

STUDIES IN ENTOLOMA—7
Entoloma sect. Phlebophora, sect. nov.

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A new section is created in *Entoloma* subgenus *Inocephalus* Noordel., viz. sect. *Phlebophora*, characterised by a rimose pileal surface and a pileipellis reminding that of *Pluteus* sect. *Hispidoderma*. One new species is described, viz. *Entoloma kitsii* from the Netherlands; type-studies are given of *E. lagenicystis* Hesl. and *E. rimosum* Hesl., and a key is given to all species known in sect. *Phlebophora*. The new combination *Entoloma pluteicutis* (Romagn. & Gilles) Noordel. is made.

At the time I gave a synopsis of the infrageneric taxonomy of *Entoloma* (Noordeloos, 1981) no representative of subgenus *Inocephalus* was known from Europe. The subgenus seemed to be restricted to (sub-)tropical areas mainly of the southern hemisphere (Romagnesi, 1941; Romagnesi & Gilles, 1979; Horak, 1973, 1980) where they are rather well represented. By courtesy of Dr. E. Kits van Waveren, Amsterdam, I was enabled to study a most interesting European new species from his personal herbarium, which belongs to subgenus *Inocephalus*. In addition, type-studies of the North-American *Entoloma lagenicystis* Hesl. and *E. rimosum* Hesl., revealed that these species have much in common with the species collected by Dr. Kits van Waveren, and also have to be placed in subgenus *Inocephalus*. Within the subgenus these species are unique in the structure of the pileipellis and therefore a new section is proposed:

Entoloma sect. Phlebophora Noordel., sect. nov.

Statura pluteoidea; pileus radialiter venosus vel venosulus, interdum in centro squamulosus; pileipellis trichoderma elementis fusoides; pigmentis intracellulosis interdum in additione leviter incrustantibus; cheilocystidia abundantia, magna, subcylindracea vel lageniformia; fibulae presentes. — Holotypus: *Entoloma kitsii* Noordel.

Habit pluteoid; pileus minutely, radially veined like in some species of *Pluteus* (*P. phlebophorus*), sometimes also minutely squamulose at centre; pileipellis a trichoderm of broadly fusoid cells; lamellar edge fimbriate, entirely sterile; cheilocystidia subcylindrical to lageniform; pigment intracellular in pileipellis, sometimes in addition minutely encrusting; clamp-connections present. — Holotype: *Entoloma kitsii* Noordel.

Section *Phlebophora* comes close to sect. *Inocephali* and sect. *Calliderma*¹ from which it differs in the structure of the pileipellis and the surface of the pileus. So far 4 species are known.

KEY TO THE SPECIES OF ENTOLOMA SECT. PHLEBOPHORA

1. Stipe dark red-brown; pileipellis with intracellular and encrusting pigment; spores (8.7–)9.3–11 × 5.8–7 μm, Q = 1.25–1.55–1.9, ellipsoid 5–8-angled in outline; cheilocystidia cylindrico-flexuose, 37–127 × 4.7–8.1(–9.3) μm, subcapitate; smell and taste farinaceous; Europe . . . 1. *E. kitsii*
1. Stipe white, dingy or pale brown with violaceous tinge; pigment intracellular; spores shorter, average Q per collection 1.5, more or less pentagonal; smell none 2
2. Stipe brown with violaceous tinge; spores 8.5–10 × 7–7.5 μm; cheilocystidia cylindrical to utriform, 30–75 × (4–)6–14 μm; Africa 2. *E. pluteicutis*
2. Stipe white, pale grey to dingy; cheilocystidia ventricose-lageniform, 7.5–20 μm wide 3
3. Spores 8.7–10(–10.4) × 7.1–8.7(–9.1) μm, Q = 1.0–1.2–1.4, subisodiametrical 4–6-angled in side-view; cheilocystidia lageniform; U.S.A. 3. *E. lagenicystis*
3. Spores 8.7–11 × 6–7 μm, Q = 1.3–1.45–1.6, 5–7-angled in outline, ellipsoid; cheilocystidia ventricose-sublageniform; U.S.A. 4. *E. rimosum*

Entoloma kitsii Noordel., *spec. nov.* — Fig. 1

Pileus planoconvexus, papillatus, margine undulatus, fuscus, centro atrofusco, haud hygrophanus, radialiter venosulus; lamellae liberae vel leviter adnatae, sordido-rosae; sporae (8.7–)9.3–11 × 5.8–7 μm, Q = 1.25–1.55–1.9; pileipellis trichoderma; pigmentis duobus: pileipellis pileitramaque incrustantibus pariter in pileipelle intracellulosus; cheilocystidia magna, subcapitata, cylindraceo-flexuosa, 37–127 × 4.7–8.1(–9.3) μm; fibulae presentes. — Holotypus: E. Kits van Waveren, 21–X–1980, 'Leyduin, prov. Noord-Holland, Netherlands' (L.).

