
**Pyrenomycetes of the Great Smoky Mountains National Park.
IV. *Biscogniauxia*, *Camaropella*, *Camarops*, *Camillea*,
Peridoxylon and *Whalleya***

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Descriptions and keys are provided for ten species of fungi currently placed in the *Boliniaceae* (*Camaropella*, *Camarops* and *Peridoxylon*) or *Xylariaceae* (*Biscogniauxia*, *Camillea* and *Whalleya*), but which possess features morphologically similar to those found in the *Diatrypaceae*. All of these are now known from the Great Smoky Mountains National Park in the eastern United States. *Biscogniauxia rumpens* (Cooke) Lar.N. Vassiljeva, **comb. nov.** and *Camaropella lutea* (Alb. & Schwein.: Fr.) Lar.N. Vassiljeva, **comb. nov.** are proposed as new combinations.

Key words: Ascomycota, generic concepts, Southern Appalachians, taxonomy, temperate forests

Introduction

Three previous papers in this series (Vasilyeva and Stephenson, 2004, 2005, 2006), which were devoted to members of the *Diatrypaceae*, considered a total of 34 species (ten in *Diatrype*, eight in *Diatrypella*, six in *Eutypella*, five in *Cryptovalsa*, and five in *Eutypa*). All of these species possess allantoid ascospores and fit the most widely accepted concept of the *Diatrypaceae*, which is restricted to allantosporous species (Kirk *et al.*, 2001). However, there are also several other genera of morphologically similar fungi currently placed in the *Boliniaceae* (*Camarops*) or *Xylariaceae* (*Biscogniauxia* and *Camillea*). The taxonomic relationships of these fungi and members of the *Diatrypaceae* are discussed below.

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Biscogniauxia is the first genus to be considered. Fungi assigned to this genus resemble members of *Diatrype* superficially and many of them were once placed in the latter genus. The same type of anamorph conidiogenesis occurs in both traditional diatrypaceous genera and *Biscogniauxia*. It has been reported that genera such as *Diatrype*, *Diatrypella*, *Eutypa* and *Eutypella* produce conidia in an apparently holoblastic manner from sympodially or percurrently proliferating conidiogenous cells (Glawe and Rogers, 1982a,b; Rogers and Glawe, 1983), while anamorphs of *Biscogniauxia* produce conidia holoblastically in sympodial sequence (Callan and Rogers, 1986). The presence of a *Nodulisporium* conidial state in both *Diatrype platystoma* (Schwein.: Fr.) Berk. (Pirozynsky, 1974) and species currently referred to *Biscogniauxia* is further evidence of their morphological similarity.

Recently, two new genera (*Jumillera* and *Whalleya*) were proposed by Rogers *et al.* (1997). These genera also fit the concept of the *Diatrypaceae*. Developmentally, they resemble *Biscogniauxia* and *Diatrype* in having, or appearing to have, bipartite stromata. The photograph of the type species of *Jumillera* (l.c., Fig. 10) illustrates the typical diatrypoid appearance and, moreover, some taxa of *Jumillera* possess *Libertella*-like anamorphs (as is the case for allantosporous members of the *Diatrypaceae*). As for *Whalleya*, the primary features of its anamorphs (wet scolecosporeous conidia) are shared with some other species, for example *Lopadostoma turgidum* (Pers.: Fr.) Traverso, which sometimes has been placed in the *Diatrypaceae* (Wehmeyer, 1975; Vasilyeva, 1998).

The placement of *Hypoxylon microplacum* in the genus *Whalleya* was based upon the presence of white tissue between the perithecia and a difference in the conidial state (Rogers *et al.* 1997). The presence or absence of white tissue is a variable feature within genera of the *Diatrypaceae* (Glawe and Rogers, 1984), so it cannot be used for the delimitation of genera. As for conidial states, we chose not to follow the segregation of *Diatrype platystoma* from the genus *Diatrype* on the basis of this feature and thus *Whalleya microplacum* might appear to be a good member of *Biscogniauxia*.

