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THE LIGNICOLOUS FUNGI OF GINN WOODS, DELAWARE COUNTY, INDIANA

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ABSTRACT. Our knowledge of the distribution of macromycetes, both basidiomycetes and ascomycetes, in Indiana is wanting. A survey of the various herbaria within Indiana revealed only nine containing fungal specimens and most having fewer than 400 collections. Due to the immense importance of the newly-established Indiana Biological Survey to the future understanding of the biota of Indiana and due to the paucity of information pertaining to the fleshy mushroom flora and its distribution in Indiana, especially east-central Indiana, this study, to provide a brief description of lignicolous fungi occurring in Ginn Woods, Delaware County, was undertaken. The survey identified 60 species of lignicolous macromycetes, including 52 species of basidiomycetes and 8 species of ascomycetes. The 52 species of basidiomycetes represented 38 genera from 23 families and 13 orders, and the 8 species of ascomycetes represented 7 genera from 5 families and three orders. This is the first report, including voucher specimens, of these 60 fungi from Delaware County, Indiana.

Keywords: Delaware County, Indiana, Ginn Woods, macromycetes, basidiomycetes, ascomycetes, mushrooms, lignicolous fungi

The literature is replete with information concerning the habitat and distribution of fleshy fungi. In any of the current mushroom field guides there is a sentence or short paragraph under each species describing its habitat and distribution (Arora 1986; Barron 1999; Bessette et al. 1997; Horn et al. 1993; Huffman et al. 1989; Lincoff 1983; McKnight & McKnight 1987; Metzler & Metzler 1992; Miller 1979; Phillips 1991; Schalkwijk-Barendsen 1991; Smith & Weber 1980; States 1990; Weber & Smith 1985). In some field guides, especially the older ones, lists of fungi associated with various habitats are included (Arora 1986; Dickinson & Lucus 1979; Krieger 1967; Ramsbottom 1954). However, unlike many current vascular flora field guides and keys that contain maps illustrating the county by county distribution of a particular plant species within a state (Deam 1940; Radford et al. 1968; Swink & Wilhelm 1994; Voss 1972, 1985, 1996), all of the fleshy fungi field guides give simply a general region of distribution. For example, in *Mushrooms of North America* Phillips (1991) describes the distribution of *Lactarius pubescens* var. *pubescens* (Fr.) *sensu lato* as follows, "Found widely distributed west of Michigan, south to Arizona and Tennessee." Even Harper's *Mushroom Reference Guide and Check List* (1985) describes the distribution of mushroom species by regions of the country, e.g., northern U.S. and Canada, central U.S., Rocky Mountains, Great Lakes area, etc., without clearly defining in which states within the region the species actually occurs. As an example, Harper's states that *Trametes hispida* Bagl. occurs in the Great Lakes area. Does it occur in all Great Lakes states? Does it occur in states that border Great Lake states, such as West Virginia, Kentucky and Iowa? If it occurs in Indiana, does it occur throughout the state, or is it just found in northern Indiana?

Recently, websites have been created to assist the study of fungi. For example, the Michigan Fungus Collection (http://www.herb.lsa.umich.edu/index.htm), whose mission is to develop and provide specimen-based information about fungi to solve problems and assist research, allows anyone to search its collection by state and county. When I searched for records for Delaware County, Indiana (home of Ball State University), no records were available. When I searched for records

from the State of Indiana (all counties), only 25 records were found for 21 different species. This hardly represents the variety or distribution of fleshy fungi in Indiana. (Although the University of Michigan Fungus Collection houses over 280,000 collections of fungi, only a 38,000 specimen database of user specified record retrieval is currently available.) The Michigan Fungus Collection website also links to the Michigan Geographic Information System, which can produce interactive maps from the specimen database. Again the system seems limited. For example, when I typed in the keyword, amanita, and selected Michigan, the following message appeared, "Your search using 'amanita' produced 2 specimen records, 0 of which can be mapped, for the states you selected." It should be noted, however, that the usefulness of such websites is expected to increase as more information is loaded into the database.

Our knowledge of the species and their distribution in Indiana is in even worse shape. According to the *Directory of Natural History Collections Housed in Indiana* (IAS 1996), there are only nine herbaria containing fungal specimens. The most notable of these are the Arthur Herbarium and Kriebel Herbarium housed at Purdue University. The Arthur Herbarium contains the largest rust fungi collection worldwide, housing approximately 100,000 specimens at the beginning of the 1990s (Markus Scholler [Curator], personal communication). The Kriebel Herbarium, the oldest herbarium in Indiana, established in 1873, contains in addition to nearly 78,000 higher plant specimens, approximately 600–1000 macromycete collections (Markus Scholler [Curator], pers. commun.). However, it could not easily be established how many of these collections were from Indiana. The other herbaria within the State containing fungal specimens include the Ball State Herbarium with approximately 400 specimens, the Friesner Herbarium, Butler University, with 15 specimens, the Greene-Neiuwland Herbarium, University of Notre Dame, with 300 specimens of fungi, lichens, and algae (not broken down by category), Indiana University Herbarium with 2000 specimens (many collected by James M. VanHook), Indiana State Herbarium with 300 specimens, Joseph Moore Museum, Earlham College, with 100 specimens, Manchester College Herbarium with 150 specimens of fungi and lichens, and the Spring Mill State Park Nature Center with five specimens (IAS 1996). With the exception of the Kriebel Herbarium at Purdue University, the macromycete specimen collections around the State are meager. In addition, none of the collections, including the Kriebel Herbarium, are on-line, thus limiting their usefulness and requiring a great deal of time to gather information concerning what species are present and where they occur in the State.

The purpose of this paper is to create a species list and provide a brief description of lignicolous fungi occurring in Ginn Woods, an old growth beech-maple woodlands located in Delaware County, Indiana (Badger et al. 1998; Ruch et al. 1998). Species information and voucher specimen numbers will be added to the Survey's database. Additionally, the information relating to species diversity will establish a baseline of information for future determination of macromycete decline in east-central Indiana.

STUDY SITE

Ginn Woods, a 65 ha tract of woodlands owned by Ball State University and managed by the Department of Biology, is located approximately 25 km north of Muncie (Delaware County), Indiana (in the SW ¼ of section 18 and the NW ¼ of section 19, Township 22 North, Range 10 East). Ginn Woods is a deciduous forest community and based on its structure, composition and size, is the second largest old-growth stand in Indiana (Badger et al. 1998). The shade-tolerant species *Acer saccharum* Marshall, *Fagus grandifolia* Ehrh. and *Tilia americana* L. dominate both the under- and overstories. Subdominant species include *Aesculus glabra* Willd., *Celtis occidentalis* L., *Fraxinus americana* L., *Prunus serotina* Ehrh., *Quercus rubra* L. and *Ulmus rubra* Muhl. In localized areas where soil drainage is poorest, *Acer saccharinum* L., *Acer rubrum* L., *Carya laciniosa* (Michx. F.) Loudon, *Fraxinus pennsylvanica* Marshall, *Platanus occidentalis* L. and *Populus deltoides* Marshall are prominent (Badger et al. 1998).

