagus* Lab. (*Monieziella entomophagus* Lab.), England.
(55) *Carpoglyphus anonymus* Haller, England, France.

CHELONETHIDA

(Chernetidia, Pseudoscorpionida)

CHERNETIDAE

(204) *Chelifer cancroides* L., Europe, North America.

CHILOPODA

SCUTIGEROMORPHIDA

SCUTIGERIDAE

(205) *Cermatia forceps* Raf. (*Scutigera forceps* Raf.), cosmopolitan.

INSECTA (HEXAPODA)

THYSANURA

LEPISMATIDAE

(64) *Lepisma saccharina* L., Europe, North America, cosmopolitan (?).
(65) *Thermobia domestica* Pack. (*Lepisma domestica* Pack.) (*Thermophila furnorum* Rov.), cosmopolitan.

COLLEMBOLA

ENTOMOBRYIDAE

(66) *Sira buski* Lubb. (generic name sometimes spelled *Seira*), Europe, North America, Siberia.
(67) *Sira platani* Nicolet (*Sira nigromaculata* Lubb.), North America.

ORTHOPTERA

BLATTIDAE

(68) *Blattella germanica* L. (*Ectobia germanica* L.) (*Phyllodromia germanica* L.) (*Phyllodromia bivittata* Serv.), cosmopolitan.
(14) *Blatta orientalis* L. (*Periplaneta orientalis* L.) (*Stylopyga orientalis* L.), cosmopolitan.
(15) *Periplaneta americana* L. (*Blatta americana* L.), cosmopolitan.
(71) *Periplaneta australasiae* F. (*Blatta australasiae* F.), cosmopolitan.
(72) *Pycnoscelus surinamensis* L. (*Panchlora surinamensis L.*) (*Leucophaea surinamensis* L.), cosmopolitan.

GRYLLIDAE

(69) *Gryllus assimilis* F. (*Gryllus pennsylvanicus* Burm.), North America, South America, West Indies.
(70) *Gryllus domesticus* L., Europe, northern Africa, North America, southern Asia.

NEUROPTERA

NEMOPTERIDAE

(206) *Croce filipennis* Westw. (*Nematoptera filipennis* Westw.), India.

CORRODENTIA (PSOCOPTERA)

Isotecnomera

CAECILIIDAE

(74) *Lachesilla pedicularia* L. (*Pterodela pedicularia* L.), North America, Germany.
(73) *Caecilius nigrotuberculatus* Curran, Argentina.

Heterotecnoma

PSOQUILLIDAE

(75) *Psoquillla marginepunctata* Hagen (*Heteropsocus dispar* Verrill), England, West Africa.

ATROPIDAE

(Trogiidae, Liposcelidae)

(17) *Trogium pulsatorium* L. (*Atropos pulsatoria* L.) (*Clothilla pulsatoria* L.) (sometimes spelled *pusilatoria*), Europe, North America.
(16) *Troctes divinatoria* Müll. (*Atropos divinatoria* Müll.), (*Liposcelis divinatorius* Müll.), (*Troctes pulsatorius* Latr.), (sometimes credited to Fabricius), Europe, North America.
(76) *Troctes corrodens* Heym. (*Liposcelis corrodens* Heym.), Germany.

EMBIIDINA

EMBIIDAE

(77) *Embia vayssierei* Navas, Senegal.

HEMIPTERA

REDUVIIDAE

(210) *Reduvius personatus* L., Europe, North America.

ANTHOCORIDAE

(207) *Lyctocoris campestris* F. (*Lyctocoris fitchii* Reut.) (*Lyctocoris domesticus* Schill.), Europe, North America.
(211) *Xylocoris cursitans* Fallen (*Piezostethus flavipes* Reut.), (sometimes spelled *Piezosthetus*), Europe, North America, Senegal.
(208) *Orius frumenti* Zacher (*Triphleps frumenti* Zacher), La Plata River, South America.
(209) *Orius madeirensis* Reut. (*Triphleps madeirensis* Reut.), Egypt.

COLEOPTERA

CARABIDAE

HARPALINAE

(212) *Aechmites terricola* Hbst. (*Laemostenus terricola* Hbst.), Europe, North America.
(217) *Lebia* sp., Taiwan.
(118) *Harpalus* (*Pseudophonus*) *rufipes* DeG. (*Pseudophonus pubescens* Müll.), Palearctic region.

STAPHYLINIDAE

OMALIINAE

(218) *Phyllodrepa plana* F., Union of Soviet Socialist Republics.

HISTERIDAE

HISTERINAE

(213) *Carcinops quatuordecimstriata* Steph., cosmopolitan.
(215) *Dendrophilus punctatus* Hbst., Europe.
(216) *Dendrophilus punctulatus* Say, Eastern and Central States.
(219) *Saprinus semistriatus* Scriba, Eurasia.