As treated in the current literature, *Camillea* and *Biscogniauxia* share species that were previously considered as a single section within the genus *Hypoxylon* (Miller, 1961). The difference between these genera is said to be the presence of light-coloured, ornamented ascospores that lack germ slits in *Camillea* versus dark-coloured, smooth or ornamented ascospores with germ slits in *Biscogniauxia* (Laessøe *et al.*, 1989). However, both genera have very similar 'diatrypoid' stromata and the same developmental type which is characteristic of diatrypaceous fungi. These features may unite *Biscogniauxia*,

Camillea (applanate forms) and *Whalleya* into a single group that is parallel to *Diatrype*.

The usual treatment of *Camarops* (Nannfeldt, 1972; Hilber and Hilber, 1980) encompasses examples with five different stromatal types traditionally associated with different genera in the *Xylariaceae*. The uniformly small ascospores, which occur in an uniseriate pattern within the ascus, are found in all members and represent the only basis for the unification of these species into a single genus. However, all allantosporous genera of the *Diatrypaceae* or the xylariaceous genera with similar ascospores are not united on this basis, so the situation with *Camarops* is an example of inconsistency in the employment of delimitative characters.

The type species of the genus, *Camarops polyspermum* (Mont.) J.H. Mill., and *C. ohiensis* (Ellis & Everh.) Nannf. possess typically ‘biscogniauxioid’ or diatrypoid stromata. *Camarops polyspermum* has been placed in the genus *Numulariola*, which is congeneric with *Biscogniauxia* (Martin 1969), or directly in the latter genus (Vasilyeva, 1988). *Camarops petersii* (Berk. & M.A. Curtis) Nannf., with its large swelling stromata, may be considered as a ‘diatrypaceous’ parallel to *Daldinia*. The former was the type of the independent genus *Peridoxylon*, which can be reestablished. Stromata of *Camarops pugillus* (Schwein.: Fr.) Shear combine characters of *Eutypella* (clustered perithecia with elongated beaks) and *Eutypa* (stromata immersed in wood). This species has recently been transferred to a new genus *Camaropella* (Vasilyeva, 1997), which also may include *Camarops rostratus* Romero and Samuels (1991).

During a six-week period extending from late March to early May 2002 and in several different periods during 2005 and 2006, specimens representing a number of species in the genera mentioned above were collected at various localities in the Great Smoky Mountains Park (GSMNP). Specimens upon which these records were based are deposited in ILLS and VLA (Institute of Biology and Soil Science, Vladivostok, Russia).

Five species reported previously (Petersen, 1979) from the Great Smoky Mountains National Park (GSMNP) are of interest and also have been considered in the context of this paper. These are *Camarops pugillus* (Schwein.: Fr.) Shear, *Hypoxylon microplacum* (Berk. & M.A. Curtis) J.H. Mill., *Nummularia discreta* (Schwein.) Tul. & C. Tul., *N. petersii* (Berk. & M.A. Curtis) Nannf., and *N. tinctor* (Berk.) Ellis & Everh.

Taxonomy

Biscogniauxia Kuntze, Rev. Gen. Pl., 2: 398, 1891.

Stromata widely effuse and crust-like, discoid or cupulate, flat or slightly convex, with separate ostioles at the surface. *Perithecia* mostly in one layer, but sometimes polystichous. *Asci* cylindrical, 8-spored, often with an amyloid apical ring or without it, paraphysate. *Ascospores* uniseriate, rarely biseriate, ellipsoid, brownish, with germ slit or pores or sometimes without them.

Type species: Biscogniauxia nummularia (Bull.: Fr.) Kuntze.

Key to species of *Biscogniauxia* known from the GSMNP

- 1. *Stromata* cupulate or discoid 2
- 1. *Stromata* widely effused 3
- 2. *Ascospores* almost globose, 11-14 × 9-12 μm *B. marginata*
- 2. *Ascospores* ellipsoid, 10-14 × 5-6 μm *B. pezizoides*
- 3. *Ascospores* 16-20 μm long, *stromata* brown, with almost umbilicate ostioles *B. rumpens*
- 3. *Ascospores* 26-30 μm long, *stromata* white to grey, with umbilicate and black ostioles *B. atropunctata*

Biscogniauxia atropunctata (Schwein.: Fr.) Pouzar, *Ceská Mykol.*, 33: 216, 1979. (Figs 1, 2)

Sphaeria atropunctata Schwein., *Schrift. Nat. Ges. Leipzig*, 1: 31, 1822.

