



*Some Parasitic Fungi on Gramineae,
Priest Lake, Idaho**

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DURING VACATION PERIODS in 1948 and 1949, collections of diseased grasses were obtained in the general vicinity of Priest Lake, Idaho, especially at Beaver Creek Camp which lies at the northern extremity of Priest Lake. Frequent mountain showers favor the development of spots and blotches on the lush growth of species of *Bromus*, *Calamagrostis*, *Glyceria*, *Phalaris*, and other grass genera. While the elevation of the lake shore is only about 2400 ft. the proximity of the conifer-covered hills with their above mentioned showers favors the development of a mountain flora. We have been able in a comparatively short period to obtain a considerable number of additions to the Idaho grass-disease flora. Except in the field of forest pathology, little is known of the fungus flora of the region, especially of the fungi parasitizing Gramineae. The following annotations and descriptions represent additions to the known flora.

Phyllosticta helenae sp. nov. Maculis brunneis v. stramineis, pycnidiis ellipticis, erumpentibus, parenchymatis, fragilibus, aureo-brunneis, ostiolatis, $180-230\mu \times 88-105\mu$ diam.; pycnosporulis in cirrhi, cylindraceo-ellipticis, bi-guttulatis, hyalinis, $6.0-7.4\mu \times 1.6-2.8\mu$.

In foliis aridis prope basibus culmis *Glyceriae occidentalis* (Piper) J. C. Nels. Thoroughfare, prope Priest Lake, Kaniksu Natl. For., Ida., Amer. Bor. Typus est A.S. 20,507 (Herb. Dept. of Plant Pathology, The State College of Washington). Legit R. Sprague and Mary Willis Sprague.

*Published as Scientific Paper No. 883, Agricultural Experiment Stations, Institute of Agricultural Sciences, The State College of Washington (Tree Fruit Experiment Station, Wenatchee, Washington).

Spots brown, fading to straw colored, pycnidia elliptical in outline, between the veins, much longer than wide, flattened, erumpent, fragile, parenchymatous, light golden brown, ostiolate, $180\text{--}230\mu \times 88\text{--}105\mu$ diam.; pycnospores exuded in cirrhi, cylindrical, elliptical at both ends, uniformly rounded, with a small guttula at each end, contents hyaline, $6.0\text{--}7.4\mu \times 1.6\text{--}2.8\mu$.

In dried foliage near the base of the culms but often close to the water in which the plants are growing. On *Glyceria occidentalis* in beach sand, in shallow water, or in wet sand along the Thoroughfare between Priest Lake and Upper Priest Lake one-half mile from outlet. Collected August 21, 1949. This species is named for Mrs. Wilson (Helen) Compton. It was her interest in the Priest Lake country near Beaver Creek Camp that enabled the writer to collect in the region.

The type is represented by scattered pycnidia. Pycnospores are illustrated in Figure 1. Immature spores of a *Hendersonia*, $12\mu \times 3\mu$, occur in the material, but these spores are found in smaller darker pycnidia than those of *P. helenae*. In addition, other material of *G. occidentalis* collected in the vicinity harbors *Septoria avenae* Frank and also a fungus somewhat intermediate morphologically between *Hendersonia culmicola* Sacc. and *H. crastophila* Sacc. The last two mentioned are incidental saprophytes.

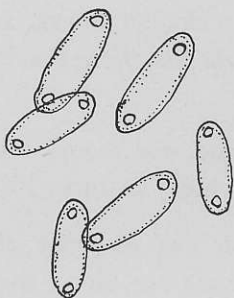


Fig. 1.—Pycnospores of *Phyllosticta helenae*, drawn with the aid of a camera lucida, $\times 2000$.

HENDERSONIA CULMICOLA Sacc., was found on the leaf margins in ashy lesions with brown borders on living leaves of *Phalaris arundinacea* L. (A.S. 20,508) in a swamp near Priest Lake. The ashy spots were associated with juvenile brown spots, but no pycnidia were found in the latter. The fungus may be weakly parasitic. Similar primary invader material was found nearby on dried leaves of *Deschampsia caespitosa* (L.) Beauv. The pycnidia in A.S. 20,508 are brown, $100\text{--}120\mu$ diam. and the spores are pale yellow-brown, flattened on one side but otherwise narrowly fusiform, 3- very rarely 4-septate,

30–38 μ \times 3.5–4.2 μ . The fungus is similar to *H. culmicola* var. *intermedia* in number of septations but in length it equals the species proper.

SEPTOGLOEUM OXYSPORUM Sacc., Bomm. and Rouss., produced abundant black or char spots on *Agrostis alba* L. and *Calamagrostis canadensis* (Michx.) Beauv. at Beaver Creek Camp.

OVULARIA PUSILLA (Ung.) Sacc. and D. Sacc., was common on leaves of *Agrostis alba* at Beaver Creek in August, 1949, causing elliptical tawny spots on the leaves. At a low magnification ($\times 45$) the neatly seried hyaline clusters of conidiophores can be seen. Otherwise the fungus is very obscure and is frequently passed over by the collector. A related fungus, *O. hordei* (Cav.) Sprague, occurred on *Phalaris arundinacea* L. along the shores of the Thoroughfare. These represent extensions of range for these two fungi.

MASTIGOSPORIUM RUBRICOSUM (Dearn. and Barth.) Nannf., caused the common red eyespot on *Calamagrostis canadensis*, along the shores of Priest Lake. The same fungus caused a comparable spot on *Agrostis alba* at Beaver Creek Camp and a purple eyespot on *Dactylis glomerata* in the area.