CLERIDAE

CLERINAE

(222) *Tillus notatus* Klug, Dutch East Indies.
(220) *Thaneroclerus buqueti* Lefevr., England, India.
(221) *Thaneroclerus girodi* Chevr., Florida, Cuba, France.

CORYNETIDAE

(214) *Corynetes coeruleus* Dej., Germany.

ANTHICIDAE

(79) *Anthicus elegans* Lea, Australia.
(80) *Anthicus floralis* L., cosmopolitan.

DERMESTIDAE

ATTAGENINAE

(83) *Attagenus pellio* L., Europe, North America (?).
(24) *Attagenus piceus* Oliv. (*Attagenus megatoma* F.), cosmopolitan.
(84) *Attagenus undulatus* Motsch. (*Aethriostoma undulata* Motsch.), Oriental region, Madagascar, Mauritius.

MEGATOMINAE

(43) *Trogoderma granarium* Everts (*Trogoderma khapra* Arrow) (*Attagenus undulatus* auct.), Asia, Europe, Egypt, Australia.
(163) *Trogoderma ornata* Say (*Trogoderma tarsalis* Melsh.) (*Trogoderma pallipes* Zieg.), North America.
(164) *Trogoderma sternalis* Jayne, California, Texas, Arizona.
(44) *Trogoderma versicolor* Creutz. (*Trogoderma inclusa* Lec.) (*Trogoderma tarsalis* auct.), cosmopolitan.

ANTHRENINAE

(81) *Anthrenus museorum* L., Europe, North America.
(82) *Anthrenus scrophulariae* L., Europe, North America, Australia.
(22) *Anthrenus verbasci* L. (*Anthrenus varius* F.), cosmopolitan.

THORICTIDAE

(159) *Thorictodes heydeni* Reitt., England, France, Germany, Dutch East Indies, Dutch Guiana, Sudan.

OSTOMIDAE

(Trogositidae, Ostomatidae, Temnochilidae)

(154) *Temnochila coerulea* Oliv. (*Trogosita coerulea* Oliv.) (species sometimes credited to Fabricius), southern Europe, Asia.

(157) *Tenebroides corticalis* Melsh. (*Trogosita corticalis* Melsh.), Mexico, United States.
(5) *Tenebroides mauritanicus* L. (*Trogosita mauritanicus* L.) (*Trogosita caraboides* F.), cosmopolitan.
(158) *Tenebroides nanus* Melsh., Alabama, Texas, District of Columbia, Pennsylvania.
(128) *Lophocateres pusillus* Klug (*Ostoma pusillus* Klug), widespread in Tropics and in South Temperate Zone.

NITIDULIDAE

CARPOPHILINAE

(90) *Carpophilus decipiens* Horn, western North America, Germany.
(25) *Carpophilus dimidiatus* F. (*Carpophilus mutilatus* Er.), Africa, Europe, North America.
(91) *Carpophilus heripterus* L. (*Carpophilus bimaculatus* L.), Australia, Europe, North America.
(92) *Carpophilus ligneus* Murray, Europe, North America.
(93) *Carpophilus obsoletus* Er., Taiwan.
(94) *Carpophilus pallipennis* Say, Europe, northern Africa, North America.
(167) *Urophorus humeralis* F. (*Carpophilus humeralis* F.), Tropical and South Africa, tropical Asia and Europe, Florida, California.

MONOTOMIDAE

MONOTOMINAE

(132) *Monotoma quadrifoveolata* Aubé, Middle Europe, Union of Soviet Socialist Republics, northern Africa, Caucasia, central Asia, Japan, Chile, Canary Islands.

SILVANIDAE

(Cucujidae in part)

SILVANINAE

(1) *Oryzaephilus surinamensis* L., (*Silvanus surinamensis* L.), (*Silvanus frumentarius* Oliv.), (*Silvanus sexdentatus* F.),
Var. *Oryzaephilus bicornis* Er. (*Silvanus bicornis* Er.),
Var. *Oryzaephilus mercator* Fauv. (*Silvanus mercator* Fauv.), cosmopolitan.
(26) *Cathartus quadricollis* Guér. (*Silvanus quadricollis* Guer.) ?(*Silvanus quadricollis* Lec.) (*Silvanus gemellatus* Duv.) (*Cathartus cassiae* Reich.) ?(*Silvanus imbellis* Lec.), North, Central, South America, Europe, Africa.
(18) *Ahasverus advena* Waltl. (*Cathartus advena* Waltl.), cosmopolitan.
(131) *Monanus concinnulus* Walk. (*Silvanus signatus* Frau.), cosmopolitan.
(137) *Nausibius clavicornis* Kug. (*Nausibius dentatus* Marsh.), cosmopolitan.