S. atropunctata Schwein.: Fr., *Syst. Mycol.*, 2: 351, 1823.

Diatrype atropunctata (Schwein.: Fr.) Curr., *Trans. Linn. Soc. Lond.*, 22: 269, 1858.

Anthostoma atropunctatum (Schwein.: Fr.) Sacc., *Syll. Fung.*, 1: 295, 1882.

Hypoxyton atropunctatum (Schwein.: Fr.) Cooke, *Grevillea*, 11: 138, 1883.

Nummularia atropunctata (Schwein.: Fr.) Höhn., *Ann. Mycol.*, 16: 219, 1918.

Numulariola atropunctata (Schwein.: Fr.) House, *Rep. New York State Mus. Bull.*, 266: 49, 1925.

Albocrustum atropunctatum (Schwein.: Fr.) Lloyd, *Mycol. Writ.*, 7: 1353, 1925.

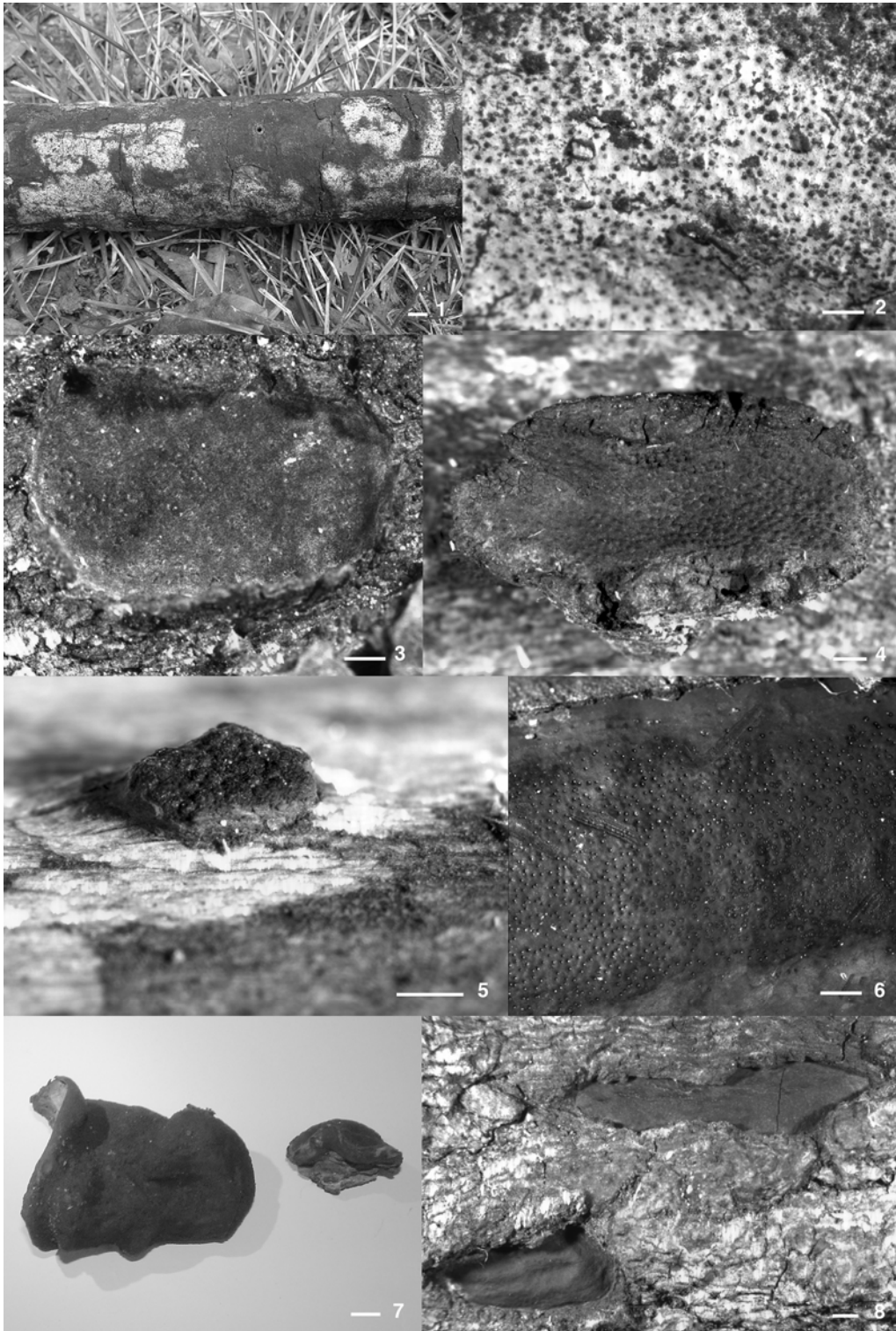
Illustrations: Miller, 1961, figs. 186, 220.