Ginn Woods lies in the Bluffton Till Plain section of the Central Till Plain Natural Region, an area formerly covered by an extensive beech-maple forest (Homoya et al. 1985). The soils of Ginn Woods, derived from glacial

parent material, are somewhat poorly drained to very poorly drained soils (Huffman 1972). McClain (1985), who studied the soils of the North Woods section of Ginn Woods (Ruch et al. 1998), described the dominant soils as Blount (Aeric Ochraqualfs, fine, illitic, mesic), Glynwood (Aquic Hapludalfs, fine, illitic, mesic) and Lenawee soils (Mollic Haplaquepts, fine, illitic, mesic). These soils comprise approximately 80, 15 and 5% of the entire study site, respectively. The poor internal drainage properties of these soils results in a seasonal high water table of less than 40 cm from the surface in most of the study area (McClain 1985). Seasonal ponding typically occurs on low lying portions of the Blount soils through early spring and the Lenawee soils through mid-summer.

METHODS

During the growing seasons of 1994–1996, approximately two trips per month, more frequently during wet periods, were made into Ginn Woods to collect lignicolous macromycetes. Forays have continued since 1996 but at a less frequent rate. Due to the large amount of down, decaying wood, collections were confined to the North Woods and South Woods areas (Ruch et al. 1998). Following identification, specimens were dried on a mushroom rack, assigned a BSUHM number (Ball State University Herbarium—Mycology), and placed in the herbarium for storage.

RESULTS

The lignicolous macromycetes that were collected and identified in Ginn Woods are listed below. Each species report contains the following information: (a) current species name, (b) current taxonomic synonyms, if appropriate, (c) a short description, (d) a comment about its frequency in Ginn Woods, and (e) BSUHM #'s. Species are listed following the taxonomic schemes in Gilbertson & Ryvarden (1987), Hawksworth et al. (1995), and Singer (1986).

BASIDIOMYCOTA

Order Agaricales

Family Pluteaceae

Pluteus cervinus (Schaeff.:Fr.) Kummer

Description.—Fruiting bodies: Centrally stipitate gilled mushrooms. Caps: Broadly convex to planar at maturity, often with a slightly raised center, 5–12 cm broad; surface smooth or radially streaked with fibrils (especially on the raised center), moist, gray-brown to dark brown, the margins often lighter. Hymenium: Gills, free of the stipe, crowded, broad, white turning pink as spores mature. Stipe: 3.6–10 cm long, 0.5–1.2 cm thick, enlarged at base, solid, dry; white but often bearing brown tinted hairs. Spores: Elliptical, smooth, 6–8 × 4–6 μm; spore print salmon pink. Pleurocystidia: Abundant, thick walled, fusiform ventricose with 2–5 hornlike projections at apex.

Habitat.—On decaying hardwood logs and stumps. Abundant. [BSUHM 28, 41, 57, 136]

Pluteus granularis Peck

Description.—Fruiting bodies: Centrally stipitate gilled mushrooms. Caps: Convex, 2–3.5 cm broad; surface wrinkled and ridged, appearing velvety plush to the unaided eye, dark to walnut brown in color; as the cap matures, it splits forming yellow streaks. Cap tissue: Yellow. Hymenium: Gills, free of the stipe, crowded, broad, pallid to white turning pink to pinkish-tan as spores mature. Stipe: 3–4.5 cm long, 0.4–0.5 cm thick, equal, solid, velvety to plush-like (but not to the extent of the cap) especially towards the base; light brown near apex, darker brown lower with the base concolorous with the cap. Spores: Broadly ellipsoid in profile, smooth, 4 × 5–5.5 μm; spore print salmon pink. Pleurocystidia: Obtusely fusoid-ventricose, 50–70 × 12–20 μm. Cheilocystidia: Same shape but smaller and much more abundant.

Habitat.—Singly to scattered on rotting hardwood logs and stumps. Infrequent. [BSUHM 149, 154, 158]

Family Strophariaceae

Pholiota albocrenulata (Peck) Sacc.

Description.—Centrally stipitate gilled mushrooms; only young specimens available. Caps: Conic to convex bearing superficial brownish fibrillose scales, 0.9–2.2 cm broad; surface viscid, dark brown to red-brown; margin appendiculate; clamp connections present in the scale fibrils; cap tissue pallid to yellow, turning yellow overnight. Stipe: 1–2 cm long, yellow-brown with rough brown scales. Veil: Yellow-brown, intact on all specimens.

Habitat.—Singly to several on decaying maple logs. Rare. [BSUHM 148]

Pholiota aurivella (Fr.) Kum.

Synonyms.—*Pholiota adiposa* (Fr.) Kummer and *Pholiota squarrosoadiposa* Lange.

Description.—Fruiting bodies: Centrally stipitate gilled mushrooms. Caps: Bell-shaped when young becoming broadly convex to nearly plane, occasionally with a broad umbo; yellow-orange to ochre-orange. Surface: Sticky to slimy-glutinous when wet, with large flattened, brown to reddish-brown scales which are arranged in a concentric pattern and may disappear in wet weather. Flesh: Firm, light yellow, unchanging on injury. Hymenium: Gills, adnate, close, broad (moderately), pale yellow at first, becoming brown with age. Partial veil: White to off-white, cortinate, leaving an evanescent ring or zone on the upper stipe. Stipe: Dry, solid, central to occasionally slightly eccentric, equal, often curved; 30–70 mm long and 5–12 mm thick at the apex; cottony to smooth above the ring, covered with brown fibrous downcurving scales below the ring; yellowish to yellowish-brown. Spores: Elliptic, smooth, with an apical pore, brownish; 7–10 × 4.5–6 μm; brown to rusty-brown in mass. Pleurocystidia present.

Habitat.—Single to clustered (cespitose) on decaying hardwood, especially maple and beech. Infrequent. [BSUHM 339, 364]

Family Tricholomataceae

Armillaria mellea (Vahl.:Fr.) Kummer

Synonym.—*Armillariella mellea* (Vahl.: Fr.) Karst.

Description.—Fruiting bodies: Centrally stipitate gilled mushrooms. Caps: Broadly convex to planar with a knob in the center, 2.5–8 cm broad; color pinkish-brown in young specimens turning yellowish-brown to dark brown in mature specimens; surface with fine erect hairs over the raised center; margins finely striate. Hymenium: Gills, adnate to short decurrent (especially in older specimens), well separated, narrow; white initially, turning light brown, often spotted darker with age. Stipe: 4–9 cm long, 0.3–1.5 cm wide, nearly equal, often with an enlarged base, hollow, tough and fibrous; surface dry, light brown below the annulus due to cotton-scaly appressed hairs, white above the annulus. Annulus: A thick whitish to yellow cottony ring, superior. Spores: Ellipsoid, smooth, 6–8 × 5–6 μmm.; spore print white.

Habitat.—Singly, small groups or large cespitose clusters on decaying hardwood logs and stumps or at the base of living hardwood trees. Very common for a short time in late summer or fall. [BSUHM 105, 106]

Armillaria tabescens (Scop.:Fr.) Emel.

Synonym.—*Armillariella tabescens* (Scop.:Fr.) Sing.

Description.—Fruiting bodies: Centrally stipitate gilled mushrooms. Caps: Convex to planar, 3.5–5 cm broad; surface dry, with brown fibrillose scales on the disc (center of cap); color ranging from yellow-brown to brown. Hymenium: Gills, slightly decurrent, well separated, varying from narrow to broad, white initially, becoming pinkish-brown with age. Stipe: 4–9 cm long, 0.6–0.8 cm wide at apex, hollow but stuffed with a cottony matrix, tapering to base; yellowish above, brown to brownish-black below, scurfy, fibrous; no annulus. Spores: Ellipsoid, smooth, 6–8 × 5–6 μm; spore print white.