CUCUJIDAE

(30) *Laemophloeus* (*Cryptolestes*) *ferrugineus* Steph. (*Laemophloeus testaceus* Payk.), cosmopolitan.
(31) *Laemophloeus* (*Cryptolestes*) *minutus* Oliv. (*Laemophloeus pusillus* Schön.), cosmopolitan.
(122) *Laemophloeus ater* Oliv., Europe, Madeira, Azores, Cape Verde, and Canary Islands.
(123) *Laemophloeus janeti* Grouv., East and central Africa, Madagascar, India.
(124) *Laemophloeus turcicus* Grouv., cosmopolitan.
(125) *Laemotmetus rhizophagoides* Walk. (*Laemotmetus ferrugineus* Gerst.) (*Oryzoecus cathartoides* Reitt.), Africa, Germany, Ceylon, Celebes, Timor, New Guinea, Taiwan.

CRYPTOPHAGIDAE

CRYPTOPHAGINAE

(142) *Pharaxonotha kirschi* Reitt. (*Thallisella conradti* Gorh.), Guatemala, Mexico, Germany, Texas, Illinois.
(104) *Cryptophagus acutangulus* Gyll., Europe, North America, Mexico, Greenland, Siberia.
(105) *Cryptophagus affinis* Sturm, Australia, Europe, Madeira, northern Africa.
(106) *Cryptophagus cellaris* Scop. (*Cryptophagus crenatus* Hbst.), Europe, North America.
(107) *Cryptophagus croceus* Zimm. (*Cryptophagus crinitus* Zimm.), eastern North America.
(108) *Cryptophagus dentatus* Hbst., Europe, Madeira, Japan.
(109) *Cryptophagus distinguendus* Sturm, England, Europe, northern Africa, Oregon (?).
(110) *Cryptophagus scanicus* L., Europe.
(119) *Henoticus californicus* Mann. (*Henoticus serratus* auct.), North America, Europe.

MYCETOPHAGIDAE

(135) *Mycetophagus bipustulatus* Melsh., Eastern and Central States.
(136) *Mycetophagus quadriguttatus* Müll., Europe, Caucasia.
(165) *Typhaea stercorea* L. (*Typhaea fumata* L.) (sometimes misspelled *Typhoea stercoraria*), cosmopolitan.
(127) *Litargus* (*Alitargus*) *balteatus* Lec., Central America, North America, Hawaii, Germany, New South Wales.

MURMIDIIDAE

(133) *Murmidius ovalis* Beck, Europe, North America, Japan, East Indies.

LATHRIDIIDAE

(120) *Holoparamecus singularis* Beck (*Holoparamecus depressus* Curtis), Europe, North America.
(126) *Lathridius bergrothi* Reitt. (*Lathridius microps* Er.), Europe.
(113) *Enicmus minutus* L., cosmopolitan.
(95) *Cartodere costulata* Reitt., Europe, eastern North America, Japan.
(96) *Cartodere filiformis* Gyll. ?(*Lathridius filiformis* Aubé), Europe, Japan, Eastern States.
(97) *Cartodere filum* Aubé, Algeria, Europe, North America.
(98) *Cartodere ruficollis* Marsh., Europe, northern Africa, Canary Islands, North America, Central America.
(102) *Corticaria ferruginea* Marsh., North America, Europe, Caucasia, Siberia.
(103) *Corticaria fulva* Com., cosmopolitan.
(129) *Melanophthalma americana* Mann., North America, Taiwan.

MYCETAEIDAE

(134) *Mycetaea hirta* Marsh., Europe, North America.

TENEBRIONIDAE

BLAPTINAE

(85) *Blaps lethifera* Marsh., Europe, western Asia, eastern North America.
(86) *Blaps mortisaga* L., Europe, Asia.
(87) *Blaps mucronata* Latr., Europe, eastern North America.

OPATRINAE

(117) *Gonocephalum hoffmannseggi* Steph., Dutch East Indies.

DIAPERINAE

(21) *Alphitophagus bifasciatus* Say (*Phylethus bifasciatus* Say), cosmopolitan.
(143) *Platydema ruficorne* Sturm, United States.