Stromata widely effuse and crust-like, flat or slightly undulate, white to grey, with umbilicate and black ostioles. *Asci* cylindrical, p. sp. 140-160 × 14-16 μm, with amyloid apical ring. *Ascospores* ellipsoid, brown, 26-30 × 12-14 μm, with straight germ slit.

Habitat: On dead branches of *Quercus* spp. and *Fagus grandifolia* Ehrh.

Localities in GSMNP: Cades Cove (Schoolhouse Gap Trail); Cosby (Lower Mt. Cammerer Trail, Hen Wallow Falls); Elkmont (Jakes Creek Trail); Greenbrier (Porters Creek Trail); Sugarlands Visitor Center (Old Sugarlands Trail).

Figs 1-8. *Stromata* of species known from the GSMNP. **1,2.** *Biscogniauxia atropunctata*. **3.** *Biscogniauxia marginata*. **4.** *Biscogniauxia pezizoides*. **5.** *Camaropella lutea*. **6.** *Camillea punctulata*. **7.** *Peridoxylon petersii*. **8.** *Whalleya microplaca*. Scale bars: Fig. 1 = 1 cm, Figs. 2-6 = 1 mm, Fig. 7 = 1 cm, Fig. 8 = 1 mm.



Notes: This species is very common in the Park but, strangely enough, had not been reported previously. It seems to be restricted to the central and eastern United States (Farr *et al.*, 1989), including North Carolina, Virginia, Pennsylvania, Florida, Ohio and North Dakota (Ju *et al.*, 1998).

Biscogniauxia marginata (Fr.) Pouzar, *Ceská Mykol.*, 33: 216, 1979. (Fig. 3)

Sphaeria marginata Fr., *Elench. Fung.*, 2: 69, 1828.

Nummulariella marginata (Fr.) Eckblad & Granmo, *Norw. J. Bot.*, 25: 72, 1978.

Illustrations: Ellis and Everhart, 1892, Pl. 39, figs. 9-12; Jong and Benjamin, 1971, figs. 1-5; Eckblad and Granmo, 1978, figs. 9-15; Ju *et al.* 1998, fig. 46.

Stromata orbicular or discoid, cupulate, 6-8 mm diam., concave, grey or brown, ostioles umbilicate. *Asci* cylindrical, p. sp. 140-160 × 14-16 μm. *Ascospores* uniseriate, almost globose or widely ellipsoid, dark brown, 11-14 × 9-12 μm, with sigmoid germ slit.

Habitat: On dead branches of *Fagus grandifolia* Ehrh.

Localities in GSMNP: Appalachian Trail between Lower Mt. Cammerer Trail and Low Gap Trail.

Notes: This species was reported previously [as *Nummularia discreta* (Schwein.) Tul. & C. Tul.] from the GSMNP by Petersen (1979).

Biscogniauxia pezizoides (Ellis & Everh.) Kuntze, *Rev. Gen. Pl.*, 2: 398, 1891. (Fig. 4)

Nummularia pezizoides Ellis & Everh., *Bull. Torr. Bot. Club*, 11: 74, 1884.