Habitat.—Large cespitose clusters at the base of living or dead hardwood trees. Abundant for a very short time in late summer or fall. [BSUHM 53, 54, 96, 97]

Flammulina velutipes (Curt.:Fr.) Sing.

Description.—Fruiting bodies: Centrally stipitate gilled mushrooms; only very young specimens available. Caps: Convex, 1–3.5 cm broad; surface viscid, smooth, yellow-orange to orange-brown, darker in the center; margins incurved. Hymenium: Gills, adnexed, close, pale yellow. Stipe: 2–5 cm long, 3–5 mm thick at the apex, equal to enlarging below; smokey to blackish-brown velvety pubescence over the lower ⅔–¾ of the stipe. Spores: Non-amyloid, elliptical to pit-shaped, smooth, 6–7.5 × 2.5–3 μm. Pleuro- and cheilocystidia abundant, fusoid-ventricose but with an obtuse apex, 32–45 × 10–16 μm.

Habitat.—Cespitose cluster on bark of recently fallen hardwood trees. Common. [BSUHM 156, 159]

Marasmius siccus (Schw.) Fr.

Description.—Fruiting bodies: Centrally stipitate gilled mushrooms. Caps: Bell-shaped at first, becoming convex with a flattened or depressed disc; surface: minutely velvety, with deep, wide radiating pleats (e.g., sulcate to plicate); orange to reddish-orange to rust-

brown, fading with age. Cap tissue: very thin, white, dextinoid. Hymenium: Gills, attached or free, distant, broad, white to pale yellow. Stipe: 40–60 × 1 mm, equal, smooth, dry, polished, cartilaginous, hollow; yellowish at first, darkening to dark brown from the base upward. Spores: Spindle- to club-shaped, smooth, hyaline, 15–20 × 3–5 μm, white in mass.

Habitat.—Scattered to gregarious on decaying hardwood leaves and twigs. Common. [BSUHM 331]

Mycena haematopus (Pers.:Fr.) Kummer

Description.—Fruiting bodies: Centrally stipitate gilled mushrooms. Caps: Initially rounded becoming bell-shaped to conical with a distinct umbo; 0.5–4 cm broad; reddish- to olive-brown; surface dry and pruinose when young, becoming moist and smooth with age; margin: striate, upturned and often ragged. Hymenium: Gills, adnate, close to subdistant, moderately broad, white becoming pale pink to brown with age. Stipe: 2–8.5 cm long, 0.5–2 mm thick, hollow, equal, base hairy strigose, pale cinnamon-brown to reddish-brown; exuding a dark blood-red fluid when cut or broken, especially near the base. Spores: Amyloid, elliptical, smooth, 8–9 × 5–6 μm; spore print white.

Habitat.—Several to gregarious, often cespitose, on decaying hardwood logs and stumps. Abundant. [BSUHM 27]

Mycena leaiana (Berk.) Sacc.

Description.—Fruiting bodies: Centrally stipitate gilled mushrooms. Caps: Initially broadly rounded to bell-shaped, becoming broadly convex with a slight depression in the center; 0.5–4.5 cm broad; bright orange to reddish-orange when young, fading to dull orange, yellow and eventually brown with age; surface slightly glutinous to viscid, smooth. Margin: Typically striate. Hymenium: Gills, attached to sinuate, crowded, broad, orange; gill edges bright orange-red. Stipe: 3–7 cm long, 0.5–1.5 cm thick, hollow, equal, orange; densely hairy with yellowish-orange hairs at the base. Spores: Amyloid, elliptical, smooth, 7–10 × 5–6 μm; spore print white.

Habitat.—Gregarious in cespitose clusters on hardwood logs, stumps and branches. Abundant. [BSUHM 21]

Mycena luteopallens (Peck) Sacc.

Description.—Fruiting bodies: Centrally stipitate gilled mushrooms. Caps: Small, 0.4–1.4 cm broad, conical to convex, some with a broad central knob, smooth; bright orange-yellow fading to dull yellow-orange to yellow with age; margin striate. Hymenium: Gills, adnexed, almost distant, yellow. Stipe: 1–5 cm tall, about 1 mm thick, equal, hollow; younger stipes yellow below and bright orange above; older stipes pale yellow; all stipes with prominent hairs at the base. Spores: Amyloid, elliptical, smooth to slightly roughened, 5–8 × 3.5–5 μm; spore print white. Pleurocystidia: Fusoid-ventricose, 4–50 μm long, the long neck often bent.

Habitat.—Singly to several on the remains of hickory nut shells. Abundant for a short period in the late summer to fall. [BSUHM 135]

Panellus stipticus (Bull.:Fr.) Karst.

Description.—Fruiting bodies: Semicircular or fan-, tongue- or kidney-shaped; 0.5–2.5 cm long, 0.4–1.5 cm wide, convex; cap surface dry, buff, tan to brown, covered with woolly hairs, rough; cap tissue tough and firm, pale tan. Hymenium: Gills, crowded, narrow, pinkish-buff to tan. Stipe: Rudimentary, lateral, concolorous with cap to whitish-buff, densely hairy; single with one cap or branched with several caps, 3–10 mm long, 3–6 mm wide. Spores: Allantoid, lightly amyloid, smooth, 3–4 × 2 μm. This species is bioluminescent, the gills glowing greenish-white in the dark.

Habitat.—Densely gregarious on hardwood logs and stumps. Abundant. [BSUHM 161–166]

Rhodotus palmatus (Bull.:Fr.) R. Maire

Description.—Fruiting bodies: Gilled mushrooms with an eccentric stipe. Caps: 4–6 cm wide, broadly convex; surface dry, conspicuously reticulate with ridges and pits; reddish to pinkish when young, fading to reddish-orange with age. Cap tissue: Firm and flesh color. Hymenium: Gills, attached, close, broad, veined, pink. Stipe: Eccentric, slightly enlarged toward the base, pinkish, dry, tough. Spores: Nearly round, 5–7 μm, tuberculate.

Habitat.—Singly to a couple on rotting hardwood logs and stumps. Infrequent. [BSUHM 260]

Xeromphalina kauffmanii A.H. Smith

Description.—Fruiting bodies: Centrally stipitate gilled mushrooms. Caps: Small, 0.3–2.3 cm broad, broadly convex with a small central depression; surface moist and smooth, yellow-brown to cinnamon-brown. Hymenium: Gills, decurrent, well separated with veins between, yellow to yellow-orange. Stipe: 2–4 cm long, 0.5–1.5 cm thick, equal with a small bulb at the base, tough and pliant, smooth, yellowish above and dark brown below; the base strigose with brownish-yellow tomentum. Spores: Elliptic, smooth, 5–6 × 2.5–3.5 μm.

Habitat.—Gregarious to densely cespitose on decaying hardwood. Common. [BSUHM 26]

Xerula furfuracea (Peck)
Redhead, Ginns & Shoemaker

Synonyms.—*Collybia radicata* var. *furfuracea* Pk. and *Oudemansiella radicata* (Relh.: Fr.) Sing.