Etymology: Named in honour of the eminent mycologist Dr. E. Kits van Waveren.

Pileus 47 mm broad, plano-convex with strongly undulating margin and small papilla, dark bronze brown (7.5 YR 4/2), paler at margin (7.5 YR 4/4), almost black at centre (papilla), shortly translucently striate at margin, minutely tomentose at centre, minutely radially veined from margin to centre. Lamellae free or narrowly adnate, ventricose, pale brown with pink tinge then sordid pink-brown (7.5 YR 7/4–6/4) with concolorous, fimbriate edge. Stipe 50 × 3.5 mm, reddish brown (5 YR 3/1 at base, upwards 5 YR 4/2 with grey tinge), at apex minutely striatulate-grooved and very finely white pruinose, fistulose. Flesh concolorous. Smell weakly farinaceous. Taste strongly farinaceous.

Spores (8.7–)9.3–11.0 × 5.8–7.0 μm, Q = 1.25–1.55–1.9, ellipsoid 5–8-angled in side-view with dihedral base. Basidia 25–42 × 9–15 μm, 4-spored, clamped. Cheilocystidia 37–127 × 4.7–8.1(–9.3) μm, irregularly cylindrical-flexuose, sometimes subcapitate. Hymenophoral trama regular, made up of fusiform-cylindrical, up to 500 μm long and (4.5–)7–3.5 μm wide elements. Pileipellis a trichoderm of fusoid to clavate cells, 50–120 × 10–25 μm with brown intracellular pigment and sometimes in addition brown encrusted walls. Pileitrama regular, made up of long cylindrical elements with (coarsely) encrusted walls. Clamp-connections abundant in hymenium.

Habitat. — On humus-rich sandy soil in mixed forest of *Quercus* and *Pinus* on old coastal dune.

¹ *Entoloma* sect. *Calliderma* (Romagn.) Noordel., *comb. nov.* — basionym: *Rhodophyllus* sect. *Calliderma* Romagn. in Bull. mens. Soc. linn. Lyon 43: 329. 1974.

Collection examined.—Netherlands, prov. Noord-Holland, Leyduin, 21 Oct. 1980, *E. Kits van Waveren* (holotype, L.).

Entoloma kitsii is a very remarkable species with its dark pileus with an almost pluteus-like surface and with its enormous cheilocystidia. *Entoloma lagenicystis* Hesl., and *E. rimosum* Hesl. are closely related but differ in having a pale stipe, smaller and/or slightly more isodiametrical spores, smaller and broader cheilocystidia and in the lack of encrusting pigments.