Stromata irregular-ellipsoid, cupulate, 0.5-1.5 cm long, 0.5-1 cm wide, with strongly papillate ostioles. *Asci* cylindrical, p. sp. 90-100 × 7-8 μm. *Ascospores* uniseriate, ellipsoid, brown, 10-14 × 5-6 μm, with straight germ slit.

Habitat: On dead branches of *Acer* sp.

Localities in GSMNP: Cosby (Gages Mountain Trail); Sugarlands Visitor Center (Old Sugarlands Trail).

Notes: The name of this species is usually considered to be a synonym of *Biscogniauxia repanda* (Fr.: Fr.) Kuntze which occurs on *Sorbus* spp. Pouzar (1979: 216) wrote that “there is a slight difference between the American population of *Biscogniauxia repanda* . . . growing predominantly on *Ulmus* spec. div. and the European population growing mostly on *Sorbus aucuparia*. Spores of the American material are slightly smaller, the marginal denticles on stroma less developed and stromata are in major part somewhat smaller”. However, these species are easily distinguishable even superficially because of the strongly papillate ostioles characteristic of *B. pezizoides*. Despite the fact that the American species was reported to occur only on *Ulmus*, it actually

occurs on both *Ulmus* and *Acer* in eastern Asia and might also be restricted to the same host plants in eastern United States.

Biscogniauxia rumpens* (Cooke) Lar.N. Vassiljeva, **comb. nov.*

Diatrype rumpens Cooke, J. Linn. Soc. Bot., 17: 143, 1878.

Anthostoma rumpens (Cooke) Sacc., Syll. Fung., 1: 306, 1882.

Nummularia rumpens (Cooke) Cooke, Grevillea, 12: 8, 1883.

Hypoxyton nummularium (Bull.: Fr.) Fr. var. *rumpens* (Cooke). J.H. Mill., Monogr. World Spec. *Hypoxyton*, p. 123, 1961.

Numulariola rumpens (Cooke) P.M.D. Martin, J. South Afr. Bot., 35: 293, 1969.

Biscogniauxia capnodes (Berk.) Y.-M. Ju & J.D. Rogers var. *rumpens* (Cooke) Y.-M. Ju & J.D. Rogers, Mycotaxon, 66: 27, 1998.

Illustrations: Miller, 1961, figs. 195, 228.

Stromata irregularly effuse, applanate, brown, with almost umbilicate ostioles. *Asci* p. sp. 100-120 × 12-14 μm. *Ascospores* ellipsoid, brown, (13)16-18(20) × 8-10 μm.

Habitat: On dead branch of an unidentified tree.

Localities in GSMNP: Cades Cove (Finley Cane Trail).

Notes: This species is usually considered to be a variety of *Hypoxyton nummularium* (Miller, 1961) or *Biscogniauxia capnodes* (Ju *et al.*, 1998) that is different from the typical form in having larger ascospores. The difference in ascospore size is considered a good delimiting character at the species level.

***Camaropella* Lar.N. Vassiljeva, Mikologiya i fitopatologiya, 31: 6, 1997.**

Perithecia erumpent from wood with eutypelloid clusters of perithecial beaks that are often confluent. *Asci* cylindrical, paraphysate. *Ascospores* uniseriate, unicellular, ellipsoid, brownish.

Type species: *C. pugillus* (Schwein.: Fr.) Lar.N. Vassiljeva

Key to species of *Camaropella* known from the GSMNP

1. Perithecia with elongated beaks projecting above the surface *C. pugillus*
 1. Perithecia without projecting beaks, embedded in yellow wood *C. lutea*

Camaropella lutea* (Alb. & Schwein.: Fr.) Lar.N. Vassiljeva, **comb. nov.*

(Fig. 5)

Sphaeria lutea Alb. & Schwein., Consp. Fung., p. 10, 1805.

S. lutea Alb. & Schwein.: Fr., Syst. Mycol., 2: 347, 1823.

Hypoxyton luteum (Alb. & Schwein.: Fr.) Fr., Summa Veget. Scand., p. 383, 1849.

Nummularia lutea (Alb. & Schwein.: Fr.) Nitschke, Pyr. Germ., p. 59, 1867.