Description.—Fruiting bodies: Centrally stipitate gilled mushrooms. Caps: 4.5–10 cm broad, nearly flat, often low umbonate and often wrinkled; dark brown to gray-brown, disc (center of cap) darker; viscid or tacky when moist; smooth. Cap tissue: Thin, white. Hymenium: Gills, notched at the stipe, well separated, broad, shiny, white. Stipe: 12–16 cm long above ground, 0.5–1.2 cm thick, enlarging slightly toward base, dry, white above and brown below, often twisted-striate; forming a long pseudorhiza, 5–11 cm long. Spores: Abundant, broadly elliptical, 13–17 × 9–11 μm, smooth, spore print white.

Habitat.—Scattered to gregarious under hardwood, especially dead beech stumps. Abundant. [BSUHM 25, 40, 56, 66]

Order Auriculariales

Family Auriculariaceae

Auricularia auricula (Hooker) Underwood

Description.—Fruiting bodies: Brown, irregularly cup-shaped to occasionally ear-shaped, stipeless, eccentrically attached; 2.5–3 cm wide, rubbery-gelatinous; outer surface tanish-brown due to minute grayish downy hairs; inner surface brown, smooth, velvet-like with wrinkles. Spores: Allantoid, smooth, 12–13 × 4–5 μm.

Habitat.—In a small group on decaying hardwood. [BSUHM 93]

Order Cortinariales

Family Cortinariaceae

Galerina autumnalis (Peck) Smith & Sing.

Description.—Fruiting bodies: Centrally stipitate gilled mushrooms. Caps: Convex to planar, often with a slight umbo, 1.5–4 cm broad; color dark brown when moist, fading to light brown or yellowish-brown, umbo often remaining darker; surface sticky to viscid, smooth and hairless; margin faintly striate. Cap tissue: Tan to light brown, watery, thick at the umbo. Hymenium: Gills, adnate, close, broad, becoming rusty-brown as the spore mature. Stipe: 1.5–2.5 cm long, 0.3–0.4 cm thick at the apex, equal to slightly thicker below, dry, hollow; pallid to brownish, darker below, streaked with white mycelial strands. Annulus: Superior, membranous. Odor: Earthy fresh, mealy when crushed. Cheilocystidia: Many, 45–50 μm long, fusoid-ventricose, apex plus/minus acute. Pleurocystidia: Few, same as cheilocystidia. Spores: Ellipsoid, wrinkled to roughened, 8–10 × 5–6 μm; spore print rust-brown.

Habitat.—Scattered to clustered in dense groups on well-decayed hardwood logs and stumps in late fall and early spring. It is worth mentioning that this species is deadly poisonous. Abundant. [BSUHM 115–118]

Gymnopilus flavidellus Murr.

Description.—Fruiting bodies: Centrally stipitate gilled mushrooms. Caps: Broadly convex to planar, 0.7–7 cm broad, ochraceous orange, margin paler; surface moist but not viscid, glabrous, hygrophanous; margin even. Hymenium: Gills, sinuate to adnate, occasionally slightly decurrent in older specimens; occasionally seceding from the stipe with age; yellow at first, dark with age, finally becoming ferruginous (rusty-reddish-brown); gills bearing rusty spots during growth; close to crowded, medium broad to broad. Stipe: 1–5 cm long, 0.2–0.5 mm wide at apex, equal with a slightly enlarged base which is dark brown; stipe above base yellow at first, becoming brown with age or handling; fibrillose, hollow, smooth except at apex which is pruinose to mealy. Partial veil: Arachnoid, pallid to light buff, evanescent, leaving no annulus on the stipe. Spores: Dextrinoid, ellipsoid, finely warty, no visible germ pore, 8–9 × 4.5–5.5 μm. Cheilocystidia: Abundant, ampulaceous

to nine-pin shape. Pleurocystidia: Few, same as cheilocystidia.

Habitat.—Gregarious on a fallen, debarked hardwood log. Rare, found only in one site in Ginn Woods. [BSUHM 44, 47, 134, 185]

Order Dacrymycetales

Family Dacrymycetaceae

Calocera cornea (Batsch:Fr.) Fr.

Description.—Fruiting bodies: Orange to yellow erect pointed spikes, usually simple but occasionally branched; 0.5–1.5 cm tall, 1–3 mm wide; rubbery-gelatinous. Basidia: Forked. Spores: Few, cylindric to allantoid, 8–10 × 3.5–4 μm, smooth.

Habitat.—In groups, sometimes large, on decaying hardwood logs. Abundant. [BSUHM 36, 99]

Order Ganodermatales

Family Ganodermataceae

Ganoderma applanatum (Pers.) Pat.

Description.—Fruiting bodies: Large semicircular or fan- or shelf-like conks, 5–25 cm wide (although larger ones occurred in the woods), sessile, thickened and broadly attached to substrate, woody; surface hard, smooth initially then furrowed, ridged and/or knobby, not varnished but heavily covered with a brown to cocoa-brown spore powder; becoming finely cracked and roughened with age; brown to gray-brown when young, fading to gray; flesh (when young) soft, corky, brown to cinnamon-brown. Margin: Usually white. Hymenium: Pores, whitish to pallid, instantly staining brown when bruised; 4–6 per mm, circular. Tubes: Distinctly stratified after the first year (perennial) and separated by a thin layer of chocolate-brown tissue, each layer 5–11 mm deep. Spores: Broadly elliptical and slightly truncate at apex, thick-walled, minutely spiny, 4–5.5 × 6–8 μm.

Habitat.—In groups on large decaying hardwood logs. Abundant. [BSUHM 119, 120, 288]

Ganoderma lucidum (W. Curt.:Fr.) Karst

Description.—Fruiting bodies: Generally stipitate (occasionally sessile). Caps: Fan- to kidney-shaped, 6–18 cm wide and 1–2 cm thick near stipe; soft to corky when fresh; surface dry, smooth to wrinkled, shiny (appearing varnished) when young, dull with age and weathering, concentrically zoned and shallowly furrowed; dark red-brown to brownish-orange. Margin: White. Cap tissue: Creamy white becoming dark purple-brown. Hymenium: Pores, 4–5 per mm, circular to angular, creamy white when young becoming light buff with age; bruising dark purple-brown. Stipe: Typically lateral, shiny, appearing varnished; brown to mahogany or blackish-brown.

Habitat.—Solitary, scattered or in groups, growing on the lower trunk of living sugar maples (located in a dry vernal pool) or from underground hardwood. Common in the West Vernal Pool (Ruch et al. 1998). [BSUHM 262]

Order Hericiales

Family Clavicoronaceae

Clavicorona pyxidata (Fr.) Doty

Description.—Fruiting bodies: Erect and coral-like, with numerous repeatedly forked branches arising from a short stipe, each branch bearing a cup-shaped, crown-like tip; 11 cm tall and about 8 cm wide; surface smooth, pallid to pale yellow when young, becoming dull ochre to tan with age. Flesh: Tough to brittle, whitish. Spores: Amyloid, elliptic, smooth, hyaline, 4–5 × 2–3 μm; white in mass.

Habitat.—Solitary to scattered on rotting hardwoods. Infrequent. [BSUHM 329]

Family Hericiaceae

Hericium ramosum (Bull.:Merat.) Let.

