United States
Department of
Agriculture

Forest Service

**Northeastern Forest
Forest Experiment Station**

General Technical
Report NE-182

Preliminary Checklist of Fungi of the Fernow Experimental Forest

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Abstract

This publication provides a checklist of fungi found on the Fernow Experimental Forest in West Virginia during 4 years of research and collecting by the authors. More than 500 fungi in seven major taxonomic groups (Acrasiomycetes, Myxomycetes, Chytridiomycetes, Oomycetes, Ascomycetes, Deuteromycetes, and Basidiomycetes) are listed alphabetically by genus and species. Also provided is a general description of the forest vegetation of the Fernow Experimental Forest.

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Cover Photograph: Fruiting bodies of the common morel (*Morchella esculents*).

Manuscript received for publication 8 November 1993

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PO BOX 6775
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February 1994

Introduction

Fungi play many important roles in forest ecosystems. Saprophytic fungi aid in the decomposition of organic matter. Mycorrhizal fungi help tree roots obtain nutrients and may help protect roots from pathogens. Other fungi are pathogenic and contribute to decline and tree mortality. Finally, the fruiting bodies of fungi serve as food for a variety of organisms, including humans. Although the vast majority of fungi are terrestrial, a number of aquatic forms occur in small, well-aerated streams within forest ecosystems. Aquatic fungi play a key role, not only in the decomposition of organic matter introduced into streams but also as intermediates in food chains involving many aquatic insects and other invertebrates.

While these roles have been recognized for some time, historically fungi have received relatively little research attention from ecologists. A first step toward understanding how fungi function in a forest ecosystem is to examine and identify the fungi present. Although species lists for particular groups of fungi have been compiled for a number of areas in eastern North America, fairly comprehensive studies of the total mycoflora are limited to just a few localities such as the Great Smoky Mountains National Park (Petersen 1979). This publication provides a checklist of fungi found on the Fernow Experimental Forest during 4 years of research and collecting by the authors. The checklist is certainly not complete, and additional field work undoubtedly will yield many more species of fungi. For example, the macrofungi (certain Ascomycetes and many Basidiomycetes) have been better sampled than the microfungi. This is true particularly for most groups of parasitic microfungi, which have not yet been investigated to any real extent. As such, the checklist should be regarded only as providing a body of data from which future floristic and ecological studies of the fungi of the Fernow Experimental Forest can be launched.

The Fernow Experimental Forest

The Fernow Experimental Forest, located in West Virginia 4 km south of Parsons and 35 km northeast of Elkins, contains 1902 ha of second- and third-growth Appalachian hardwood stands, which are representative of average-to-better sites found on approximately 4 million hectares of the forest type in West Virginia and surrounding states. At the lowest elevations, the original forests consisted mainly of hardwoods, with an admixture of eastern hemlock (*Tsuga canadensis* (L.) Carr.) along stream bottoms and on north slopes. Forests at the higher elevations were dominated by red spruce (*Picea rubens* Sarg.) and hemlock. Small patches of pure spruce occurred on the tops of the mountains. At the turn of the century, stands on the Experimental Forest were estimated to average 129 m^3 ha^{-1} (15,000 board feet per acre) (Weitzman 1949).

The pattern of cutting and regeneration on the Fernow is similar to that found throughout much of the central Appalachians. Logging took the best species. Undesirable trees of poor form and unmarketable species were left. Forest fires burned repeatedly over the area and chestnut blight (*Endothia parasitica* (Murr.) P. J. And. & H. W. And.) wiped out 10,440 m^3 (3 million board feet, approximately 25 percent of the volume of the Experimental Forest) of American chestnut (*Castanea dentata* (Marsh.) Bork.) in the 1930's (Weitzman 1949).

Elevations in the Fernow range from 533 to 1112 m, with slopes of 10 to 60 percent. Soils predominantly are loams and silt loams of the Calvin and Berks-Muskingham series (Typic Dystrochrepts). These soils originate from acid shales and sandstones on the western half of the forest and from sandstones, shale, and limestone on the eastern half of the forest. Average soil depth is about 1 m, and average soil pH is about 4.5 (Helvey and Kochenderfer 1991).

A rainy, cool climate is typical on the Experimental Forest. Precipitation, which averages about 145 cm per year, is evenly distributed throughout the year. Mean annual temperature is about 9°C, and the length of the growing season is approximately 145 days (U.S. Department of Agriculture, Forest Service 1987).

