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A TAXONOMIC SURVEY OF MYXOMYCETES OF THE GREAT SMOKY MOUNTAINS NATIONAL PARK[1]

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Relatively little taxonomic work on the Myxomycetes of the Great Smoky Mountains National Park has been done. Apparently only two papers on the slime molds of this and neighboring areas have been published. Cooley (1934) published a preliminary paper on these organisms from eastern Tennessee, including species occurring in the Park. Relying largely on specimens deposited in the herbarium at the University of Tennessee, Cooley did not include locations nor dates of collections in his report. Since these specimens were destroyed by fire in 1934, it is no longer possible to distinguish species collected in the Park from those collected elsewhere. Mr. Robert Hagelstein (see Linder, David, 1941), on the 1939 foray of the Mycological Society of America, collected sixty-six species occurring within the Park. In the published report of the foray, locations and dates were omitted from the species list, but fortunately a few of his specimens are on file in the Mycological Herbarium of the University of Tennessee and are listed here in the appropriate places.

This study was confined to the area of the Great Smoky Mountains National Park and lasted from October 20, 1949, until October 15, 1950. For the greater part of the study, mature fruiting bodies were brought into the laboratory for identification, but toward the latter part of this work the culture method described by Gilbert and Martin (1933) was used. The latter method is a very good one and it may well be that many species heretofore unknown from this area will be discovered by the use of this method if it were practised intensively for a time.

All descriptions and authorities for generic and specific names are those appearing in *North American Flora* (1949) and the order of listing in this paper is that of that work. The specific names used by Hagelstein have been changed, where necessary, to conform with the *North American Flora*. While other descriptions were consulted from time to time (Lister, 1925; Macbride and Martin, 1934; Hagelstein, 1944) *North American Flora* seems best for the forms occurring in this area. Exsiccati collected are deposited in the Mycological Herbarium, University of Tennessee, Knoxville. Other collections of workers in this area which have been deposited in the University of Tennessee Herbarium are included in this report.

The species appearing with an asterisk after them are reported for the first time for this area.

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Ceratiomyxa fruticulosa (Müll.) Macbr. A very common species from May through August in all parts of the Park. Most of the specimens collected were of the filiform type.

Licea operculata (Wingate) G. W. Martin*. This species was found only once during the course of this survey. It appeared on conifer bark collected from Bull Head Mountain in August.

Tubifera ferruginosa (Batsch) J. F. Gmel*. Fairly common and typical. Found from July through September in Blount and Sevier Counties.

Lycogala epidendrum (L.) Fries. A common species found throughout the Park from January through October.

Lycogala exiguum Morgan. A not-too-common species. Distinguished from *L. epidendrum* by its smaller size and large dark brown to black warts on the peridium.

Dictydiaethalium plumbeum (Schum.) Rost. Apparently this species is not too common. The only report of it is by Hagelstein who reported it in 1939.

Cribraria splendens (Schrad.) Pers. Collected only once. It appeared in culture on conifer bark collected from Bull Head Mountain. Easily distinguishable because of its 8 to 15 firm ribs radiating from the tip of the stipe.

Cribraria microcarpa (Schrad.) Pers. This species is also uncommon. Collected only once, in Swain County, North Carolina.

Cribraria intricata Schrad. Moderately common. Collected in Blount and Sevier counties, Tennessee, and from Swain County from June through October.

Cribraria macrocarpa Schrad.* Found only once. On the trail to Hannah Mountain in August.

Cribraria languescens Rex.* Apparently uncommon. Appeared in culture on conifer bark collected from Andrews Bald.

Cribraria tenella Schrad. Found only once in this survey. On a conifer log in Deals Gap.

Cribraria rufa (Roth) Rost.* Moderately common in July and August. Collected in Swain County, N. C., and Cocke County, Tennessee.

Cribraria elegans Berk. & Curt. Collected by Hagelstein in 1939. The only report.

Cribraria purpurea Schrad. Not a very common species in this area. Found in the higher altitudes in August and November.

Dictydium cancellatum (Batsch) Macbr. A very common and distinctive species. Collected from June through August in all parts of the Park.

Prototrichia metallica (Berk.) Massee. This species has been reported from this area only once, by Hagelstein in 1939.

Perichaena chrysosperma (Currey) Lister. This is apparently an uncommon species. Reported once by Hagelstein and collected once in this study.

Perichaena depressa Libert.* This species appears to be very uncommon, but this is probably due to its habitat. The only time it was collected it was growing on a conifer log imbedded in the ground. The peridium is a very dark red and unless it was broken, exposing the golden yellow capillitium, it would pass unnoticed.