ULOMINAE

(28) *Gnathocerus cornutus* F. (*Echocerus cornutus* F.), cosmopolitan.
(29) *Gnathocerus maxillosus* F. (*Echocerus maxillosus* F.), widely distributed in tropical and subtropical regions.
(33) *Latheticus oryzae* Waterh. (*Lyphia striolatus* Fairm.), cosmopolitan, often found in Southern and Middle-Western States.
(6) *Tribolium castaneum* Hbst. (*Tribolium ferrugineum* auct. nec F.) (*Tribolium navale* auct. nec F.), cosmopolitan, especially numerous in subtropical countries.
(7) *Tribolium confusum* J. du V., cosmopolitan, especially numerous in middle-temperature zones.
(160) *Tribolium destructor* Uyttenb., Germany, Netherlands.
(161) *Tribolium madens* Charp., Northern and Western States, southern Canada, central and northern Europe, Egypt.
(141) *Palorus depressus* F., Europe, Caucasia, northern Asia.
(35) *Palorus ratzeburgi* Wissm. (*Caenocorse ratzeburgi* Wissm.), cosmopolitan.
(36) *Palorus subdepressus* Woll. (*Palorus depressus* auct. nec F.) (*Caenocorse subdepressa* Wissm.), cosmopolitan.
(166) *Uloma* (*Melasia*) *culinaris* L., Europe.
(19) *Alphitobius diaperinus* Panz. (*Alphitobius piceus* auct. nec Oliv.), cosmopolitan.
(20) *Alphitobius piceus* Oliv. (*Heterophaga fagi* Curt.) (*Alphitobius granivorus* Muls. and God.) (*Alphitobius oryzae* Hbst.) (*Alphitobius ovatus* Hbst.), cosmopolitan.
(121) *Hypophloeus floricola* Mais., Japan.
(152) *Sitophagus hololeptoides* Cast. (*Sitophagus solieri* Muls.), Europe, South Africa, Texas, Central America.

TENEBRIONINAE

(41) *Tenebrio molitor* L., cosmopolitan.
(42) *Tenebrio obscurus* F., cosmopolitan.
(155) *Tenebrio picipes* Hbst. (*Tenebrio tenebroides* Beauv.) (*Neatus picipes* Hbst.), cosmopolitan.
(156) *Tenebrio syriacus* Zouf., Egypt, Syria, Spain.

PTINIDAE

(115) *Gibbium boieldieu* Levr., southern Europe, Caucasus, Persia, Malay Archipelago.
(116) *Gibbium psylloides* Czemp. (*Scotias psylloides* Czemp.) (*Gibbium scotias* F.), cosmopolitan.
(130) *Mezium americanum* Laporte (*Mezium sulcatum* Woll.), United States, Central America, South America, Canary Islands, Europe.
(162) *Trigonogenius globulus* Solier (*Trigonogenius farctus* Lec.), California, Oregon, Chile, Columbia, England, Germany, Tasmania.
(34) *Niptus hololeucus* Fald., cosmopolitan, except in Tropics.
(114) *Epaulaecus unicolor* Pill. (*Niptus unicolor* Pill.). Europe, Transcaucasia.
(145) *Ptinus bicinctus* Sturm, Europe, Canada, Massachusetts, Nebraska.
(146) *Ptinus brunneus* Dufts., cosmopolitan.
(37) *Ptinus fur* L., Palearctic and Nearctic regions.
(147) *Ptinus latro* F., England, Europe, Asia, Africa.
(148) *Ptinus pusillus* Sturm, northern and central Europe.
(149) *Ptinus raptor* Sturm, northern Europe, New York.
(38) *Ptinus tectus* Boield., Palearctic and Nearctic regions, Australia.
(39) *Ptinus villiger* Reitt., Palearctic and Nearctic regions.

ANOBIIDAE

(Ptinidae in part of authors)

ANOBIINAE

(40) *Stegobium paniceum* L. (*Sitodrepa panicea* L.), cosmopolitan.
(78) *Anobium punctatum* DeG. (*Anobium striatum* Oliv.) (*Anobium pertinax* F.) (*Anobium domesticum* Muls. and Rey) (*Anobium pumilus* Lec.), Europe, North America.

(32) *Lasioderma serricorne* F. (*Lasioderma testaceum* Duft.) ?(*Lasioderma castaneum* Melsh.), cosmopolitan.
(99) *Catorama mexicana* Chevr., Hawaii.
(100) *Catorama punctulata* Lec., Florida.
(101) *Catorama zeae* Waterh. (*Tricorynus zeae* Waterh.), England, Barbados.

BOSTRICHIDAE

(Ptinidae in part of authors, Psoidae)

(144) *Prostephanus truncatus* Horn (*Dinoderus truncatus* Horn) (*Stephanopachys truncatus* Horn), California, District of Columbia, Texas, Mexico, Guatemala, Brazil.
(111) *Dinoderus bifoveolatus* Woll., Europe, Asia, Africa, Central America, South America, West Indies, New Guinea, Malaya, Seychelles Islands.
(112) *Dinoderus minutus* F. (*Dinoderus brevis* auct. nec Horn), widespread in Tropics and South Temperate zones.
(2) *Rhizopertha dominica* F. (*Dinoderus dominica* F.) (*Dinoderus pusillus* F.) (*Rhizopertha pusilla* F.), cosmopolitan.
(150) *Rhizopertha hordeum* Mats., Taiwan.