The forest types and conditions on the Fernow reflect the site qualities and past history of the area. Oaks (*Quercus* spp.) are the most common species on the Experimental Forest and are found on all sites along with American beech (*Fagus grandifolia* Ehrh.) and sweet birth (*Betula lenta* L.). Excellent sites in coves and on north slopes support primarily northern red oak (*Quercus rubra* L.), sugar maple (*Acer saccharum* Marsh.), yellow-poplar (*Liriodendron tuplipifera* L.), black cherry (*Prunus serotina* Ehrh.), white ash (*Fraxinus americana* L.), basswood (*Tilia americana* L.), cucumbertree (*Magnolia acuminata* L.), and beech. Fair sites on south and east slopes usually support oak stands composed of red oak, white oak (*Quercus alba* L.), chestnut oak (*Quercus prinus* L.), and scarlet oak (*Quercus coccinea* Muenchh.). Other fair site species include red maple (*Acer rubrum* L.), sweet birch, blackgum (*Nyssa sylvatica* Marsh.), sassafras (*Sassafras albidum* Nutt.), and sourwood (*Oxydendrum arboreum* (L.) DC.). Good sites commonly support a mixture of excellent and fair site species. Black locust (*Robinia pseudoacacia* L.), sweet birch, and Fraser magnolia (*Magnolia fraseri* Walt.) are consistent but generally minor components of the forest on all sites. As already noted, American chestnut was a major forest component until it was eliminated by the chestnut blight.

Since 1949, two research work units of the Northeastern Forest Experiment Station (USDA Forest Service) have been conducting research on the Experimental Forest. Included in the research activities of these two work units (Growth and Culture of Central Appalachian Hardwoods and Water Resource Protection in Central Appalachian Forests) are evaluation of various silvicultural practices on growth and regeneration of Appalachian hardwoods and assessment of the effects of these and other forest management practices on water yield and water quality. As a result of various experimental treatments, stands ranging from 0 to >80 years exist.

Collecting Methods and Techniques

The checklist of fungi that follows is based upon specimens collected during the course of field work as well as specimens isolated from samples of organic material, soil, and water collected on the Fernow Experimental Forest and brought back to the laboratory. Field collections of the fruiting bodies of Ascomycetes and Basidiomycetes were preserved by convective warm air drying on the shelves of a standard mushroom dryer (Smith and Smith 1973), whereas fruiting bodies of Myxomycetes collected in the field or obtained from moist chamber cultures were air dried. Voucher specimens are deposited in the herbarium of Fairmont State College (FWVA). Moist chamber cultures used for isolating Myxomycetes from samples of tree bark and leaf litter were prepared in the manner described by Stephenson (1985, 1989). Procedures used for isolating Acrasiomycetes from soil-litter samples were those of Cavender and Raper (1965), as described by Stephenson and Landolt (1987). Ascomycetes and Basidiomycetes were identified using the keys and descriptions available in a number of standard references (Overholts 1953, Miller 1972, Jenkins 1986). For the most part, the nomenclature used for Ascomycetes and Basidiomycetes is derived from Miller and Farr (1975) or Farr et al. (1989), whereas that used for Acrasiomycetes and Myxomycetes follows Raper (1984) and Martin and Alexopoulos (1969), respectively.

A number of different collecting techniques were used for aquatic fungi. Chytridiomycetes and Oomycetes were collected by "baiting" streams with various types of organic material in the manner described by Johnson (1956), Sparrow (1960), and Seymour (1970). The baits used included hemp (*Cannabis sativa* L.) seeds, mustard seeds, pine pollen grains, snake skin, and cellulose. These were confined in small bags prepared with fine-mesh nylon netting and left in the streams for periods ranging from two weeks to several months. Aquatic Hyphomycetes were collected with the use of leaf bags and by isolating their conidia from samples of stream water by means of a membrane filtration technique. Leaves from four different tree species (red oak, sugar maple, beech, and red maple) were used to prepare leaf bags in the manner described by Musil and Shearer (1982) and Chamier et al. (1984). Hyphomycete conidia present in the six streams were isolated in the manner described by Iqbal and Webster (1973) and Shearer and Webster (1991). Water samples were filtered directly in the field, using a millipore filtration apparatus with a membrane filter (47-mm diameter, 0.45-μm pore size). Specimens of aquatic fungi were studied as living material or stained with cotton blue in lactic acid and mounted in lactophenol, or both. Identifications of Chytridiomycetes and Oomycetes were made using the keys and descriptions provided in Coker (1923), Sparrow (1960), Seymour (1970), and Karling (1977), whereas aquatic Hyphomycetes were identified using Nilsson (1964), Ellis (1971), Barnett and Hunter (1972), Ainsworth et al. (1973), Ingold (1975), and Subramanian (1983).