Bolinia lutea (Alb. & Schwein.: Fr.) J.H. Mill., Monogr. World Spec. *Hypoxyton*, p. 138, 1961.

Numulariola lutea (Alb. & Schwein.: Fr.) P.M.D. Martin, J. S. Afr. Bot., 35: 288, 1969.

Chromendothia lutea (Alb. & Schwein.: Fr.) Lar.N. Vassiljeva, Mikologiya i fitopatologiya, 27: 6, 1993.

Perithecia deeply immersed in yellow wood and visible from above as small, black groups of short beaks. *Asci* cylindrical, p. sp. 35-40 × 3.5-4.5 μm. *Ascospores* uniseriate, ellipsoid, brownish, 5-6 × 2.5-3 μm.

Habitat: On dead branches of deciduous trees.

Localities in GSMNP: Cataloochee (Rough Fork Trail).

Notes: This species is said to be very rare and not known outside of Europe (Nannfeldt, 1972). However, judging from Shear's (1940) descriptions of '*Camarops pugillus*' found in the eastern United States (Tennessee and Virginia), these specimens could be accommodated within *C. lutea*. The stromata are entirely buried in wood, the ostioles are united in a more or less erumpent disk, and the wood in which the perithecia are embedded is usually a pale yellowish or saffron colour. Shear (l. c.) commented on the close relationship of *C. pugillus* and *C. lutea* and even suspected that *C. pugillus* may be a variety of *C. lutea*. In the key to Swedish species of *Camarops*, Lundquist (1987) placed these species close together and indicated that stromata of *C. pugillus* are "with erected, often clustered fingers", while those of *C. lutea* are "rounded in circumference, often with flattened upper side".

Camaropella pugillus (Schwein.: Fr.) Lar.N. Vassiljeva, Mikologiya i fitopatologiya, 31: 6, 1997.

Sphaeria pugillus Schwein., Schrift. Nat. Ges. Leipzig, 1: 38, 1822.

S. pugillus Schwein.: Fr., Syst. Mycol., 2: 383, 1823.

Valsa pugillus (Schwein.: Fr.) M.A. Curtis, Geol. Nat. Hist. Surv. North Carol., 3: 142, 1867.

Camarops pugillus (Schwein.: Fr.) Shear, Mycologia, 32: 549, 1940.

Illustrations: Lundqvist, 1987, figs. 1-2; Vasilyeva and Scheuer, 1996, fig. 1; Catania and Romero, 2005, fig. 29-39.

Perithecia erumpent from wood with eutypelloid clusters of perithecial beaks that are often confluent. *Asci* cylindrical, p. sp. 35-40 × 3.7-4.5 μm. *Ascospores* uniseriate, ellipsoid, brownish, 5-6.2 × 2.5-3 μm.

Notes: This species was reported previously from the GSMNP by Petersen (1979). We did not find it again; the description provided was taken from Vasilyeva (1998).

Camarops P. Karst., Bidr. Känn. Finl. Nat. Folk., 23: 6, 1873.

Stromata applanate or flat-pulvinate, with separate ostioles at the surface and very long tubular perithecia composing a palisade layer of cream or brownish colour. *Asci* clavate, with barely visible apical ring, paraphysate. *Ascospores* uniseriate or biseriate, very small, brownish or smoky, ellipsoid, without germ slit.

Type species: *C. polyspermum* (Mont.) J.H. Mill.

In addition to *Camarops polysperma*, there is one other species, *C. ohioensis* (Ellis & Everh.) Nannf., with tubular perithecia. The stromatal surface of the former species is strongly and densely papillate, while that of the latter is more even and pitted with age. These species also differ in host plants. *Camarops ohioensis* occurs on *Quercus* spp. in the eastern United States and is known from Pennsylvania, West Virginia, Georgia and Ohio (Nannfeldt, 1972). *Camarops polyspermum* was reported from a number of different host plants by Farr *et al.* (1989) but actually all confirmed identifications were of specimens from *Alnus* spp. (Nannfeldt, 1972). This species also occurs in eastern Russia, where it is found only on *Alnus* logs.