Description.—Fruiting bodies: A mass of white, long multiple branched stipes covered with large numbers of very small spines; 12–14 cm across, 8 cm high. Spines: 0.5–1 cm long, fairly evenly distributed along the stipes much like the teeth on a comb. Spores: Round to ellipsoid, 3–5 × 3–4 μm, smooth or minutely roughened.

Habitat.—On decaying hardwood logs. Rare. We found one colony with nine basidiocarps. [BSUHM 23]

Family Lentinellaceae

Lentinellus ursinus (Fr.) Kuhner

Description.—Caps: Semicircular to fan-shaped, 3.5–14.5 cm broad, 5–10 cm wide, convex to planar, dry, densely hairy from point of attachment outward, hairs stiff, dark brown to cinnamon; margin incurved, irregu-

lar or lobed, and glabrous; cap color below hairs dark tan to light brown; cap tissue firm, thin, pale watery brown near margin and dark brown under the hairs; mixed with amyloid and nonamyloid hyphae; cap with a fruity aroma and an extremely acrid taste. Hymenium: Gills, very broad, close coarsely toothed with ragged edges; pallid to tan to brown. Spores: Nearly round, minutely spined, amyloid, 2.5–3 × 3–3.5 μm; spore print white.

Habitat.—Gregarious, overlapping clusters growing laterally from decaying hardwood logs. Infrequent. [BSUHM 129]

Order Hymenochaetales

Family Hymenochaetaceae

Phellinus gilvus (Schw.) Pat.

Description.—Fruiting bodies: Sessile, shelflike or bracketlike to slightly effused-reflexed, tough and corky when fresh. Caps: Fan-shaped or semicircular in outline, 2–7 cm broad, 1–3 cm deep; surface: velvety at first, becoming rough and hairless with age; ochre to bright rusty-yellow when young, becoming dark rusty-brown with age, eventually turning black; margin: concolorous with the cap. Cap tissue: Tough, yellowish-brown to orange-brown, staining black with KOH. Hymenium: Pores circular, minute, 4–8 per mm, grayish-brown becoming reddish-brown to dark brown. Spores: Elliptic, smooth, 4–5 × 3-3.5 μm. Setae (e.g., large brown sterile cells) abundant among the basidia, sharp pointed, thick-walled, 20–30 × 5–6 μm.

Habitat.—In groups or in overlapping clusters on decaying hardwoods. Common. [BSUHM 330]

Order Lycoperdales

Family Geastraceae

Geastrum saccatum Fr.

Description.—Fruiting bodies: Stellate, 6–12 cm wide. Outer peridium: Thick, split into starlike rays (2–4 cm long) at the top and recurving against the base; ochre-buff to light yellow-brown. Inner peridium (spore case): Smooth, round, 2.5 cm across, dull gray to brownish, paler at the mouth area; mouth formed of a distinct ring. Gleba: Powdery brown at maturity. Spores: Globose, warty, 3.5–4.5 × 4–4.5 μm.

Habitat.—In a group around a decaying hardwood stump. Rare. [BSUHM 259]

Family Lycoperdaceae

Lycoperdon pyriforme Schaeff.:Pers.

Description.—Fruiting bodies: Oval to pear-shaped with a stemlike sterile base; 1.5–3.5 cm tall, 1.5–2 cm broad. Peridium: Exoperidium finely cracked forming small patches of minute granules on young specimens, absent on older specimens; endoperidum smooth, brown to dark rusty-brown. Sterile base: Well-developed, up to about ⅓ of the fruiting body, interior dull white with small chambers; base bearing many white mycelial threads (rhizomorphs). Mature gleba: Olive to olive-brown, powdery. Spores: Round, smooth, 3–3.5 μm.

Habitat.—Gregarious on well-rotted hardwood logs. Abundant. [BSUHM 130, 152]

Order Nidulariales

Family Nidulariaceae

Crucibulum laeve (Huds.) Kamb.

Description.—Fruiting bodies: Cup-shaped containing numerous spore packets, 4–5 mm high, 6–7 mm wide, sessile; margin of cup flared slightly or tapered downward; outer surface tan, velvety; inner surface pallid, smooth and shiny; mouth initially covered with an epiphragm, which is coarsely tomentose. Peridioles (spore packets): 1–2 mm broad, whitish to buff, circular but flattened (disklike), attached to peridium by a long thin cord; several per fruiting body.

Habitat.—Several growing on one half of a hickory nut shell. Rare. [BSUHM 137]

Order Poriales

Family Coriolaceae

Cerrena unicolor (Bull.:Fr.) Murr.

Synonym.—*Daedalea unicolor* Bull.:Fr.

Description.—Fruiting bodies: Sessile to effused-reflexed overlapping brackets, gray to grayish-brown to light brown, 1–5 cm across; upper surface villose to tomentose with stiff hairs, zonate, hairless between the zones; some green areas due to a coating of algae. Hymenium: In young specimens daedaloid (mazelike) pores breaking up into flattened teeth (e.g., toothlike) with age; pore depth variable, 0.4–3.5 mm; white to gray. Spores: Ellipsoid, smooth, 4.5–5.5 × 2.5–3.5 μm.

Habitat.—On decaying hardwood. Common. [BSUHM 33, 140]

Ischnoderma resinosum (Schrad.:Fr.) Karst

Description.—Fruiting bodies: Sessile, broadly attached, semicircular to fan-shaped, occurring singly or in shelving masses. Caps: Fan-shaped, 7–19 cm wide, 5–10 cm across, 1–3 cm thick at base; exuding drops of orange to orange-red liquid; upper surface velvety and rough like sandpaper, wrinkled radially, dark rusty-brown to blackish; margin thick; cap flesh tan to brown, extremely watery; fleshy when collected becoming very tough and corky in age (or drying). Hymenium: Pores, 3–6 per mm, white to pallid, bruising brown on injury or on drying; only one layer of pores (annual). Spores: Cylindrical, smooth, 5–6.5 × 1.5–2 μm.

Habitat.—On decaying hardwood logs and stumps. Common. [BSUHM 141, 142]

Pycnoporus cinnabarinus (Jacq.:Fr.) Karst

Synonym.—*Polyporus cinnabarinus* Jacq.: Fr.

Description.—Fruiting bodies: Semicircular to fan-shaped, bright orange to cinnabar red when young, fading with maturity, 4–7 cm across, 2–4 cm wide, 0.5–2 cm thick, sessile and broadly attached; upper surface roughened, wrinkled, slightly tomentose when young weathering to glabrous with age. Cap tissue: Soft-corky when young becoming tough and leathery; turns black in KOH; red to orange-red. Hymenium: Pores, 2–4 per mm, circular to angular, cinnabar red (concolorous to darker than cap surface). Spores: Cylindrical to allantoid, smooth, 5–6 × 2–3 μm.

Habitat.—On a recently fallen beech tree. Rare. [BSUHM 231]

Trametes elegans (Spreng.:Fr.) Fr.

Synonyms.—*Daedalea ambigua* Berk. and *Daedalea elegans* Spreng.:Fr.

Description.—Fruiting bodies: Semicircular to fan-shaped and sessile or occasionally nearly circular with a rudimentary stipe; nearly planar, 8.5–15.5 cm broad; leathery and flexible when young and moist, rigid and hard corky when dry; white to cream throughout or the bases occasionally umber to black; surface dry, ranging from very finely tomentose and velvety to the touch, to glabrous and smooth with age, often concentrically zonate, especially near the margin, and warted with age. Hymenium: Pores conspicuously variable, ranging from round to angular to irregular to daedaloid to more or less lamellate; white initially, turning creamy white to pale brown with age or drying. Spores: Cylindric, smooth, 5–7 × 1.5–3 μm.