Checklist of Fungi

The fungi in the checklist are listed alphabetically by genus and species within major taxonomic groups. The overall scheme of classification essentially is that used in Alexopoulos and Mims (1979). Because no completely satisfactory system of classification exists for Deuteromycetes, aquatic Hyphomycetes are assigned to three categories--aeroaquatic Hyphomycetes, dematiaceous and other Hyphomycetes, and Ingoldian Hyphomycetes--which are practical rather than taxonomic and encompass all those fungi that have certain morphological or reproductive features in common. For example, the Ingoldian Hyphomycetes include only those species that complete their entire life cycle below the water surface (Ingold 1966). Although the vast majority of collections in most groups of fungi could be identified to species, this was not always possible. As a result, a few of the genera are represented only by unidentified species.

Preliminary Checklist of the Fungi of the Fernow Experimental Forest

Division Gymnomycota

CLASS ACRASIOMYCETES

Order Dictyosteliales

Family Acytosteliaceae
Acytostelium leptosomum Raper

Family Dictyosteliaceae
Dictyostelium aureo-stipes Cavender, Raper & Norberg
Dictyostelium discoideum Raper
Dictyostelium giganteum Singh
Dictyostelium lacteum van Tieghem
Dictyostelium minutum Raper
Dictyostelium mucoroides Brefeld
Dictyostelium pupureum Olive
Dictyostelium sphaerocephalum (Oud.) Sacc. & March.
Polysphondylium candidum Hagiwara
Polysphondylium pallidum Olive
Polysphondylium tenuissimum Hagiwara
Polysphondylium violaceum Brefeld

CLASS MYXOMYCETES

Order Ceratiomyxales

Family Ceratiomyxaceae
Ceratiomyxa fruticulosa (Mull.) Macbr.

Order Echinosteliales

Family Echinosteliaceae
Echinostelium minutum de Bary

Order Liceales

Family Cribrariaceae
Cribraria confusa Nann.-Brem.
Cribraria microcarpa (Schrad.) Pers.
Cribraria minutissima Schw.
Cribraria violacea Rex
Dictydium cancellatum (Batsch) Macbr.

Family Enteridiaceae
Dictydiaethalium plumbeum (Schum.) Rost.
Enteridium splendens (Morgan) Macbr.
Lycogala epidendrum (L.) Fries
Tubifera ferruginosa (Batsch) J. F. Gmel.

Family Liceaceae
Licea kleistobolus Martin
Licea operculata (Wingate) Martin

Order Physarales

Family Didymiaceae
Diderma effusum (Schw.) Morgan
Didymium minus (A. Lister) Morgan
Lepidoderma tigrinum (Schrad.) Rost

Family Physaraceae
Fuligo septica (L.) Wiggers
Leocarpus fragilis (Dicks.) Rost.
Physarella oblonga (Berk. & Curt.) Morgan
Physarum contextum (Pers.) Pers.
Physarum galbeum Wingate
Physarum globuliferum (Bull.) Pers.
Physarum luteolum Peck
Physarum penetrale Rex
Physarum tenerum Rex
Physarum viride (Bull.) Pers.

Order Stemonitales

Family Stemonitaceae
Colloderma oculatum (Lippert) G. Lister
Stemonitis axifera (Bull.) Macbr.
Stemonitis fusca Roth

Order Trichiales

Family Trichiaceae
Arcyria cinerea (Bull.) Pers.
Arcyria incarnata
Hemitrichia calyculata (Speg.) Farr
Hemitrichia clavata (Pers.) Pers.
Hemitrichia serpula (Scop.) Rost.
Metatrichia vesparium (Batsch) Nann.-Brem.
Perichaena depressa Libert
Trichia favoginea (Batsch) Pers.
Trichia scabra Rost.
Trichia varia (Pers.) Pers.

Division Mastigomycota

CLASS CHYTRIDIOMYCETES

Order Blastocladiales

Family Blastocladiaceae
Allomyces arbuscula Butler
Allomyces javanicus var. *allomorphus* Indoh
Leptocladia laevis Sorgel

Family Catenariaceae
Catenomyces persicinus Hanson
Catenophlyctis variabilis Karling
Catenaria auguillulae Sorokin
Catenaria vermicola Birchfield

Order Chytridiales

Family Cladochytriaceae
Cladochytrium irregulare de Wild.
Cladochytrium tenue Kouch
Nowakowskiella elegans (Nowak) Schroet.
Nowakowskiella multispora Karling
Nowakowskiella sculptura Karling
Polychytrium sp.