PLATYSTOMIDAE

(Anthribidae, Choragidae)

(88) *Brachytarsus alternatus* Say (*Anthribus alternatus* Say), eastern North America.
(89) *Brachytarsus sticticus* Boh. (*Brachytarsus obsoletus* Fahrs.) (*Brachytarsus variegatus* Say), eastern North America.
(23) *Araecerus faciculatus* DeG. (*Araecerus coffeae* F.), cosmopolitan.

CURCULIONIDAE

COSSONINAE

(27) *Caulophilus latinasus* Say (*Caulophilus pinguis* Horn), Central America, West Indies, Southern States, Mexico, Madeira, England, Germany.
(151) *Rhyncolus oryzae* Gyll., Sweden.

CALANDRIDAE

(Rhynchophoridae, Curculionidae in part of authors)

(3) *Sitophilus granarius* L. (*Calandra granaria* L.) (*Calendra granaria* auct.) (*Calandra remotepunctata* Gyll.), cosmopolitan, especially in temperature climates.
(4) *Sitophilus oryzae* L. (*Calandra oryza* L.) (*Calandra zea-mais* Mots.), cosmopolitan, especially in warm climates.
(153) *Sitophilus sasakii* Takah., Japan.

SCOLYTIDAE

(Ipidae)

SCOLYTINAE

(138) *Pagiocerus frontalis* F., Peru.
(139) *Pagiocerus rimosus* Eich., Central America, South America, Mexico, Cuba, Florida.
(140) *Pagiocerus zeae* Eggers, Colombia, Guadaloupe.

LEPIDOPTERA

NOLIDAE

(Arctiidae in part of authors)

(175) *Celama sorghiella* Riley, Florida, Mississippi, Texas, North Carolina, Tennessee, District of Columbia, Maryland, Missouri, Iowa, Nebraska.

NOCTUIDAE

HADENINAE

(176) *Cirphis zeae* Dup. (*Noctua zeae* Dup.) (*Leucania zeae* Dup.), Italy, southern France, Spain, Greece, Dalmatia, Egypt, western Turkestan.

APATELINAE

(193) *Trachea basilinea* D. and S. (*Noctua basilinea* D. and S.) (*Hadena basilinea* D. and S.), Europe, central Asia to China and Japan.

PYRALIDIDAE

PYRALIDINAE

(169) *Aglossa dimidiata* Haw., Japan, China (?), India (?).
(170) *Aglossa pinguinalis* L., England, Europe, central and western Asia, India.
(180) *Hypsopygia costalis* F., North America, central and southern Europe, Turkestan.
(49) *Pyralis farinalis* L. (*Asopia farinalis* L.), cosmopolitan.
(182) *Pyralis lienigialis* Zell., Northern Europe.
(183) *Pyralis manihotalis* Gn., Florida, West Indies, Central and South America, India, Japan.
(184) *Pyralis pictalis* Curt., India, Indo-China.

GALLERIINAE

(173) *Aphomia gularis* Zell. (*Paralispa gularis* Zell.) (*Mellissoblaptes gularis* Zell.) (*Paralispa modesta* Butl.) (sometimes spelled *Paralipsa*), North America, Europe, China, Japan, India, Hawaii.
(46) *Corcyra cephalonica* Staint. (*Tineopsis theobromae* Dyar), cosmopolitan.
(187) *Thagora figurana* Walk., Dutch East Indies, Japan.
(168) *Achroia grisella* F. (*Achroia alvearia* F.), cosmopolitan.

PHYCITINAE

(47) *Ephestia cautella* Walk. (*Ephestia cahiritella* Zell.) (*Ephestia desuetella* Walk.) (*Ephestia passulella* Barr.), cosmopolitan.
(48) *Ephestia elutella* Hbn. (*Ephestia amarella* Dyar), cosmopolitan.
(178) *Ephestia figulilella* Gregs. (*Ephestia figulella* Gregs.) (*Ephestia ficulella* Barr.), cosmopolitan.
(8) *Ephestia kuehniella* Zell. (*Ephestia fuscofasciella* Rag.), cosmopolitan.
(9) *Plodia interpunctella* Hbn. (*Plodia zeae* Fitch) (*Ephestia zeae* Fitch) (*Ephestia glycinivora* Mats.), cosmopolitan.
(181) *Mussidia nigrivenella* Rag., Africa.

PTEROPHORIDAE

(171) *Alucita* sp., Algeria.

GELECHIIDAE

(10) *Sitotroga cerealella* Oliv. (*Gelechia cerealella* Oliv.), cosmopolitan.
(174) *Aristotelia austeropa* Meyr., India.
(179) *Epithectis studiosa* Meyr., India.

