

SPECIMEN EXAMINED.— FINLAND. Mustiala, Tammela, Tavastia australis, 6 Oct 1867, leg. & det. P.A. Karsten (H 4474, holotype of *H. spinulosa*).

## SPECIMENS ILLUSTRATED:

*Hypocrea aureoviridis* f. *macrospora* Y. Doi: UNITED STATES. Indiana: Porter Co., Indiana Dunes National Lake shore, in hardwood area, on *Phellinus ferruginosus*, 19 Aug 1996, Jack Murphy 2201, comm. S. Huhndorf, det. G.J. Samuels G.J.S. 96-189 = CBS 101603 (BPI 744524). Plate 4, f (page 25).

*Hypocrea pseudokoningii* Samuels & O. Petrini: NEW ZEALAND. Westland, Harihari, Lower Pucora Valley, on *Dacrydium cupressinum*, 5 Apr 1963, J. Dingley, det. G. Samuels (PDD 23871). Plate 4, g (page 25).

**HYPOCREOPSIS** P. Karst., Symb. Mycol. Fenn. 2: 251. 1873.

Type: *H. riccioidea* (Bolton) P. Karst. (= *Sphaeria riccioidea* Bolton), a synonym of *Hypocreopsis lichenoides* (Tode) Seaver.

[= *Dozya* P. Karst. 1873, non *Dozya* Lacoste 1866].

Ascomata immersed in a well-developed, radiately spreading, indefinite, often lobate, pseudoparenchymatous stroma; stromal surface reddish brown to grey, generally smooth in young lobes, becoming rugose, with minute, black ostioles of perithecia evident, occasionally covered with conidiophores of the anamorph; stromal context soft, light-colored. Ascomata globose, white to pale yellow, KOH-, thin-walled. Asci cylindrical, 8-spored. Ascospores ellipsoid to fusiform, 1-septate, rarely 3-septate, hyaline, minutely to coarsely warted. Anamorph, where known, *Stromatocrea*. On decaying woody substrata, often on *Hymenochaete* spp. and other resupinate basidiomycetes.

NOTES.— The original citation of *Hypocreopsis* is in a list of corrections to Karsten's 1873 publication, in which the name *Dozya* P. Karst. is replaced by *Hypocreopsis*, because *Dozya* P. Karst. 1873 was a later homonym of *Dozya* Lacoste 1866; Karsten apparently realized this before the book was published. *Hypocreopsis* is typified by *H. riccioidea*, a species previously placed in *Hypocrea*. With changes in the International Code of Botanical Nomenclature that since 1981 allow priority for pre-Friesian names, the oldest epithet for this species is *H. lichenoides*, neither of the competing names being sanctioned by Fries. Niemelä & Nordin (1985) present a review of the entire genus.

**Hypocreopsis lichenoides** (Tode) Seaver, Mycologia 2: 82. 1910. — Plate 4, h-i (see page 25).

= *Acrospermum lichenoides* Tode, Fungi Mecklenb. sel. 1: 9. 1790.

= *Sphaeria riccioidea* Bolton, Fungi Halifax 4: 182. 1791.

= *Hypocrea riccioidea* (Bolton) Berk., Outl. Brit. Fungol. p. 383. 1860.

[= *Dozya riccioidea* (Bolton) P. Karst., Symb. Mycol. Fenn. 2: 221. 1873, gen. illeg., Art. 53.]

= *Hypocreopsis riccioidea* (Bolton) P. Karst., Symb. Mycol. Fenn. 2: 251. 1873.

= *Sphaeria parmelioides* Mont., Ann. Sci. Nat. Bot., Sér. 2, 6: 333. 1836.

= *Hypocrea parmelioides* (Mont.) Mont., Syll. Gen. Sp. Crypt. 210. 1856.

= *Hypocrea digitata* Ellis & Everh., J. Mycol. 1: 42. 1885.

Anamorph: *Stromatocrea cerebriformis* W.B. Cooke, Mycologia 44: 249. 1952.