Family Entophlyctaceae
Diplophlyctis chitinophilla Willoughby
Mitochytridium ramsum Dangeard

Family Olpidiaceae
Dictyomorpha dioica (Couch) Mullins
Olpidium appendiculatum Karling
Olpidium luxurians (Tomasch) Fischer
Olpidium pendulum Zopf

Family Physodermataceae
Physoderma maydis Miyahe
Saccopodium gracile Sorokin

Family Rhizideaceae
Subfamily Chytridioideae
Chytridium appressum Sparrow
Subfamily Rhizidioideae
Chytridium appressum Sparrow
Chytriomyces mammilifer Persiel
Karlingia chitinophilla Karling
Obelidium megarhizum Willoughby
Rhizidium chitinophyllum Sparrow
Rhizidium laevis Karling
Rhizophlyctis rosea Fischer
Rhizophlyctis varians (Karling) Comb.
Rhizophlydium angulosum Karling
Rhizophlydium chitinophilum Karling
Rhizophlydium elyensis Sparrow
Rhizophlydium globosum (Braun) Robenhorst
Rhizophydium keratinophyllum Karling
Rhizophydium pedicellatum

Rhizophydium pollinis Pini. Braun & Zopf
Rhopalophlyctis sarcoptoidis Karling

Order Monoblepharidales

Family Gonapodyaceae
Gonapodya prolifera Fischer

CLASS OOMYCETES

Order Lagenidiales

Family Lagenidiaceae
Lagenidium rabenhorstii

Family Olpidiopsidaceae
Olpidiopsis saprolegniae Cornu

Order Leptomitales

Family Leptomitaceae
Apodachlya brachynema (Hildeb) Pringsh

Family Rhipidiaceae
Rhipidium americanum Thaxter
Sapromyces reinschii (Schroet.) Fritsch

Order Peronosporales

Family Pythiaceae
Phytophthora cryptogeae Pethybridge & Lafferty
Phytophthora infestans (Mont) de Bary
Phytophthora omnivora de Bary
Pythium afertile Kanouse & Humphrey
Pythium graminicolum Subramaniam
Pythium monospermum Pringsh.
Pythium undulatum Petersen

Order Saprolegniales

Family Sprolegniaceae
Achlya americana Humphrey
Achlya conspicua Coker
Achlya debaryana Humphrey
Achlya dubia Coker
Achlya glomerata Coker
Achlya hypogyna Coker & Pemberton
Achlya imperfecta Coker
Achlya megasperma Humphrey
Aphanomyces stellatus de Bary
Dictyuchus monosporus Leitgeb
Dictyuchus sterile Coker
Isoachlya unispora Coker & Couch
Pythiopsis humphryana Coker
Saprolegnia anisospora de Bary
Saprolegnia asterophora de Bary
Saprolegnia megasperma Coker
Saprolegnia monoica Pringsh.
Saprolegnia parasitica Coker
Thraustotheca clavata (de Bary) Humphrey

Division Amastigomycota

CLASS ASCOMYCETES

Order Diaporthales

Family Diaporthaceae
Cryphonectria parasticia (Murr.) Barr

Order Helotiales

Family Dermatiaceae
Chlorociboria aeruginascens (Nyl.) Kan.

Family Leotiaceae
Bisporella citrina (Batsch. ex Fr.) Korf & Carp.
Hymenoscyphus fructigenus (Bull. ex Merat.) S. F. Gray
Leotia lubrica Pers. ex Fr.
Leotia viscosa Fr.

Order Hypocreales

Family Hypomycetaceae
Hypomyces chrysospermus Tul.
Hypomyces luteovirens (Fr.) Tul.

Order Ostropales

Family Stictidaceae
Vibrissea truncorum Alb. & Schw. ex Fr.

Order Pezizales

Family Morchellaceae
Morchella angusticeps Pk.
Morchella esculenta L. ex Fr.
Morchella semilibera DC. ex Fr.

Family Pezizaceae
Peziza badioconfusa Korf

Family Pyronemataceae
Aleuria aurantia (Fr.) Fuckel
Scutellinia scutellata (L. ex Fr.) Lambotte

Family Sarcoscyphaceae
Sarcoscypha coccinea (Scop. ex Fr.) Lambotte
Sarcoscypha occidentalis (Schw.) Sacc.

Order Pleosporales

Family Venturiaceae
Apiosporina morbosa (Schw ex Fr.) Arx

Order Sphaeriales

Family Clavicipitaceae
Cordyceps militaris (L. ex Fr.) Link

Family Xylariaceae

Daldinia concentrica (Bolt. ex Fr.) Cesati & de Not.
Hypoxylon fragiforme (Pers. ex Fr.) Kickx
Xylaria polymorpha (Pers. ex Fr.) Grev.