OECOPHORIDAE

(45) *Borkhausenia pseudospretella* Staint. (*Acompsia pseudospretella Staint.*) (*Oecophora pseudospretella* Staint.), Europe, India, North America.
(172) *Anchonoma xeraula* Meyr. (*Santuzea kuwanii* Heinrich), Japan.
(177) *Endrosis lacteella* (D. and S.) (*Endrosis kennicottella* Clem.), cosmopolitan.

COSMOPTERYGIDAE

(Lavernidae)

(50) *Pyroderces rileyi* Wals. (*Batrachedra rileyi* Wals.) (sometimes spelled *Batrachetra*), Southern States, Australia, Mexico, Hawaii.

TINEIDAE

TINEINAE

(185) *Setomorpha insectella* F. (*Setomorpha dryas* Butler) (*Setomorpha ruderella* Zell.) (*Setomorpha inamoenella* Zell.) (*Setomorpha operosella* Zell.), widely distributed.
(186) *Setomorpha margaloestriata* Keuch., Dutch East Indies.
(192) *Tineola biselliella* Humm. (*Tinea biselliella* Humm.), cosmopolitan.
(188) *Tinea cloacella* Haw., cosmopolitan.
(189) *Tinea fuscipunctella* Haw., Europe, North America.
(51) *Tinea granella* L. (*Tinea variatella* Clem.), Europe, northern Africa, Asia Minor, Japan, North America.
(190) *Tinea misella* Zell., Europe, North America.
(191) *Tinea pallescentella* Haw., Europe.

DIPTERA

Orthorrhapha

CECIDOMYIIDAE

CECIDOMYIINAE

(223) *Arthrocnodax farinicola* Barnes (*Silvestrina farinicola* Barnes), Italy.
(226) *Lestodiplosis raphani* Barnes, Denmark, England, Germany.

SCENOPINIDAE

(229) *Scenopinus fenestralis* L. (*Scenopinus pallipes* Say) (*Omphrale fenestralis* L.), Europe, North America.
(230) *Scenopinus glabrifrons* Meig., Europe, eastern North America.

Cyclorrhapha

TACHINIDAE

TACHININAE

(227) *Lispidea tarsalis* Coq. (*Clausicella tarsalis* Coq.) (*Phylacteropoda tarsalis* Coq.), Illinois, Maryland, New Hampshire.
(224) *Epigrimyia floridensis* Towns. (*Epigrymia floridensis* auct.) (*Drepanoglossa floridensis* Towns.) (*Siphophyto floridensis* Towns.), California, New Mexico, Eastern States.

DEXIINAE

(228) *Melanophora roralis* L. (*Melanophora americana* Macq.) (*Melanophora nitidiventris* Curran), Europe, North America, Brazil, Jamaica.

ANTHOMYIIDAE

MYDAEINAE

(225) *Helina uliginosa* Fallen (*Mydaea uliginosa* Fallen) (*Spilogaster uliginosa* Fallen), Europe, North America.

HYMENOPTERA

Ichneumonoidea

BRACONIDAE

VIPIINAE

(301) *Microbracon brevicornis* Wesm. (*Habrobracon brevicornis* Wesm.), Europe, Egypt, India, introduced in North America.
(302) *Microbracon crassicornis* Thoms., Sweden, Yugoslavia.

(303) *Microbracon hebetor* Say (*Habrobracon juglandis* Ashm.) (*Bracon dorsator* Say) (*Habrobracon beneficientor* Vier.) (*Habrobracon hebetor* Say) (*Habrobracon brevicornis* auct. nec Wesmael) (sometimes spelled *Hadrobracon*) (*Microbracon breviantennatus* DeSt.), cosmopolitan.

(304) *Microbracon kitcheneri* Dudg. and Gough (*Rhogas kitcheneri* Dudg. and Gough), Egypt.

SPATHIINAE

(322) *Spathius bisignatus* Walk. (*Spathius dinoderi* Gahan), India, Ceylon, Philippine Islands.

(323) *Spathius exarator* L. (*Euspathius exarator* L.) (species sometimes credited to Marshall), Europe.

HECABOLINAE

(282) *Hecabolus sulcatus* Curt., Italy, Finland, Sweden, England (?).

HORMIINAE

(260) *Chremylus rubiginosus* Nees (*Hormius rubiginosus* Nees), Europe.

MICROGASTERINAE

(237) *Apanteles aletiae* Riley, Florida, Alabama.

(238) *Apanteles araeceri* Wilk., Java.

(239) *Apanteles carpatus* Say (*Microgaster carpata* Say), United States, Europe, Japan.

(240) *Apanteles nephoptericis* Pack. (*Apanteles ephestiae* Baker) (*Microgaster nephoptericis* Pack.), United States.

(241) *Apanteles* sp., Germany (?).

BRACONINAE

(245) *Bassus hawaiicola* Ashm. (*Microdus hawaiicola* Ashm.), Hawaii.

