

TWO NEW HOSTS FOR PERIDERMIIUM PYRIFORME

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Peridermium pyriforme Peck, which is the æcial form of *Cronartium pyriforme* (Peck) Hedgec. and Long, was collected for the first time on *Pinus rigida* Mill. by the senior writer on June 16, 1915, near Essex Junction, Vt. (F. P. 17708).¹ This is the first collection which has been reported on this host. The senior writer had previously found the uredinial and telial forms in abundance in the same locality on *Comandra umbellata* (L.) Nutt. (F. P. 8655) on July 31, 1913. This find is important, since it may serve to clear up the mystery associated with the identity of the host in the case of the type specimen on *Pinus* spp.,² collected by Prof. J. B. Ellis (2040) in 1880, possibly near Newfield, N. J., Ellis not being certain as to the locality. Since the telial form was collected by Ellis (Ellis and Everhart, N. A. Fungi, No. 1082) near Newfield in 1879 and as *Pinus rigida* is the only native species of pine in this locality known to be attacked by the fungus, it is very probable that this species is the host of the type. In measurements and shape the spores of the writers' specimen agree with those of the type which the writers have examined at the herbarium of the State Museum at Albany, N. Y. The type specimen consists of a young pine twig whose bark closely resembles in color and markings that of *Pinus rigida*.

Mr. Roy G. Pierce, of this office, collected a number of specimens of *Peridermium pyriforme* on *Pinus divaricata* (Ait.) Du Mont de Cours (Pl. XXVII, fig. 1) in several localities near Cass Lake, Minn., during the month of June, 1915 (F. P. 18044, 18046, 18047, 18058, 18060, 18072, and 18076). So far as the writers know, only one specimen of the fungus has hitherto been reported on *Pinus divaricata*, and that was found by Mr. J. J. Davis in Douglas County, Wis. Mr. Pierce reported that the fungus was common where he collected it, and it is probably common also in other localities. He also found the uredinial form, *Cronartium pyriforme*, on July 11, 1915, on *Comandra umbellata* in the same locality as one of his previous collections of the æcial form.

The junior writer also has a specimen of this rust (F. P. 19440) on *Pinus divaricata* collected at Roscommon, Mich., by State Forester Marcus Schaaf. This specimen was sent in with *Peridermium cerebrum*, which on this host produces typical globular swellings, while *Peridermium pyriforme* causes the typical fusiform swellings. *Peridermium pyriforme*, however, does not always produce fusiform swellings, since the junior writer has recently received a specimen (F. P. 19437) on a 4-year-old

¹ "F. P." = Forest-Pathology Investigations number.

² Hedgecock, G. G., and Long, W. H. A disease of pines caused by *Cronartium pyriforme*. U. S. Dept. Agr. Bul. 247, p. 7. 1915.

transplant of *Pinus (murrayana) contorta* Loud., collected at Roscommon, Mich., by Mr. Schaaf, which produced a globoid gall (Pl. XXVII, fig. 2) extending nearly around the attacked stem. This gall was 6 cm. in circumference and 2 cm. in diameter. Both above and below the gall were irregular lesions caused by *Peridermium comptoniae* (Arthur) Orton and Adams. The gall resembled so closely the swelling produced by *Peridermium cerebrum* that the junior writer thought it was this species until he examined it under the microscope, when he found the typical pyriform spores of *Peridermium pyriforme*.

In June, 1915, the junior writer received a fine specimen of *Peridermium pyriforme* (F. P. 19429) on *Pinus arizonica* Engelm., a 3- to 5-leaved pine (Pl. XXVII, fig. 3), collected by Ranger J. H. Woolsey in Jacobson's Canyon, Crook National Forest, Arizona. This is the first time this rust has been reported on this host. Many of the aëcia of the specimen were very large and unusually prominent, owing to their marked extension beyond the bark. Some were over 2 cm. long and from 5 to 6 mm. in height. The galls were of the effused type and were from 40 to 50 cm. long. One of the branches attacked was about 2 inches in diameter where the lesions occurred. Its bark was very rough and exfoliated by the action of the fungus. The lesions had completely surrounded the two branches for a distance of from 20 to 30 cm., but had not yet killed them.

The writers have previously found *Peridermium pyriforme* only on pines having two to three needles in the leaf cluster,² and the occurrence of the fungus as now reported on *Pinus rigida* and *Pinus arizonica* is of interest, since it adds to the list of known hosts two pines of the group bearing three needles in a cluster. *Pinus rigida* has three needles and *Pinus arizonica* three to five needles.

It is now known that *Peridermium pyriforme* causes three forms of disease on pines; one with slight or no hypertrophy, common on *Pinus divaricata*, *Pinus pungens* Michx., and *Pinus ponderosa scopulorum* Engelm.; a second causing a fusiform or spindle-shaped swelling and found on *Pinus arizonica*, *Pinus (murrayana) contorta*, *Pinus divaricata*, *Pinus ponderosa* Laws., *Pinus ponderosa scopulorum* Engelm., and *Pinus rigida*; and a third form, causing the formation of globose galls (Pl. XXVII, fig. 2) now first reported on *Pinus (murrayana) contorta*.

Peridermium pyriforme, especially when weathered, superficially resembles *Peridermium comptoniae*, with which the senior writer found it associated near Essex Junction, Vt., where he found 1 specimen of the former and nearly 50 of the latter species. It is quite probable that this resemblance has frequently caused it to be overlooked by collectors wherever two species occur together and that a more careful search for *Peridermium pyriforme* will greatly extend the known range of the disease of pines caused by it. The spheroid galls of *Peridermium pyriforme* resemble very closely the spheroid galls of *Peridermium cerebrum* (Pl. XXVII, fig. 2); and unless the spores are examined, this form might be easily mistaken for the latter fungus.

² Hedgcock, G. G., and Long, W. H. Op. cit.

PLATE XXVII

Fig. 1.—*Peridermium pyriforme* (F. P. 18044) on a trunk of *Pinus divaricata*, showing the form of the peridia before they are ruptured to allow the escape of the aëciospores.

Fig. 2.—A globose gall with *Peridermium pyriforme* on a trunk of *Pinus contorta* (F. P. 19437), associated with two lesions of *Peridermium comptoniae*, one near the gall and the other 1 inch above it at the base of a branch.

Fig. 3.—*Peridermium pyriforme* (F. P. 19429) on a branch of *Pinus arizonica* showing unopened peridia. This branch was 1 inch in diameter and 10 years old.