CLASS DEUTEROMYCETES

Form-Subclass Hyphomycetidae

Aeroaquatic Hyphomycetes

Clathrosphaerina zalewskii Van Beverwijk
Helicodendron paradoxum Peyronel
Helicoma muelleri Corda
Helicomyces roseus Link
Helicoon sessile Morgan
Helicosporium vegetum Nees

Dematiaceous and Other Hyphomycetes

Acremonium sp.
Acrospeira sp
Actinocladium rhodosporum Ehrenberg
Alternaria sp.
Ampulliferina persimplex Sutton
Aphanocladium album (Preuss) W. Gams
Annellophora solani Sydow
Arbuscula eugeniae Batista & Peres
Arthrinium caricicola Kunze
Bactrodesmiella masonii Hughes
Balanium stygium Wallr.
Bipolaris maydis Shoemaker
Bispora monilioides Corda
Brachydesmiella biseptata Arnaud
Burgoa verzuoliana Goidanich
Ceratophorum helicosporum Sacc.
Ceratosporella bicornis Hohnel
Ceratosporium fuscescens Schw.
Cercospora elaeidis Fres.
Cercosporella persica Sacc.
Cheiromycella speiroides Hohnel
Cheiromyces stellatus Berk. & Curt.
Cladosporiella cercosporicola Deighton
Cladosporium cladosporioides (Fresen.) de Vries
Corynespora sp.
Cryptocoryneum condensatum Fuckel
Curvularia aquatica Boedijn
Curvularia fallax Boedijn
Cylindrocarpon sp.
Deightoniella torulosa Hughes
Dendrophion vinosum Wallr.
Dictyoarthrinium quadratum Hughes
Dictyosporium toruloides Corda
Drechslera sp.
Dwayaloma trina Subramanian
Epicoccum purpurascens Link
Fusariella atrovirens Sacc.
Fusarium avenaceum Sacc.
Gnomonia sp.
Gyrothrix sp.
Hirudinaria macrospora Cesati
Hormiokrypsis libocedri Hughes
Hormisciella atra Hughes
Hyalodictys degenerans (Sydow) Subramanian
Idriella lunata Nelson & Wilhelm
Mammaria echinobotryoides Cesati
Megalodochium palmicola Deighton
Mitteriella zizyphina Sydow
Monacrosporium elegans Dudemans
Monodictys putredenis Hughes
Mycoenterolobium platysporum Goos
Myrothecium striatisporum Tode ex Fr.
Papulaspora sepedonioides Preuss
Pendulispora venezuelancia Ell
Penicillium sp.
Pestalotia pezizoides de Not.
Phoma putaminum Speg.
Polycephalomyces tomentosus (Schrad.: Fr.) Seifert
Septonema secedens Corda
Spadicoides bina Corda
Spirospora castaneae Mangin & Vinc.
Sporidesmium hyalosperma (Corda) Hughes
Sternphylium botryosum Wallr.
Sympodiophora stereicola Arnold
Taeniolella stilbospora Hughes
Tomenticola trematis Deighton
Trichocladium asperum Harz
Trichoderma koningii Oud.
Verticillium tenerum Neos
Virgatospora echinofibrosa Finley

Ingoldian Hyphomycetes

Actinospora megalospora Ingold
Alatosessilispora bibrachiata Ando. & Tubak
Alatospora acuminata Ingold
Anavirga dendromorpha Descal
Anavirga taxa Sutton
Anguillospora angulata Iqbal
Anguillospora crassa Ingold
Anguillospora filiformis Greathead
Anguillospora longissima Ingold
Angulospora aquatica Nilsson
Arborispora paupera Marvanova
Articulospora monilifera Ranzoni
Articulospora tetracladia Ingold
Asterophora lycoperdoides Ingold
Calcarispora hiemalis Marvanova & Marvan
Camposporium pellucidum Hughes
Campylospora chaetocladia Ranzoni
Candelabrum japonense Van Beverwijk
Casaresia sphagnorum Fragoso
Clavariana aquatica Nawawi
Clavariopsis aquatica de Wild.
Clavariopsis brachycladia de Wild.
Clavatospora longibrachiata (Ingold) Nilsson
Colispora curvata Nawawi & Kuthubutheen
Condylospora spumigena Nawawi
Culicidospora aquatica Petersen
Dactuliophora tarii Leaky
Dactylaria purpurella Sacc.
Dactylella aquatica (Ingold) Ranzoni
Dactylella submersa Nilsson
Dendrospora erecta Ingold
Dimorphospora foilicola Tubaki