Habitat.—In groups on decaying hardwood logs and stumps. Abundant. [BSUHM 35, 126, 127, 289]

Trametes hirsuta (Wulf.:Fr.) Pilat.

Synonyms.—*Polyporus hirsutus* Wulf.:Fr.

Description.—Fruiting bodies: A semicircular to fan-shaped, sessile mushroom. Caps: Shelf- or bracketlike, tough and leathery when fresh, rigid dry; surface covered with dense conspicuous hairs (velvety), concentrically zoned but colors dull, not sharply contrasting; various shades of tan and light yellow browns, darker towards the base; margin lighter tan, wavy, hairy. Cap tissue: White and tough. Hymenium: Pores, 2–4 per mm, white at first, turning light yellowish-brown with age. Spores: None observed.

Habitat.—Gregarious on decaying beech logs; occasionally caps fuse forming lines of fruiting bodies. Common. [BSUHM 172, 333]

Trametes versicolor (L.:Fr.) Pilat.

Synonyms.—*Polyporus versicolor* L.:Fr. and *Coriolus versicolor* (L.:Fr.) Quel.

Description.—Fruiting bodies: Semicircular, fan-shaped or "turkey-tail-like," sessile, caps often fused to form long rows. Caps: 2–6 cm broad, leathery, colorfully zoned with various shades of browns, grays, and creams, velvety to touch when young due to a densely hairy surface, becoming smooth with age. Margin: White to cream. Hymenium: Pores, minute, 3–5 per mm, circular to irregularly angular; white becoming yellowish or light brown with age. Spores: Ellipsoid, smooth, 4–5.5 × 1.5–2 μm.

Habitat.—In rows and densely overlapping clusters on decaying hardwood logs and stumps. Abundant. [BSUHM 30, 104, 287]

Trichaptum biforme (Fr.:Klotzch) Ryv.

Synonyms.—*Polyporus pargamenus* Fr.

Description.—Fruiting bodies: Sessile, broadly attached, semicircular to fan-shaped, occurring in shelving masses, stipeless. Caps: 1–7 cm wide, 1–4 cm deep, convex to typically flat with age; leathery to stiff. Surface: Hairy at first, smooth with age; distinctly zoned and variously colored including white

to grayish, reddish-brown, ochre to dark brown; margin often violet and wavy. Cap tissue: Thin, 0.5–1.5 mm thick, fibrous-tough, white to yellow. Hymenium: Pores when young, splitting to become toothlike and jagged with age; white to brownish, usually with a violet tint overall but especially along the margin; pores angular, 2–4 per mm; tubes 1–5 mm long. Spores: Cylindrical, smooth, hyaline, 5–6.5 × 2–2.5 μm; white in mass.

Habitat.—Numerous, overlapping caps on decaying hardwood stumps and logs. Infrequent. [BSUHM 365]

Family Lentinaceae

Phyllotopsis nidulans (Pers.:Fr.) Sing.

Description.—Fruiting bodies: Lateral attached, bracket-like caps without stipes; odor sharp, strong and unpleasant. Caps: Semicircular to fan-shaped, 4–10.5 cm across, broadly convex; margin inrolled when young, irregular at maturity; dry, densely hairy; light orange to orange-buff. Cap tissue: Two-layered, upper layer yellowish-orange, lower layer pale orange-buff; tough; clamp connections abundant. Hymenium: Gills adnate, crowded, narrow, orange-buff to orange-yellow. Spores: Narrowly elliptical to allantoid, smooth, 5–6 × 2–2.5 μmm. Spore print: Pinkish (light reddish-cinnamon).

Habitat.—Gregarious in overlapping clusters on hardwood logs. Infrequent. [BSUHM 128, 143]

Pleurotus ostreatus (Jacqu.:Fr.) Kummer

Description.—Fruiting bodies: Shell-like with eccentric to lateral, often absent, stipes. Caps: Shell-like to fan-shaped, convex when young becoming planar to slightly depressed at maturity; 3–14 cm across; moist, smooth and without hairs; white to pale tan or yellowish-brown. Margin: Wavy, often lobed and splitting with age. Flesh: White. Hymenium: Gills: Decurrent on distinct stipe (or the blunt point of attachment), crowded and narrow; white to pale cream. Spores: Elliptical, smooth, 8–10 × 3–4 μm. Spore print: white to buff (reported by some to be lilac).

Habitat.—Large, overlapping clusters on decaying hardwood. Abundant. [BSUHM 24]

Family Polyporaceae

Polyporus alveolaris (DC.:Fr.) Bond. & Sing.

Synonyms.—*Favolus alveolaris* DC.:Fr. and *Polyporus mori* Poll.

Description.—Caps: 2–4.5 cm wide, semicircular, convex to depressed, fibrous-tough. Surface: Dry, scaly, dark brown when young, becoming yellow-brown in age. Margin: Incurved and lined with conspicuous hairs. Hymenium: Large pores, 0.5–3 mm across, hexagonal to angular, often radially aligned, decurrent; white or dull creamy or very pale yellow. Stipe: Eccentric to lateral, short, up to 10 mm, concolorous with the pores.

Habitat.—On small dead twigs of hardwoods. Common to abundant especially in the spring. [BSUHM 37]

Polyporus badius (Pers.:S.F. Gray) Schw.

Synonym.—*Polyporus picipes* Fr.

Description.—Fruiting bodies: Stipitate, 6–25 cm across, circular to irregular, typically funnel-shaped or convex to slightly depressed at the point of attachment of the stipe, fibrous tough; young specimens yellowish-brown, black toward the center and yellow on the margin, older specimens chestnut-brown to reddish-brown with a blackish-brown center. Surface: Smooth and shiny to dull. Margins: Incurved when young becoming uplifted, thin, wavy and lobed in age. Hymenium: Pores, very small, 5–7 per mm, generally circular and less than 2 mm deep, wall appearing thick for size of pore; white when young, becoming tan in age. Stipe: 1–10.5 cm long, up to 25 mm thick at apex, eccentric to lateral, black in color the entire length. Spores: Small, 5–8 × 3–4 μm, smooth, hyaline, cylindrical to ellipsoid; white in mass.

Habitat.—Gregarious on decaying hardwood. Abundant. [BSUHM 108–110, 261]

Polyporus brumalis Pers.:Fr.

Description.—Fruiting bodies: 1.5–4 cm across, circular, convex and depressed where the stipe is attached; the margin is inrolled; blackish-brown, dry, densely hairy. Stipe: 1–2.5 cm long, slightly eccentric, light brown (no black areas), minutely longitudinally ridged. Hymenium: Pores, 2–3 per mm. Tubes: About 1 mm deep, slightly decurrent. Flesh: Thin, white. Spores: White in deposit, cylindric to allantoid, smooth, 5–7 × 1.5–2.5 μm.

Habitat.—Decaying hardwood. Frequent. [139, 167]

Polyporus elegans Bull.:Fr.

Synonym.—*Polyporus varius* (Pers.:Fr.) Fr.