Stromata developing as radiating ridges, up to 10 cm diam, 1–5 mm thick, divided in marginal areas into separate lobes, forming 2–4 mm wide finger-like projections; on small twigs, minute stromata of only a few separate lobes encircling the wood. Stromata brown, center greyish, margins paler, context pale tan, soft to corky. Surface smooth on young lobes, becoming rugose in central areas, covered by a palisade of fusiform conidiophores budding conidia from their apices, ascumatal ostioles visible as minute black dots. Stroma a uniform reticulum of intermixed hyphae forming a *textura intricata*, hyphae thin-walled, branched, 3–5  $\mu\text{m}$  wide, near the surface with vesicular, intercalary, swollen cells, 10–15  $\mu\text{m}$  diam. Ascomata globose, 180–250  $\mu\text{m}$  diam. Ascumatal wall pseudoparenchymatous. Asci cylindrical, 80–110  $\times$  7–11  $\mu\text{m}$ , 8-spored. Ascospores ellipsoid to short-fusiform, (16–)22–30  $\times$  (5–)6–9.5  $\mu\text{m}$ , 1-septate, hyaline, minutely warted.

ANAMORPH: Conidiophores developing on the surface of the stroma or associated directly with *Hymenochaete tabacina*. Conidia globose, (8–)9–11.5  $\mu\text{m}$  diam, with warted, yellowish, 0.5  $\mu\text{m}$  thick walls. Description modified from Niemelä & Nordin (1985).

HABITAT.— On dead wood of dicotyledonous trees and vines and herbaceous stems, often on *Hymenochaete* spp., usually above ground level.

DISTRIBUTION.— Canada (Labrador, Ontario, Quebec) (Cauchon & Ouellette, 1964; Niemelä & Nordin, 1985). Denmark (Strid, 1967). England, Finland (Niemelä & Nordin, 1985). France (Strid, 1967). Germany, Greenland (Læssøe, 1989). Luxembourg (Marsson, 1987). Norway (Eckblad & Torkelsen, 1974). Russia (Niemelä & Nordin, 1985). Spain (Candoussau, 1990). Sweden (Niemelä & Nordin, 1985; Strid, 1967). United States (Idaho – anamorph only, New Hampshire) (Cauchon & Ouellette, 1964).

TYPE.— The Tode specimen of *A. lichenoides* was destroyed; however, the illustration in Tode (1790) is an unequivocal iconotype. According to Dennis (1975), a portion of the type

KEY TO THE SPECIES OF *HYPOCREOPSIS*

1. Ascospores 22–30 × 7–9.5 μm, ellipsoid to short-fusiform, 1-septate, minutely warted; primarily from northern Europe including England, northern United States, and Canada ..... *H. lichenoides*
1. Ascospores 12–17 × 12–13.5 μm, globose with one to several spores cemented together, 1–3-septate, thick-walled, irregularly coarsely warted; southern Europe, but also England and southern United States ..... *H. rhododendri*

specimen of *S. riccioidea* at K is in poor condition and was not examined for this study.

SPECIMEN ILLUSTRATED.—FRANCE, Barèges (65), on *Betula*, 28 Aug 1989, J.-F. Magni A8907.

ILLUSTRATIONS.—Brandt (1992, Fig. 2); Candoussau (1990 Fig. 1D, 2A–B); Dennis (1975, Fig. 8B; 1978, Pl. 31A); Ellis & Ellis (1985, Fig. 1132); Ellis & Everhart (1892, Pl. 11, Figs. 1–3); Laessøe (1989); Marson (1987, Fig. 14–22); Müller & von Arx (1962, Fig. 255, as *H. riccioidea*); Niemelä & Nordin (1985, Figs. 1–3); Nordin (1969, Figs. 1–2); Strid (1967, Figs. 1–5).

NOTES.—Cauchon & Ouellette (1964) demonstrated that *Hypocreopsis lichenoides* is fungicolous on *Hymenochaete* spp. Cooke (1952) described a fungus that appears macroscopically identical to *H. lichenoides* as *Stromatocrea cerebriformis* W.B. Cooke, the presumed anamorph of *H. lichenoides*. Cooke's specimen of *S. cerebriformis* from the United States (Idaho) does not contain the teleomorph. Repeated attempts to germinate ascospores or conidia have failed (Candoussau, 1990; W. Gams, pers. comm.), although Candy & Webster (1988) were successful in obtaining cultures from stromatal explants. These cultures produced pigments similar to those of the stroma but failed to sporulate. Niemelä & Nordin (1985) presented a description and illustrations of *H. lichenoides*, and Brandt (1992) discussed the ecology of this species.