Dinemasporium canadense Morgan-Jones
Diplocladiella scalaroides Arnaud
Entomophthora rhizospora Thaxter
Filosporella cf. annelidica (Shearer & Crane) Crane & Shearer
Flabellospora crassa Alasoadura
Flabellospora tetracladia Nawawi
Flabellospora verticillata Alasoadura
Flagellospora curvula Ingold
Flagellospora penicillioides Ingold
Fontanospora eccentrica Petersen
Gyoerffyella rotula Marvanova
Heliscina campanulata Marvanova
Heliscus lugdunensis Sacc. & Therry
Ingoldiella hamata Shaw
Isthmotricladia laeensis Matsushima
Jaculispora submersa Hudson & Ingold
Lambdasporium minimum Matsushima
Laridospora appendiculata (Anastasiou) Nawawi
Lateriramulosa uniinflata Matsushima
Lemonniera aquatica de Wild.
Lemonniera cornuta Ranzoni
Lunulospora curvula Ingold
Margaritispora aquatica Ingold
Monotosporella tuberculata Gonczol
Mycocentrospora acerina Newhall
Mycocentrospora angulata Iqbal
Mycocentrospora aquatica Iqbal
Orbimyces spectabilis Linder
Phialophora verrucosa Medlar
Pleiochaeta setosa Hughes
Pleuropedium tricladioides Marvanova & Iqbal
Polycladium aguiseti Ingold
Pseudoanguillospora stricta Iqbal
Pyramidospora casuarinae Nilsson
Rhynchosporium graminicola Heinsen
Scorpiosporium minutum Iqbal
Sigmoidea prolifera Crane
Speiropsis pedatospora Tubaki
Sympodiocladium frondosum Descals
Tetrachaetum elegans Ingold
Tetracladium marchalianum de Wild.
Tetracladium setigerum (Grove) Ingold
Tetraploa aristata Berk. & Br.
Thallospora aspera Olive
Tricellula aquatica Webster
Tricladium chaetocladium Ingold
Tricladium splendens Ingold
Trinacrium subtile Riess
Tripospermum myrti (Lind) Hughes
Triposporina ceranoica Speg.
Triposporium elegans Corda
Triscelophorus monosporus Ingold
Tumularia aquatica (Ingold) Descals & Marvanova
Vargamyces aquaticus Toth
Varicosporium aquaticum Nilsson
Varicosporium delicatum Iqbal
Varicosporium elodeae Kegel
Varicosporium ramulosa Meyers & Kohlmeyer
Volucrispora aurantiaca Haskins

CLASS BASIDIOMYCETES

Order Agaricales

Family Agaricaceae
Agaricus silvicola (Vitt.) Pk.

Family Amanitaceae
Amanita bisporigera Atk.
Amanita brunnescens var. *brunnescens* Atk.
Amanita ceciliae (B. & Br.) Bas
Amanita citrina var. *cintrinia* (Schaeff.) per Roques
Amanita citrina var. *lavendula* Coker
Amanita farinosa Schw.
Amanita flavoconia Atk
Amanita fulva (Schaeff.) per Pers.
Amanita magnivelaris Pk.
Amanita rubescens (Persz. ex Fr.) S. F. Gray
Amanita vaginata (Bull. per Fr.) Vitt.
Amanita virosa (Fr.) Bertillon in DeChambre

Family Bolbitiaceae
Conocybe tenera (Schaeff. ex. Fr.) Kuhner

Family Boletaceae
Boletinellus merulioides (Schw.) Murr.
Boletus bicolor Pk.
Boletus chrysenteron Bull. ex St-Amans
Boletus frostii Russel apud Frost
Boletus longicurvipes Snell & A. H. Sm.
Boletus parasiticus Bull. ex Fr.
Boletus cf. rubinellus Pk.
Boletus subtomentosus Fr.
Boletus truncatus (Sing., Snell & Dick) Pouz.
Gyroporus castaneus (Bull. ex. Fr.) Quel.
Leccinum scabrum (Bull. ex Fr.) S. F. Gray
Suillus granulatus (L. ex Fr.) Kuntze
Tylopilus felleus (Bull. ex Fr.) Karst.
Tylopilus rubrobrunneus Mazzer & A. H. Sm.

Family Cantharellaceae
Cantharellus cibarius Fr.
Cantharellus cinnabarinus Schw.
Cantharellus lateritius (Berk.) A. H. Sm.
Cantharellus minor Pk.
Cantharellus tubaeformis Fr.

Family Coprinaceae
Coprinus atramentarius (Bull. ex Fr.) Fr.
Coprinus comatus (Muller ex Fr.) S. F. Gray
Coprinus micaceus (Bull. ex Fr.) Fr.
Coprinus plicatilis (W. Curtis ex Fr.) Fr.
Psathyrella candolliana (Fr.) Maire
Psathyrella delineata (Pk.) A. H. Sm.
Psathyrella hydrophila (Bull. ex Merat) Maire
Psathyrella velutina (Pers. ex Fr.) Sing.

Family Cortinariaceae
Cortinarius alboviolaceus (Fr.) Fr
Cortinarius cf. *caerulescens* Fr.
Cortinarius iodes Berk. & Curt.
Crepidotus mollis (Fr.) Staude
Inocybe sp.

Hebeloma crustuliniforme (Bull. ex St-Amans) Quel.
Rozites caperatus (Pers. ex Fr.) Karst.