Description.—Fruiting bodies: Stipitate, leathery when fresh and rigid when dry. Cap: Circular to reniform, 2.3–7.2 cm broad, pale tan to dull white (in age), convex when young, becoming depressed at the point of attachment of the stipe in age, smooth with waxy and lobed margins. Stipe: 0.5–2.5 cm long, 0.3–0.6 mm thick, equal, eccentric to lateral, tan above and black below (lower half), tough. Hymenium: Pores, small, 4–6 per mm, circular to angular, white when young, turning light brown with age, decurrent.

Habitat.—In groups on decaying hardwood branches. Common. [BSUHM 34, 121, 122]

Polyporus radicatus Schw.

Description.—Fruiting bodies: Stipitate. Cap: Circular, convex to planar, 6–8 cm across, yellowish-brown to soot-brown due to many small brown patches of appressed tufts of fibrils; dry, velvety to scurfy to the touch. Hymenium: Pores, white at first turning cream-yellow with age, decurrent, angular, about 4 mm deep at the stipe, typically 2 per mm. Stipe: 7 cm long, 0.6–0.9 cm across at the apex, enlarging downward, hollow, flesh creamy to pallid color; top portion of stipe concolorous to slightly lighter than the cap, scurfy to slightly scaly; lower portion of the stipe black forming a long pseudorhiza. Spores: Ellipsoid, 11–15 × 5.5–7 μm, white in deposit, abundant for a polypore.

Habitat.—Singly on ground around a hardwood stump. I have since found several collections of this fungus. Infrequent to common. [BSUHM 107, 144]

Polyporus squamosus Huds.:Fr.

Description.—Fruiting bodies: Stipitate. Cap: Fan-shaped, overlapping, slightly depressed at point of stipe attachment, 17.5–36 cm across, yellowish to ochraceous-cream color, surface covered with large brown appressed hairy scales arranged in concentric rings; strong mealy smell. Hymenium: Large pores, 1+ mm wide, angular to irregular, decurrent, whitish at first, turning yellow-cream with age. Stipe: All stipes fused to a common base, generally black but with creamy areas concolorous with pores, stubby, laterally attached to the cap, 7–10 cm long, 11 cm across (for all three stipes of collection BSUHM 92).

Habitat.—Rotting hardwood trees. Abundant. [BSUHM 92, 103]

Order Schizophyllales

Family Schizophyllaceae

Schizophyllum commune Fr.

Description.—Fruiting bodies: Small, 9–24 mm wide, fan-shaped, dry, densely hairy, white to grayish when dry. Margin: Lobed, hairy and inrolled when dry. Hymenium: Gills white to grayish, the gills split down the long axis and the sides recurved in dry weather. Stipe: None.

Habitat.—In a group on hardwood sticks. Common to abundant. [BSUHM 32]

Order Stereales

Family Hyphodermataceae

Sarcodontia setosa (Pers.) Donk

Description.—Fruiting bodies: Resupinate, 15–25 cm across, 30–45 cm long, forming crustlike spreading patches; no noticeable odor. Hymenium: Yellow developing reddish stains where bruised; bearing downward pointing teeth or spines, 5–12 mm long. Spores: Teardrop shape, smooth, 5–6 × 3–4 μm.

Habitat.—Decaying hardwood logs. Rare. [BSUHM 169]

Family Meruliaceae

Gleoeporus dichrous (Fr.) Bres.

Synonym.—*Caloporus dichrous* Fr.

Description.—Fruiting bodies: Resupinate and overlapping with the edges forming elongated, narrow shelves up to 3.5 cm long; edges sharp and undulating. Cap: White with concentric rings, finely hairy. Tubes: Rubbery when fresh, resinous and tough when dry. Pores: 4–6 per mm, round to angular, reddish-brown and glaucous. Flesh: White.

Habitat.—Decaying hardwood logs. Infrequent. [BSUHM 155]

Phlebia radiata Fr.

Synonym.—*Phlebia merismoides* Fr.

Description.—Fruiting bodies: 8–15 cm across, running together so the entire mass is 9–15 cm long; 2–3 mm thick; resupinate, forming irregular round to oval patches with a fringed margin, color variable from a dull

flesh color to purplish to bright fluorescent orange, especially at the margins. Surface: Wrinkled with radiating ridges. Spores: Allantoid, 4–6 × 1–1.5 μm.

Habitat.—Decaying hardwood logs. Rare. [BSUHM 157]

Phlebia tremellosus (Schrad.:Fr.) Nakas. & Burds.

Synonym.—*Merulius tremellosus* Schrad.: Fr.

Description.—Fruiting bodies: Soft with watery flesh, often forming overlapping clusters. Upper surface: White to pale yellow and hairy to wooly. Hymenium: Orange to orange-buff, merulioid or variously veined, wrinkled and porous. Pores: Shallow, 1–2 per mm, irregular.

Habitat.—Decaying hardwood logs near or in the leaf litter. Infrequent. [BSUHM 123, 132]

Family Steccherinaceae

Irpex lacteus (Fr.:Fr.) Fr.

Description.—Fruiting bodies: Resupinate with free edges curling up from the large, spreading, crustlike mass; upper surface of free edge white to pallid, densely wooly. Hymenium: Varying from ridges to teethlike projections to pores. Pores: Cream to pale buff; 2–3 pores per mm, angular, up to 3 mm deep, walls very irregular in length. Cystidia: Many, conspicuous, long and encrusted.

Habitat.—Spreading, overlapping clusters on decaying hardwood. Common. [BSUHM 133, 150]

Family Stereaceae

Stereum hirsutum (Willd.:Fr.) S.F. Gray

Description.—Fruiting bodies: Thin, leathery, pliant when moist, rigid when dry; annual; bracketlike to shelflike, frequently occurring in rows and often fused laterally to form lobed shelves. Individual caps: 1–5 cm broad; plane to wavy; surface dry and concentrically zoned with white, tan, light brown and/or dark brown matted hairs, smooth toward the margin; where the hairs are missing, the cap is dark chestnut-brown; greenish toward point of attachment due to algal growth. Hymenium: smooth to wrinkled, concentrically zoned in browns, darker towards base, lighter towards margin; margin tan. Stipe: None.

Habitat.—In groups, frequently fused and forming dense overlapping clusters on decaying hardwood logs. Abundant. [BSUHM 124, 125]

Stereum striatum (Fr.) Fr.

Description.—Fruiting bodies: 0.3–1.5 cm across, nearly circular to fan-shape in outline, frequently fused laterally to form longer lines; buff to pale brown; surface dry with radiating, loosely arranged hairs, concentrically zonate. Hymenium: Buff to pale brown, slightly zonate especially at the margin, but appearing cracked like the pieces of a puzzle; smooth. Flesh: Tough, thin, pliant when fresh.

Habitat.—In masses on dead twigs of hardwoods, especially *Carpinus caroliniana* Walter. Common. [BSUHM 145]

Order Thelephorales

Family Thelephoraceae

Thelephora palmata Scop.:Fr.

Description.—Fruiting bodies: Erect, profusely branched from a common base, 9 cm tall, 7 cm wide. Branches: Purplish-brown when fresh, turning chocolate-purple overnight on drying); flattened; tips palmlike and pallid. Stipe: Common, tough and leathery. Odor: Garliclike. Spores: 8–11 × 7–8 μm, elliptical-angular, spiny.