A second species of *Hypocreopsis*, *H. rhododendri* Thaxter, is macroscopically similar to *H. lichenoides* and also occurs on *Hymenochaete* spp. but can be differentiated by smaller, globose, warted ascospores (12–17 × 12–13.5 μm) as illustrated by Candoussau (1990) and Marson (1987). *Hypocreopsis rhododendri* was originally described from Tennessee and is reported from England (Dennis, 1975; Henderson & Watling, 1978), southern France (Candoussau, 1990), and the United States (Maryland *vide* Cauchon & Ouellette, 1964; North Carolina, Tennessee and West Virginia, Fayette Co., on *Kalmia latifolia*, alt. 670 m, 24 Aug 1893, L. W. Nuttall 567, BPI 631883). Candy & Webster (1988) and Candoussau (1990) provided good descriptions and illustrations of both *H. lichenoides* and *H. rhododendri*. An unidentified species of *Hypocreopsis* was reported from Australia (May & Eichler, 1993).

**HYPOMYCES** (Fr.) Tul., Ann. Sci. Nat. Bot., Sér. 4, 13: 11. 1860

(= *Hypocrea* subgenus *Hypomyces* Fr., Syst. Orb. Veg. p. 105. 1825).

Lectotype, designated by Seaver (1910a): *H. lactifluorum* (Schwein. : Fr.) Tul. (= *Sphaeria lactifluorum* Schwein. : Fr.). — Plate 4, j (page 25); Plate 18, a–d.

= *Bonordenia* Schulzer, Verh. K. Zool. Bot. Ges. Wien 16: 58. 1866. — Type: *B. aurantia* (Pers. : Fr.) Schulzer, recognized as *Hypomyces aurantius* (Pers. : Fr.) Tul. & C. Tul.

= *Peckiella* (Sacc.) Sacc., Syll. Fung. 9: 944. 1891 (= *Hypomyces* subgenus *Peckiella* Sacc., Syll. Fung. 2: 472. 1883). — Lectotype, designated by Seaver (1910a): *P. viridis* (Alb. & Schwein. : Fr.) Sacc. (= *Sphaeria viridis* Alb. & Schwein. : Fr. = *Hypomyces viridis* (Alb. & Schwein. : Fr.) P. Karst.), a synonym of *Hypomyces luteovirens* (Fr. : Fr.) Tul., as discussed by Rogerson & Samuels (1994).

= *Clintoniella* (Sacc.) Rehm, Hedwigia 39: 223. 1900 (= *Hypocrea* subgenus *Clintoniella* Sacc., Syll. Fung. 2: 532. 1883). — Lectotype, designated by Clements & Shear (1931): *C. apiculata* (Cooke & Peck) Sacc. (= *Hypocrea apiculata* Cooke & Peck = *Hypomyces apiculatus* (Cooke & Peck) Seaver), a synonym of *Hypomyces armeniacus* Tul., according to Rogerson & Samuels (1994).

= *Apiocrea* Syd. & P. Syd., Ann. Mycol. 18: 186. 1920 [1921]. — Type: *A. chrysosperma* (Tul. & C. Tul.) Syd. & P. Syd., recognized as *Hypomyces chrysospermus* Tul. & C. Tul.

= *Chiajaea* Höhn., Sitzungsber. Kaiserl. Akad. Wiss., Math.-Naturwiss. Kl., Abt. 1. 129: 151. 1920. — Lectotype, designated by Clements & Shear (1931): *C. rhodomela* (Fr.) Höhn. (= *Sphaeria rhodomela* Fr.), a synonym of *Hypomyces rosellus* (Alb. & Schwein. : Fr.) Tul.

Subiculum of loosely intertwined or compacted hyphae, sometimes forming thin, separable sheets upon which ascumata are seated, or a firm stroma-like tissue within which ascumata are completely immersed, light- to bright-colored, reacting or not to KOH. Ascumata solitary to densely gregarious or caespitose, superficial on or immersed in the subiculum to a greater or lesser extent, pyriform, papillate, ascumatal wall smooth, thin, generally less than 25 μm, nearly hyaline or in shades of yellow, orange, tan or green, part or all of each ascumata becoming red or purple in KOH or not reacting to KOH. Asci cylindrical, apex thickened to a greater or lesser extent, with a pore, 8-spored. Ascospores ellipsoid, lanceolate with rounded ends, or fusiform with a blunt or acute apiculus at each end, apiculus obscure to conspicuous, non- or 1-septate with