Arcyria incarnata (Pers.) Pers. A fairly common species collected regularly throughout the Park from May through August.

Arcyria cinerea (Bull.) Pers. A very common species. The collections range from the digitate type with 3-7 or more sporangia united by their stipes to a solitary sporangium.

Arcyria insignis Kalchbr. & Cooke.* Not a very common species. Collected only twice. Occurs from June through August in Blount County, Tennessee, and Swain County, N. C.

Arcyria denudata (L.) Wettst. Common. Found in Blount and Sevier Counties from June through November.

Oligonema flavidum (Peck) Peck. Very uncommon. Collected only once, in Greenbrier Cove in March.

Oligonema Schweinitzii (Berk.) G. W. Martin.* Another uncommon species. Collected only once, in Cades Cove in November.

Trichia varia (Pers.) Pers. A not uncommon species found in all parts of the Park from March through September.

Trichia contorta (Ditmar) Rost.* This species is apparently very uncommon. It was collected by J. H. and S. H. Taylor and has not been reported since.

Trichia scabra Rost.* Also apparently an uncommon species. It has been found only twice in this survey. Easily distinguishable from other species of *Trichia* by its sessile sporangia and delicately reticulate spores.

Trichia subfusca Rex. This is another species that is apparently uncommon in this area. Collected only once, in October.

Trichia Botrytis (J. F. Gmel.) Pers. Fairly common from June through October at all elevations. Readily recognizable by its stipitate sporangia, long, tapering elaters and light reddish-yellow lines of dehiscence which are the inner walls of the peridium.

Hemitrichia serpula (Scop.) Rost. A very common species which occurs throughout the Park. One unusual specimen of this species was found at the Sinks (no. 19949). The reticulate plasmodiocarp was broken up into pulvinate, heaped, shining yellow to dull yellowish-brown sporangia. The other characters are similar to the normally occurring types. Upon comparison of this specimen with others in the herbarium at the State University of Iowa, it was found that while this type of fruiting is unusual it is not too uncommon.

Hemitrichia clavata (Pers.) Rost. This species was found to occur fairly frequently in February, March and June in Sevier and Swain counties.

Hemitrichia stipitata (Massee) Macbr.* Moderately common throughout the Park from March through September. This species is often confused with *H. clavata* and is thought by many to be a variety of that species. *H. stipitata* can be distinguished from *H. clavata*, however, by its smoother capillitium, cylindrical stipe, as opposed to the expanding stipe of *H. clavata*, and by the fact that less than half of the peridium is left after dehiscence.

Hemitrichia Vesparium (Batsch) Macbr. One of the most frequently occurring species in this area. It can be found throughout the year in all parts of the Park. One sessile form (no. 19972) was found which dehisced by fragmentation. The peridium was granular and dark wine-red in color.

Diachea leucopodia (Bull.) Rost. Does not occur frequently. It was not collected in this study but was reported by Hagelstein in 1939.

Diachea bulbillosa (Berk. & Br.) Lister. Collected by Hagelstein in 1939 but not found in this survey.

Enerthenema papillatum (Pers.) Rost. This is apparently another uncommon species. It was found by Hagelstein but has not been reported since.

Stemonitis fusca Roth. A not uncommon species found throughout the Park from June through August.

Stemonitis virginiensis Rex.* An apparently uncommon species found in Blount and Sevier counties in July and October.

Stemonitis splendens Rost. This is another uncommon species of *Stemonitis*. It has been found in Blount, Sevier and Cocke counties from June through August.

Stemonitis axifera (Bull.) Macbr. A very common species occurring June through August in all parts of the Park.

Stemonitis Smithii Macbr.* Not very common. Found in June and July in Blount and Sevier counties. This species is considered by Lister as a variety of *S. axifera*. It can be distinguished from *S. axifera* by its paler color, smaller height and smaller spores.

Stemonitis flavogenita Jahn.* Apparently uncommon. Collected on the Noland Divide in July. This was the only collection made of this species.

Stemonitis pallida Wingate. Collected by Hagelstein in 1939 and not reported since.

Comatricha Suksdorfii Ellis & Ev.* The only specimen of this species known from the Park was collected by J. H. and S. H. Taylor at Ramsey Cascades.

Comatricha nigra (Pers.) Schroet.* Not too common. Appeared on bark in culture. The bark was collected from Bull Head Mountain.

Comatricha typhoides (Bull.) Rost. A common species found from August through October. The spores with large clusters of warts on their surfaces make this an easily determined species.