Habitat.—Singly on moist, rich ground in woods. Rare. [BSUHM 72]

ASCOMYCOTA

Order Leotiales

Family Leotiaceae

Bisporella citrina (Batsch:Fr.) Korf & Carpenter

Synonym.—*Calycella citrina* (Hedw.:Fr.) Boud.

Description.—Fruiting bodies: saucer-shaped, essentially stipeless, hymenium and outer surface smooth, 1–3 mm across, bright lemon-yellow to golden yellow. Asci: Inoperculate, thin-walled, 135 × 10 μm. Spores: Elliptic, smooth, hyaline with oil droplets at each end, 9–14 × 3–5 μm, frequently 1-septate.

Habitat.—Gregarious in large numbers on debarked hardwood logs. Abundant. [BSUHM 332]

Order Pezizales

Family Otideaceae

Scutellinia scutellata (L.:Fr.) Lamb.

Description.—Fruiting bodies: Sessile apothecia, 4–8 mm broad, disc- or saucer-shaped; inner (upper or hymenial) surface bright orange-red, the outer (lower) surface light brown and covered with stiff black hairs (setae) which look like eyelashes rimming the margin; setae rooting in the flesh of the apothecium, up to 45 μm thick, thick-walled, septate, tapering to a point. Paraphyses: Mycelial to typically clavate, up to 10 μm thick at the tip, brownish-purple in Melzer's solution. Asci: About 300 × 25 μm, no apical apparatus visible. Spores: Ellipsoid, 18–19 × 10–12 μm, minutely warty, containing many small to a few large lipid droplets.

Habitat.—On wet, well rotted hardwood logs. Abundant. [BSUHM 138, 153]

Family Sarcoscyphaceae

Sarcoscypha coccinea (Fr.) Lambotte

Description.—Fruiting bodies: Apothecia, sessile or with a rudimentary stipe, 1–8 cm broad, cup-shaped; inner (upper or hymenial) surface bright scarlet, outer (lower) surface white and floccose with matted hairs; margin generally inrolled. Paraphyses: Slender, forking near the base, not enlarging upward, containing red granular material, 2–4 μm broad; stains green in Melzer's solution. Asci: Unitunicate, up to 400 μm by 16 μm, hyaline. Spores: Uniseriate, hyaline, ellipsoid with obtuse ends, two guttulate with droplets aggregating at both ends of the spore, 10–13 × 25–27 μm.

Habitat.—Gregarious and widespread on dead hardwood branches and stems. Abundant. [BSUHM 176–178]

Sarcoscypha occidentalis (Schw.) Sacc.

Description.—Fruiting bodies: Stipitate apothecia, cup-shaped, cups shallow, 0.5–2.9 cm broad; inner (upper of hymenial) surface scarlet, outer (lower) surface whitish-pink and smooth. Stipe: White, round, 8–35 mm long, 1–3 mm wide. Spores: Ellipsoid, two guttulate with droplets aggregating at both ends of the spore, 10–12 × 20–22 μm.

Habitat.—Singly to groups on dead hardwood sticks and branches in damp woods. Abundant and widespread. [BSUHM 182, 183]

Family Sarcosomataceae

Urnula craterium (Schw.) Fr.

Description.—Fruiting bodies: Urn-shaped, stipitate apothecia, 5–9 cm tall, 2–5.5 cm broad at top, brownish-black to black; margin of urn remaining incurved with scalloped (sometimes torn) edges; flesh tough and fibrous or leathery. Stipes: 2–4 cm long, 5–8 mm thick, concolorous with urn. Hymenium: Black when fresh. Asci: 500–600 × 15–17 μm, unitunicate, operculate, hyaline. Spores: Narrowly ellipsoid, smooth, uniseriate, no oil droplets visible, grayish, 9–10 × 21–28 μm. Paraphyses: Numerous, septate, branched, not thickening toward apex, 2–4 μm diameter.

Habitat.—Occurring singly or in groups on decaying hardwood sticks, limbs and logs. Common in spring. [BSUHM 179–181]

Order Xylariales

Family Xylariaceae

Daldinia concentrica (Bolton:Fr.) Cesati & de Notaris

Description.—Fruiting bodies: Hemispherical, carbonaceous, black stroma covered with minute pores; hard, smooth. Internal concentric zones revealed when cut in half. Flask-shaped perithecia visible in outer concentric zone. Spores: Elliptical, smooth, dark brown, single-celled, 12–16 × 6-9 μmm, occurring in a single row within the ascus.

Habitat.—On decaying hardwood limbs, logs and bark. Common. [BSUHM 31]

Hypoxylon fragiforme (Pers.:Fr.) Kickx.

Description.—Fruiting bodies: Stromata brick-red at maturity, eventually turning brownish-black to black with age; hemispherical, 3–7 mm across, confluent forming extensive lobed crusts; surface papillate with protruding tips of perithecia but ostiolar necks do not extend beyond the crust of the stroma; ostioles breaking exposing pore into perithecium. Ascospores: Uniseriate, reniform with one side flattened, blackish-brown, 1–2 guttulate, 10–12 × 5–6 μm.

Habitat.—Gregarious on the bark and wood of recently fallen beech trees. Abundant. [BSUHM 131, 175]

Xylaria longipes (Nitschke) Dennis

Description.—Fruiting bodies: Stromata more or less club-shaped (sometimes irregular or even slightly lobed) with a short cylindrical stipe, 3–8 cm tall, 3–3.5 mm wide at widest point, hard or carbonaceous; surface dull black, finely wrinkled or roughened and cracked; interior flesh white to pallid, corky and tough. Spores: One-celled, irregularly elliptic with one side flattened, dark gray to black, 1–2 guttulate, 11–15 × 5–6 μm.

Habitat.—Gregarious on rotting maple logs. Frequent. [BSUHM 113, 174]

DISCUSSION

This survey of Ginn Woods identified 60 species of lignicolous macromycetes, including 52 species of basidiomycetes and 8 species of ascomycetes. The 52 species of basidiomycetes represented 38 genera from 23 families and 13 orders, and the 8 species of ascomycetes represented 7 genera from 5 families and 3 orders (Hawksworth et al. 1995). To our knowledge this is the first report, including voucher specimens, of these 60 from Delaware County, Indiana.

As detailed in the introduction of this paper, our knowledge pertaining to the occurrence and distribution of macromycetes in Indiana is extremely limited. Ultimately, we would like to have county by county information describing the occurrence and distribution of each macromycete species, similar to information currently available concerning the vascular flora of Indiana (Deam 1940) and other states (Dorn 1984; Hickman 1993; Radford et al. 1968; Strausbaugh & Core 1997; Swink & Wilhelm 1994; Voss 1972, 1985, 1996). In order to achieve this goal, we suggest the following plan. First, the State be divided into six regions, e.g., northeast, east-central, southeast, northwest, west-central, and southwest. Second, one university in each region be designated the center for macromycetes study in that region. We recommend the following universities for each region: Purdue University in the northwest region, Indiana State University in the west-central region, the University of Southern Indiana in the southwest region, Notre Dame University in the northeast region, Ball State University in the east-central region, and Indiana University in the southeast region. These six centers of macromycetes research would be responsible for housing voucher specimens and transmitting this information to the Indiana Biological Survey for loading on the IBS statewide database.

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