Specimens of *Camarops* from the GSMNP were collected on *Betula* spp. and were most abundant along the Appalachian Trail. The stromata have tubular perithecia but their shape and surface differ from those in *C. polysperma* and *C. ohioensis*. Unfortunately, all stromata were old, and it was impossible to adequately compare material. We mention these collections here to attract attention to the putative new species.

Camillea Fr., Summa Veget. Scand., p. 382, 1849.

Stromata upright to applanate or cupulate, grey, dark-brown to black, with papillate or umbilicate ostioles. *Perithecia* mostly in one layer, ovoid or elongate. *Asci* cylindrical, 8-spored, with amyloid apical ring, paraphysate. *Ascospores* uniseriate, ellipsoid, dilute yellow to light brown, without germ slits or pores.

Type species: *Camillea leprieurii* (Mont.) Mont.

Key to species of *Camillea* known from the GSMNP

1. Ascospores $8-9 \times 4-5 \mu\text{m}$, stromata with pitted surface *C. punctulata*
 1. Ascospores $16-20 \times 6-8 \mu\text{m}$, stromata with finely papillate ostioles *C. tinctor*

Camillea punctulata (Berk. & Ravenel) Laessøe, J.D. Rogers & Whalley, Mycol. Res., 93: 143, 1989 (Fig. 6)

Diatrype punctulata Berk. & Ravenel in Berk., Grevillea, 4: 94, 1876.

Nummularia punctulata (Berk. & Ravenel) Sacc., Syll. Fung., 1: 399, 1882.

Hypoxylon punctulatum (Berk. & Ravenel) Cooke, Grevillea, 11: 138, 1883.

Numulariola punctulata (Berk. & Ravenel) P.M.D. Martin, J. South Afr. Bot., 42: 78, 1976.

Illustrations: Miller, 1961, figs. 184, 213; Laessøe *et al.*, 1989, fig. 128.

Stromata widely effused, orbicular or oblong, applanate, dark brown to almost black, with ostioles in finely punctate holes scattered at the surface.

Asci cylindric, p. sp. 60-80 × 5-7 μm, with amyloid apical ring; *Ascospores* ellipsoid, light brown, 8-9 × 4-5 μm.

Habitat: On dead trunks of deciduous trees.

Localities in GSMNP: Cades Cove (Gregory Ridge Trail); Cataloochee (Boogerman Trail); Cosby (Gages Mountain Trail); Greenbrier (Ramsey Cascades Trail); Oconaluftee (Mingus Creek Trail).

Notes: This species is said to be one of the few species in the genus that occurs north of Central America and is well known as a result of its parasitism of species of *Quercus* (Laessoe *et al.*, 1989).

Camillea tinctor (Berk.) Laessøe, J.D. Rogers & Whalley, Mycol. Res., 93: 145, 1989.

Sphaeria tinctor Berk., Hooker J. Bot., 4: 311, 1845.

Diatrype tinctor (Berk.) Sacc., Syll. Fung., 1: 200, 1882.

Hypoxylon tinctor (Berk.) Cooke, Grevillea, 11: 133, 1888.

Nummularia tinctor (Berk.) Ellis & Everh., North Amer. Pyren., p. 627, 1892.

Numulariola tinctor (Berk.) P.M.D. Martin, J. South Afr. Bot., 35: 317, 1969.

Illustrations: Miller, 1961, figs. 189, 190, 223; Laessøe *et al.*, 1989, figs. 102-108, 130.

Stromata widely effused, orbicular or oblong, applanate, dark brown, finely papillate, wood underneath often stained orange. *Asci* cylindric, p. sp. 110-130 × 8-10 μm, with amyloid apical ring. *Ascospores* ellipsoid or inequilaterally broadly fusiform, yellow, 16-18 × 6-8 μm.

Habitat: On dead trunks of deciduous trees.

Localities in GSMNP: Cades Cove (Loop Road, Parsons Branch Road).

Notes: This species was reported previously (as *Nummularia tinctor*) from the GSMNP (Petersen, 1979).

Peridoxylon Shear, Mycologia, 15: 126, 1923.

Stromata pulvinate and attached by almost the whole under-surface, becoming broadly turbinate, sometimes cup-shaped with flat or convex papillate surface; perithecia polystrichous. *Asci* clavate, with barely visible apical ring. *Ascospores* small, ellipsoid, smoky or brownish.