OPIINAE

(307) *Opius carinatus* Thoms., Sweden. Italy.

(308) *Opius sicula* DeSt. (*Diachasma sicula* DeSt.), Italy.

METEORINAE

(300) *Meteorus ictericus* Nees (*Perilitus ictericus* Nees), Europe.

ICHNEUMONIDAE

CRYPTINAE

(283) *Hemiteles muscorum* Rond. (manuscript name ?), Italy.

(284) *Hemiteles tineae* Rond. (manuscript name ?), Italy (probably).

(262) *Cryptus ptinivorus* Rond. (manuscript name ?), Italy.

(298) *Mesostenus gracilis* Cress. (*Nematopodius orbitalis* Ashm.), United States, Mexico.

TRYPHONINAE

(299) *Metacoelus mansuetor* Grav. (*Exochus mansuetor* Grav.) (*Polyclistus mansuetor* Grav.), cosmopolitan.

OPHIONINAE

(288) *Idechthis canescens* Grav. (*Campoplex canescens* Grav.) (*Campoplex prytanes* Cam.) (*Omorga columbiana* Ashm.) (*Omorgus frumentarjus* Rond.) (*Idechthis oahuensis* Ashm.) (*Amorphota ephestiae* Cam.) (*Nemeritis canescens* Grav.), cosmopolitan.

(305) *Nemeritis caudatula* Thoms., Europe.

(295) *Limnerium ephestiae* Ashm., Missouri.
(287) *Hyposoter fugitivus* Say (*Campoplex fugitivus* Say) (*Limneria fugitiva* Say) (*Limnerium fugitivum* Say) (*Ameloctonus fugitivus* Say), United States.
(232) *Angitia armillata* Grav. (*Campoplex armillatus* Grav.) (*Limneria armillata* Grav.), Europe.
(233) *Angitia kichtani* Vier., Connecticut.
(267) *Ecphoropsis viennensis* Grav., England.
(261) *Cremastus flavoorbitalis* Cam. (*Cremastus hymeniae* Vier.), Hawaii, Fiji Islands.

Chalcidoidea

Mymaridae

(231) *Alaptus globosicornis* Gir., Florida, Hawaii, Australia.

Chalcididae

(235) *Antrocephalus aethiopicus* Masi, Italian Somaliland.
(236) *Antrocephalus mahensis* Masi, India, Seychelles Islands.

Cleonymidae

(318) *Ptinobius texanus* Cwfd., Texas.

Eurytomidae

(273) *Eurytoma tylodermatis* Ashm., United States.
(272) *Eurytoma* sp., Malay States (?).
(243) *Aximopsis javensis* Gir., Java, Malay (?).
(244) *Aximopsis tephrosiae* Gir., Java.

Eupelmidae

(269) *Eupelmus cushmani* Cwfd. (*Cerambycobius cushmani* Cwfd.), Texas.
(270) *Eupelmus javae* Gir., Java, Malaya (?).

Pteromalidae

Spalangiinae

(257) *Cerocephala cornigera* Westw., Europe.
(258) *Cerocephala* (*Parasciatheras*) *dinoderi* Gahan, Philippine Islands.
(259) *Chaetospila elegans* Westw. (*Spalangiomorpha fasciatipennis* Gir.) (*Cerocephala elegans* auct.), probably cosmopolitan.

Pteromalinae

(263) *Dibrachys* (*acutus* Thoms. ?) (sometimes spelled *Dibrachus*), Sweden, Italy.
(264) *Dibrachys cavus* Walk. (*Peteromalus boucheanus* Ratz.) (*Dibrachys boucheanus* Ratz.), Europe, North America, Sudan.
(265) *Dibrachys clisiocampae* Fitch (species sometimes credited to Girault) (*Pteromalus gelechiae* Webster), Eastern States.
(324) *Systellogaster ovivora* Gahan, Illinois, Maryland.
(335) *Zatropis incertus* Ashm. (*Catolaccus incertus* Ashm.), United States.
(336) *Zatropis* sp., Florida (?).
(242) *Aplastomorpha calandrae* How. (*Peteromalus calandrae* How.) (*Meraporus vandinei* Tucker) (*Aplastomorpha pratti* Crawford) (*Neocatolaccus australiensis* Gir.), cosmopolitan.
(280) *Habritys brevicornis* Ratz. (*Pteromalus brevicornis* Ratz.) (*Meraporus brevicornis* auct.), Europe.
(296) *Meraporus graminicola* Walk., England.
(297) *Meraporus requisitus* Tucker, Louisiana.
(286) *Hypopteromalus tabacum* Fitch (*Pteromalus tabacum* Fitch), United States.