Comatricha pulchella (C. Bab.) Rost. Collected only once, by Hagelstein in 1939.

Clastoderma Debaryanum A. Blytt. An uncommon species. Most collections were obtained by the culture method. This species is small and difficult to see in the field, but it is very distinctive in appearance at maturity. The peridium breaks up leaving angular and rounded fragments attached to the tips of the capillitium. The stalk is noticable in that a swollen ring divides the translucent upper part from the darker, granular lower portion.

Lamproderma Arcyrionema Rost. Not uncommon from August through September. Not easily discernible from species of *Comatricha* after the peridium has disappeared but distinctive enough by its circinate capillitium which is pale as it leaves the cylindrical or slightly tapering columella. The capillitium becomes darker and thicker after leaving the columella but towards the periphery it fades to colorless tips.

Lamproderma columbinum (Pers.) Rost. Not uncommon from August through October. A very distinctive species because of its rich violet or purple metallic, iridescent peridium, clavate columella, dark brownish-purple capillitium and large smoky-brown punctate spores.

Fuligo septica (L.) Webber. A common distinctive species found throughout the Park from June through October.

Badhamia Curtisii (Fries) Rost.* An apparently uncommon species found only once, on Mt. Le Conte by A. J. Sharp and L. R. Hesler. Easily recognizable by its reddish-brown or purplish-brown color.

Physarum cinereum (Batsch) Pers., *Physarum lateritum* (Berk. & Rav.) Morgan, *Physarum superbum* Hagelst., *Physarum bivalve* Pers., *Physarum penetrale* Rex, *Physarum melleum* (Berk. & Br.) Massee, *Physarum pulcherripes* Peck, *Physarum pulcherrimum* Berk. & Rav., *Physarum nucleatum* Rex, *Physarum leucopus* Link, *Physarum psittacinum* Ditmar, *Physarum flavidum* (Peck) Peck, and *Physarum sulphureum* Alb. & Schw. were reported by Hagelstein in 1939, but none of these species were deposited in the University of Tennessee Herbarium or were collected in this survey.

Physarum contextum (Pers.) Pers. Collected only once, at Indian Camp Creek in July.

Physarum globuliferum (Bull.) Pers. Obtained in culture on conifer bark and also from a log on the Fork Ridge-Bryson City trail.

Physarum stellatum (Massee) G. W. Martin.* Collected at Ft. Harry in Sevier County. The fruiting bodies covered large areas of the log and a polypore fungus.

Physarum tenerum Rex. Not common. Found in Blount and Sevier counties in July.

Physarum nutans Pers. Not uncommon. Found in Blount and Sevier counties from July through August.

Physarum viride (Bull.) Pers. Not common. Collected in Sevier County in July and August.

Leocarpus fragilis (Dicks.) Rost. Not uncommon. Found in Sevier and Swain counties in August. A very distinctive species for its duplex capillitium, weak stipes, and brittle peridium. Martin reports the spore size as 12-14 microns in diameter, but in the specimens collected in this study the spore diameter was from 9-14 microns.

Diderma testaceum (Schrad.) Pers. Moderately common in July and August in Blount and Servier counties.

Diderma effusum (Schw.) Morgan. Apparently an uncommon species. Obtained in culture from bark collected on Bull Head Mountain.

Diderma hemisphaericum (Bull.) Hornem. Collected by Hagelstein in 1939, but not found in this study.

Diderma rugosum (Rex) Macbr. Not common. Collected once on Bull Head Mountain in September.

Didymium crustaceum Fries. Not uncommon. Collected in January and August in Sevier and Swain counties.

Didymium squamulosum (Alb. & Schw.) Fries. Collected by Hagelstein in Cherokee Orchard, Sevier County, 1939.

Didymium minus (Lister) Morgan.* Only one collection, by L. R. Hesler in Sevier County, August.

Didymium nigripes (Link) Fries. A collection by A. J. Sharp and L. R. Hesler is the only collection, except the one by Hagelstein, that has been reported from this area.

Didymium Iridis (Ditmar) Fries. Two collections of this species were made, both collections from Sevier County, in January.

Lepidoderma tigrinum (Schrad.) Rost.; Fuckel.* Not common. One collection was made, in March, in Swain County.

Summary

This taxonomic survey of the Myxomycetes of the Great Smoky Mountains National Park lists eighty-three species; twenty-one of which are reported for the first time for this area. The most frequently encountered species (using only those specimens collected by this author) belonged in the families TRICHIACEAE and STEMONITACEAE, followed by CRIBRARIACEAE, and PHYSARACEAE.

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