SCOLECOTRICHUM GRAMINIS Fckl., produced a widespread leafstreak on *Agropyron repens* (L.) Beauv., *Melica smithii* (Porter) Vasey (a new host), *Bromus carinatus* (Hook.) Arn., *B. vulgaris* (Hook.) Shear, and *Dactylis glomerata* L. in the region. It occurred on *Glyceria pauciflora* Presl but in small quantities.

SPERMOSPORA SUBULATA (Sprague) Sprague, was found in moist woods at Beaver Creek Camp on *Melica smithii* (a new host) in June, 1949.

PUCCINIA CORONATA Corda. Crown rust was seriously abundant on *Calamagrostis canadensis* and on *Phalaris arundinacea* along the Thoroughfare and at Upper Priest Lake. The rust on *Phalaris* is newly reported for Idaho. *Rhamnus*, the alternate host, was heavily rusted at Upper Priest Lake in June.

SEPTORIA AVENAE Frank. As mentioned, blotch was found on *Glyceria occidentalis* on the Thoroughfare near Priest Lake. *S. avenae* f. sp. *triticea* T. Johnson is also newly reported for the West on *Agropyron repens* (L.) Beauv. at Beaver Creek. Abundant material in gray spots was obtained in *Glyceria pauciflora* Presl with spores 37–44 μ \times 3.5–4.2 μ . Microspores in similar pycnidia were present. They are cylindrical or curved, 4–5 μ \times 1.1–1.5 μ , and

differed from *P. helenae* in pycnidial size, shape, and color as well as in spore size and shape.

PHOMA sp. (Black spot). This fungus is probably undescribed but available material is seldom mature. A scanty collection on *Festuca occidentalis* Hook. showed the coal-black culms and sheath spots typical of the fungus. The small black pycnidia in this collection range up to 90μ diam. and the hyaline spores are spermatia-like, $4-6\mu \times 0.5-0.9\mu$, slightly broader than collections made in 1948 from other parts of the West.

HELMINTHOSPORIUM CYCLOPS Drechsl., produced an obscure mold on necrotic leaves of *Danthonia spicata* (L.) Beauv. growing in dry ground in moss-covered soil near the Thoroughfare. Incidentally, a trace of *Ustilago residua* Clinton was noted in this material (determined by G. W. Fischer). It might be mentioned in passing that the Ustilaginales are very scarce in the region along the shore of Priest Lake, although no exploration of any extent has been made on the bald hills above the lake. Even the usually prevalent *Ustilago bullata* Berk. on *Bromus tectorum* was limited to scattered puny plants growing in gravelly open areas at Compton Cove (lots 4-8) in the Beaver Creek Camp.

SCLEROTIUM RHIZODES Auers. There were scattered but locally severe infestations of this fungus on *Calamagrostis* at Beaver Creek Camp. The dead, dried, recurved leaves with the black adhering sclerotia are typical. The plants, in nearly circular areas 20-30 ft. across, were almost all infected in the low sandy ground on lots 14 to 16 in the Beaver Creek Camp. The infection apparently had spread radially.

ERYSIPHE GRAMINIS DC. Powdery mildew was not abundant in the area. It is newly reported on *Agropyron repens* for Idaho and on *Poa palustris*.

COLLETOTRICHUM GRAMINICOLA (Ces.) Wils., was found on *Calamagrostis canadensis* in 1948 at Beaver Creek. This is a new host of this fungus in Idaho.

RHYNCHOSPORIUM SECALIS (Oud.) J. J. Davis, was relatively common on *Pbalaris arundinacea* along the shores of the Thoroughfare.

HELMINTHOSPORIUM TRITICI-REPENTIS Died., occurred on the leaves of *Agropyron repens* along the shores of the Thoroughfare. This is a new report for this leaf mold in Idaho.

SEPTORIA ELYMI Ell. and Ev., was associated with the above mentioned *Helminthosporium* on quack grass. The spores resembled summer material frequently seen in earlier studies and having aseptate or 1-septate, straight or curved spores with either one or both ends rounded, sometimes one end tapered or ill-formed. The spores range from $5-15\mu \times 1.5-3.0\mu$. The fungus has some resemblance to *Ascochyta elymi* Tehon and Daniels, regarded by the author as a synonym for *A. sorghi* Sacc. Some of the spores even resemble *Selenophoma obtusa* Sprague and A. G. Johnson and others those of *Septoria nodorum* Berk. On the basis of earlier studies, however, the author is more inclined to consider it *S. elymi*, off type because of excessive heat and competition with the *Helminthosporium*. The presence of true microspores with the aberrant macrospores is more strongly suggestive of the filiform group of *Septoria* than of the cylindrical spored group of *S. nodorum*.

FUSARIUM NIVALE (Fr.) Ces. Pink snow mold was noted on *Poa annua* L. in moist shaded areas at Beaver Creek Camp (lot 14) on August 23, 1949. No doubt a survey in early season, especially on the adjacent slopes, would have revealed that this fungus was common. The presence of pink snow mold so late in the year is not typical.

PUCCINIA RUBIGO-VERA (DC.) Wint., occurred on *Agrostis scabra* Willd. at Beaver Creek. This well known leaf rust is not common on this particular grass. It appears to be *P. rubigo-vera* var. *impatiens* (Art.) Mains, and is here newly reported on *A. scabra* west of New York State. The alternate host genus for this variety of *P. rubigo-vera* is *Impatiens*. This host genus is not abundant in the West, but oddly enough a species of *Impatiens* does occur in the woods at Beaver Creek. We have not yet found rust on it.

ASCOCHYTA SORGHII Sacc., occurred on the dead leaf tips of *Agrostis scabra* at Beaver Creek Camp. There were numerous brown globose pycnidia present that contained uniformly cylindrical, hyaline, 1-septate spores measuring $12-16\mu \times 3.5-4.2\mu$. The fungus belongs to the species recognized as *A. sorghi*, formerly generally known as *A. graminicola*.