Family Entolomataceae
Entoloma abortivum (Berk. & Curt.) Donk
Entoloma murrai (Berk. & Curt.) Sacc.
Entoloma salmoneum (Pk.) Sacc.
Entoloma violaceum Murr
Pouzarella nodospora (Atk.) Mazzer

Family Hygrophoraceae
Hygrophorus cantharellus (Schw.) Fr
Hygrophorus coccineus (Fr.) Fr.
Hygrophorus marginata (Pk.) Murr.
Hygrophorus flavescens (Kauff.) A. H. Sm. & Hesler
Hygrophorus miniatus (Fr.) Fr.

Family Lepiotaceae
Lepiota acutesquamosa (Weinm.) Kummer
Lepiota procera (Scop. ex Fr.) S. F. Gray

Family Paxillaceae
Paxillus involutus (Batsch ex Fr.) Fr
Paxillus panuoides (Fr. ex Fr.) Fr.
Phylloporus rhodoxanthus (Schw.) Bres.

Family Pluteaceae
Pluteus cervinus (Schaeff. ex Fr.) Kummer
Volvariella bombycina (Schaeff. ex Fr.) Sing.

Family Russulaceae
Lactarius camphoratus (Bull. ex Fr.) Fr.
Lactarius chrysorheus Fr.
Lactarius cf. *deceptivus* Pk
Lactarius gerardii Pk.
Lactarius lignyotus Fr.
Lactarius peckii (Burl.) Sacc.
Lactarius piperatus (Scop. ex Fr.) S. F. Gray
Lactarius subgerardii A. H. Sm. & Hesler
Lactarius cf. *subvellereus* Pk.
Lactarius volemus (Fr.) Fr.
Russula aeruginea Lindblad ex Fr.
Russula amoenolens Romagn.
Russula ballouii Pk.
Russula compacta Frost
Russula crustosa Pk.
Russula cyanoxantha (Schaeff. ex Secr.) Fr.
Russula densifolia (Secre.) Gill.
Russula emetica (Schaeff. ex Fr.) S. F. Gray
Russula cf. *foetens* Fr.
Russula krombholtzii Shaffer
Russula cf. *laurocerasi* Melzer
Russula modesta Pk
Russula ochroleucoides Kauff.
Russula rosea Quel.
Russula silvicola Shaffer
Russula variata Banning & Pk.
Russula virescens (Schaeff. ex Zantedeschi) Fr.
Russula xerampelina (Schaeff. ex Secr.) Fr.

Family Strobilomycetaceae
Strobilomyces confusus Sing.
Strobilomyces floccopus (Vahl ex Fr.) Karst.

Family Strophariaceae
Hypholoma capnoides (Fr.) Kummer
Hypholoma fasciculare (Huds. ex Fr.) Kummer
Hypholoma sublateritium (Fr.) Quel.
Pholiota limonella (Pk.) Sacc.
Pholiota malicola (Kauff.) A. H. Sm.
Psilocybe squamosa var. *thrausta* (Schulz. ex Kalchbr.) Guzman
Stropharia aeruginosa (W. Curtis ex Fr.) Quel

Family Tricholomataceae
Armillariella mellea (Vahl ex Fr.) Karst.
Asterophora lycoperdoides (Bull. ex Merat) Ditmar ex Fr.
Clitocybe aurantiaca (Fr.) Studer
Clitocybe clavipes (Pers. ex Fr.) Kummer
Clitocybe candicans (Fr.) Kummer
Clitocybe gibba (Fr.) Kummer
Clitocybe irina (Fr.) Bigelow & A. H. Sm.
Clitocybe odora (Bull. ex Fr.) Kummer
Clitocybe trullaeformis (Fr.) Karst
Collybia alkalivirens Sing.
Collybia confluens (Pers. ex Fr.) Kummer
Dollybia dryophila (Bull. ex Fr.) Kummer
Collybia spongiosa (Berk. & Curt.) Sing.
Collybia strictipes Pk.
Collybia subsulphurea (Pk.) Bull.
Cystoderma amianthinum (Scop. ex Fr.) Fayod
Cystoderma cf. *granosum* (Morg.) A. H. Sm. & Sing.
Flammulina velutipes (Fr.) Karst.
Hygrophoropis aurantiaca (Wulfen ex Fr.) Maire
Laccaria laccata (Scop. ex Fr.) Cke.
Laccaria ochropurpurea (Berk.) Pk.
Marasmiellus ramealis (Bull. ex Fr.) Sing.
Marasmius capillaris Morg.
Marasmius rotula (Scop. ex Fr.) Fr.
Marasmius siccus (Schw.) Fr.
Melanoleuca melaleuca (Pers. ex Fr.) Murr.
Mycena galericulata (Scop. ex Fr.) S. F. Gray
Mycena haematopus (Pers. ex Fr.) Kummer
Mycena leaiana (Berk.) Sacc.
Mycena luteopallens (Pk.) Sacc.
Omphalotus olearius (DC. ex Fr.) Sing.
Oudemansiella radicata (Relhan ex Fr.) Sing.
Panellus serotinus (Fr.) Kuhner
Panellus stipticus (Bull. ex Fr.) Karst.
Phyllotopsis nidulans (Pers. ex Fr.) Sing.
Pleurotus ostreatus (Jacq. ex Fr.) Kummer
Resinomycena rhododendri (Pk.) Redhead & Sing.
Strobilurus conigenoides (Ell.) Sing.
Tricholoma cf. *sejunctum* (Sow. ex Fr.) Quel.
Tricholoma virgatum (Fr. ex Fr.) Kummer
Tricholomopsis platyphylla (Pers. ex Fr.) Sing.
Xerula megalospora (Clements in Clements & Pound) Redhead, Ginns & Shoemaker