Type species: *P. petersii* (Berk. & M.A. Curtis) Shear

This genus is represented in the GSMNP by a single species.

Peridoxylon petersii (Berk. & M.A. Curtis) Shear, Mycologia, 15: pl. 12, 1923. (Fig. 7)

Hypoxylon petersii Berk. & M.A. Curtis, J. Linn. Soc. Bot., 10: 384, 1869.

Bolinia petersii (Berk. & M.A. Curtis) Lloyd, Mycol. Writ., 7: 1283, 1924.

Camarops petersii (Berk. & M.A. Curtis) Nannf., Svensk Bot. Tidskr., 66: 366, 1972.

Numulariola petersii (Berk. & M.A. Curtis) P.M.D. Martin, J. South Afr. Bot., 42: 78, 1976.

Illustrations: Nuss and Hilber, 1977, fig. 8, 14-19; Hilber and Hilber, 1980, pl. 6, figs. 1-6; pl. 7, figs. 1-4; Doi and Nunomura, 1980, fig. 1.

Stromata pulvinate and attached by almost the whole under-surface, becoming broadly turbinate, sometimes cup-shaped with flat or convex papillate surface; perithecia polystrichous. *Asci* clavate, p. sp. 50-55 × 5-6 μm. *Ascospores* small, ellipsoid, smoky or brownish, 7-9 × 4-4.5 μm.

Habitat: On dead trunk of an unidentified deciduous tree.

Localities in GSMNP: Cades Cove.

Notes: This species was reported previously from the eastern United States by Nannfield (1972), having been recorded from Alabama, Indiana, Maryland, North Carolina and Ohio. Petersen (1979) listed it for the GSMNP as *Nummularia petersii* (Berk. & M.A. Curtis) J.H. Mill., but there is no such combination in the literature.

Whalleya J.D. Rogers, Y.-M. Ju & San Martín, *Mycotaxon*, 64: 48, 1997.

Stromata applanate, small, orbicular, dull black, with umbilicate ostioles. *Asci* cylindrical, with amyloid apical ring. *Ascospores* uniseriate, subinequilaterally ellipsoid, pale brown.

Type species: *Whalleya microplaca* (Berk. & M.A. Curtis) J.D. Rogers, Y.-M. Ju & San Martín.

This genus is represented in the GSMNP by a single species.

Whalleya microplaca (Berk. & M.A. Curtis) J.D. Rogers, Y.-M. Ju & San Martín, *Mycotaxon*, 64: 48, 1997 (Fig. 8)

Diatrype microplaca Berk. & M.A. Curtis, *J. Linn. Soc. Bot.*, 10: 386, 1869.

Anthostoma microplacum (Berk. & M.A. Curtis) Sacc., *Syll. Fung.*, 1: 298, 1882.

Nummularia microplaca (Berk. & M.A. Curtis) Cooke, *Grevillea*, 12: 8, 1883.

Hypoxylon microplacum (Berk. & M.A. Curtis) J.H. Mill., *Mycologia*, 33: 77, 1941.

Numulariola microplaca (Berk. & M.A. Curtis) P.M.D. Martin, *J. South Afr. Bot.*, 35: 299, 1969.

Illustrations: Miller, 1961, figs. 201, 202, 237.

Stromata small, orbicular, 0.4-1 × 0.3-0.6 cm, dull black, with umbilicate ostioles. *Asci* p. sp. 35-40 × 3-4 μm. *Ascospores* uniseriate, subinequilaterally ellipsoid, pale brown, 4-6 × 2-3 μm.

Habitat: On dead branches of *Lindera benzoin* (L.) Blume and *Sassafras albidum* (Nutt.) Nees.

Localities in GSMNP: Cataloochee (Caldwell Fork Trail), Cosby (Old Settlers Trail), Elkmont (Little River Trail), Oconaluftee (ATBI plot), Sugarlands Visitor Center (Old Sugarlands Trail).

Notes: This species was reported previously from the GSMNP as *Hypoxylon microplacum* (Petersen, 1979).

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