(293) *Lariophagus distinguendus* Foerst. (*Meraporus utibilus* Tucker) (*Pteromalus oryzinus* Rond.) (*Lariophagus puncticollis* Moller) (*Pteromalus oryzae* Cam.), Europe, India, United States, probably cosmopolitan.
(315) *Pteromalus pyrophilus* Kollar, Austria.
(317) *Pteromalus tritici* Gour., France, Union of Soviet Socialist Republics (?).
(316) *Pteromalus* sp., Hawaii.
(247) *Catolaccus anthonomi* Ashm., Southern States.
(281) *Habrocytus cerealellae* Ashm. (*Pteromalus cerealellae* Ashm.) (*Catolaccus cerealellae* Ashm.) United States and Argentina.
(234) *Anisopteromalus mollis* Ruschka, Germany.
(246) *Caenacis* sp., Austria.
(266) *Dimachus discolor* Walk., Europe.
(306) *Norbanus* sp., Philippine Islands, Malaya (?).

EULOPHIDAE

(268) *Entedon longiventris* Ratz., Germany.
(294) *Leucodesmia nigriventris* Gir., Florida.
(325) *Tetrastichus australasiae* Gahan, Sumatra.
(326) *Tetrastichus doteni* Cwfd., Nevada.
(327) *Tetrastichus hagenowi* Ratz. (*Blattotetrastichus hagenowi* Ratz.) (*Entedon hagenowi* Ratz.), cosmopolitan.
(328) *Tetrastichus periplanetae* Cwfd., Africa, Jamaica.
(329) *Tetrastichus* sp., Kansas.

TRICHOGRAMMIDAE

(330) *Trichogramma australicum* Gir., Australia, Java, Japan.
(331) *Trichogramma erosicornis* Westw., Ceylon.
(332) *Trichogramma evanescens* Westw., Europe.
(333) *Trichogramma japonicum* Ashm., Japan.
(334) *Trichogramma minutum* Riley, United States.

EVANIIDAE

(274) *Evania appendigaster* L. (*Evania laevigata* Oliv.), cosmopolitan.
(275) *Evania dimidiata* Spin. (*Evania abyssinica* Westw.), Egypt.
(276) *Evania erythraspis* Cam., British Guiana.
(277) *Evania punctata* Brullé (*Evania urbana* Bradley), Maryland, New York, Europe.
(278) *Evania sericea* Cam., Hawaii.

Vespoidea

FORMICIDAE

(271) *Euponera sennaarensis* Mayr., Italian Somaliland.
(289) *Iridomyrmex detectus* Sm., Australia.
(290) *Iridomyrmex rufoniger* Lowne, Australia, Samao.

Mutilloidea

BETHYLIDAE

BETHYLINAE

(310) *Perisierola emigrata* Rohwer, Hawaii.
(311) *Plastanoxus chittendeni* Ashm. (*Cephalonomia chittendeni* Ashm.), District of Columbia, New York.
(312) *Plastanoxus westwoodi* Kief. (*Cephalonomia westwoodi* Kief.), Africa, Australia, Brazil, North America.
(248) *Cephalonomia carinata* Kief., Europe, Australia.
(249) *Cephalonomia formiciformis* Westw., England.
(250) *Cephalonomia meridionalis* Brèthes, Argentina.
(251) *Cephalonomia nigricornis* Sarra, Italy.
(252) *Cephalonomia quadridentata* Duch., Germany.

(253) *Cephalonomia tarsalis* Ashm. (*Neoscleroderma tarsalis* Ashm.) (*Ateleopterus tarsalis* Ashm.) (*Cephalonomia kiefferi* Fouts), Australia, Italy, United States.
(254) *Cephalonomia waterstoni* Gahan, Australia, North America.
(255) *Cephalonomia xambeui* Giard (*Gonatopus ptinorum* Licht.) (?), France.
(256) *Cephalonomia* sp., Italy.
(279) *Goniozus columbianus* Ashm., Maryland, Virginia, Pennsylvania, New York.
(285) *Holepyris hawaiiensis* Ashm., Hawaii, West Africa, Venezuela, Ceylon.
(319) *Rhabdepyris zeae* Turner and Waterston, Florida, Louisiana, Indiana, Texas, Africa.
(309) *Parepyris* (*Epyris*) *sylvanidis* Brèthes, Argentina.
(291) *Laelius anthrenivorus* Trani, France, Italy.
(292) *Laelius trogodermatis* Ashm., United States.
(320) *Sclerodermus domesticus* Latr. (species sometimes credited to Klug), Europe, northern Africa.
(321) *Sclerodermus immigrans* Brid., Hawaii.
(314) *Pseudisobrachium flavinervis* Fouts, California.

ANTEONINAE

(313) *Platygonatopus pedestris* Dalm. (*Gonatopus pedestris* Dalm.), Italy.

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