Order Aphyllophorales

Family Clavariaceae
Clavariadelphus pistillaris (L. ex Fr.) Donk
Clavicorona pyxidata (Fr.) Doty
Clavulina cinerea (Fr.) Schroet.
Clavulina cristata (Fr.) Schroet.

Clavulina ornatipes (Pk.) Corner
Clavulinopsis corniculata (Schaeff. ex Fr.) Corner
Clavulinopsis fusiformis (Sow. ex Fr.) Corner
Ramaria stricta (Fr.) Quel.
Sparassis crispa Wulfen ex Fr.
Thelephora terrestris Ehrhart ex Fr.

Family Fistulinaceae
Fistulina hepatica Schaeff. ex Fr.

Family Ganodermataceae
Ganoderma applanatum (Pers. ex Wallr.) Pat.
Ganoderma tsugae Murr.

Family Hydnaceae
Dentinum repandum (L. ex Fr.) S. F. Gray
Hericium coralloides (Scop. ex Fr.) S. F. Gray

Family Polyporaceae
Albatrellus cristatus (Pres. ex Fr.) Pouz.
Coriolus pubescens (Schum. ex Fr.) Quel.
Coriolus versicolor (L. ex Fr.) Quel.
Daedalea ambigua Bewrk.
Daedalea confragosa Bolt. ex Fr.
Daedalea quercina L. ex Fr.
Daedalea unicolor Bull. ex Fr.
Favolus alveolaris (DC. ex Fr.) Quel.
Fomes fomentarius (L. ex Fr.) Fr.
Laetiporus sulphureus (Bull. ex Fr.) Bond. & Sing.
Lenzites betulina (L. ex Fr.) Fr.
Oxyporus populinus (Schum. ex Fr.) Donk
Polyporus badius (Pers. ex S. F. Gray) Schw.
Polyporus brumalis Pers. ex Fr.
Polyporus caesius Schrad. ex Fr.
Polyporus melanopus Schw. ex Fr.
Polyporus radiacatus Schw.
Polyporus varius Pers. ex Fr.
Pycnoporus cinnabarinus (Jacq. ex Fr.) Karst.
Tyromyces chioneus (Fr.) Karst.

Family Schizophyllaceae
Plicaturopsis crispa (Pers. ex Fr.) Reid
Schizophyllum commune Fr.

Order Lycoperdales

Family Lycoperdaceae
Lycoperdon echinatum Pers.
Lycoperdon molle Pers.
Lycoperdon pedicellatum Pk.
Lycoperdon perlatum Pers.
Lycoperdon pyriforme Schaeff. ex Pers.
Lycoperdon umbrinum Pers.

Order Nidulariales

Family Nidulariaceae
Crucibulum laeve (Huds. trans Rehlan) Kamb.
Cyathus olla (Batsch) Pers.
Cyathus striatus (Huds.) Willd. per Pers.

Order Sclerodermatales

Family Sclerodermataceae
Scleroderma citrinum Pers.

Order Tremellales

Family Auriculariaceae
Auricularia auricula (Hooker) Underwood

Family Tremellaceae
Tremellodendron pallidum (Schw.) Burt

Order Tulostomatales

Family Calostomataceae
Calostoma cinnabarina Desvaux

Acknowledgments

The research reported in this publication was supported in part by U. S. Department of Agriculture, Forest Service Cooperative Agreements No. 23-600 and 23-743. Logistical and laboratory support was provided by Fairmont State College, Shepherd College, and West Virginia Institute of Technology. We wish to thank Drs. T. W. Johnson, Jr., R. A. Paterson, R. L. Seymour, and C. A. Shearer for helping with the identification of some of the fungi reported. Cultures of a few of the Hyphomycetes isolated during this study were identified by the Commonwealth Mycological Institute (CMI), Surrey, England.

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