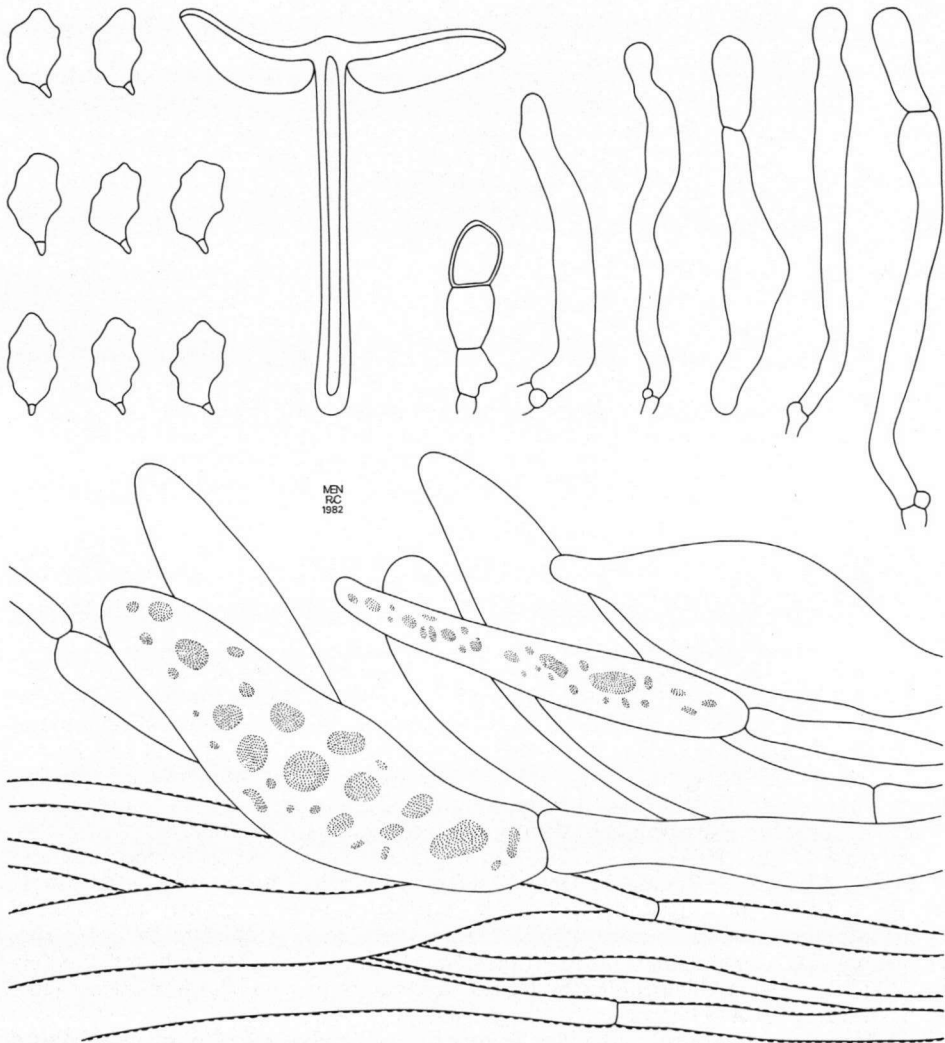


Fig. 1. *Entoloma kitsii*. — Habit ($\times 1$), spores ($\times 1000$), cheilocystidia ($\times 670$), and pileipellis ($\times 670$) (all figs from holotype).

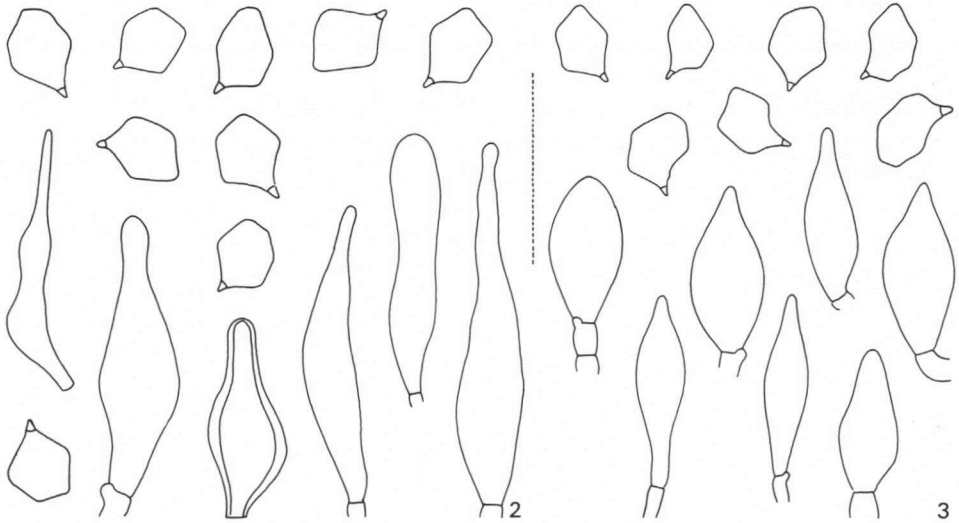


Fig. 2. *Entoloma rimosum*.—Spores ($\times 1000$) and cheilocystidia ($\times 670$) (all figs. from holotype).

Fig. 3. *Entoloma lagenicystis*.—Spores ($\times 1000$) and cheilocystidia ($\times 670$) (all figs. from holotype).

Entoloma lagenicystis Hesl.—Fig. 2

Entoloma lagenicystis Hesl. in Beih. Nova Hedwigia 23: 133. 1967.

'Pileus (20–)30–60(–90) mm broad, conico to conico-campanulate or convex-campanulate; umbonate or papillate-umbonate, more or less expanding, first fuscous or dark-ker, the disk black, then light brownish-olive (snuff-brown, Prouts' brown or Dresden brown), silky fibrillose, the recurving ends forming minute scales, more or less rimose, margin striatulate. Context white or pallid; odor mild; taste mild or slightly adstringent. Lamellae crowded, white then 'light pinkish cinnamon', medium close, broad, edges fimbriate. Stipe 40–80(–100) \times (2–)3–6(–8) mm, whitish or greyish and pruinose above, dingy and glabrous below, equal or slightly enlarged below, striate, hollow.'

Spores 8.7–10(–10.4) \times 7.1–8.7(–9.3) μm , $Q = 1.0$ –1.2–1.4, isodiametrically sub-cuboid to pentagonal. Basidia 22–36 \times 8–14 μm , 4-spored with clamp. Cheilocystidia 40–75 \times 7.5–20 μm , slenderly to broadly lageniform, thin- or slightly thick-walled, abundant; lamellar edge entirely sterile. Pleurocystidia sparse, similar to cheilocystidia. Hymenophoral trama regular, made up of long cylindrical elements, up to 400 μm long and 11–32 μm wide. Pileipellis trichodermal, made up of fusoid cells up to 26 μm wide. Pigment intracellular. Clamp-connections present.

Collection examined.—U.S.A., Tennessee, Great Smokey Mountains National Park, near Tremont, 1 Aug. 1963, *L. R. Hesler 25742* (holotype, TENN).

Entoloma rimosum Hesl.—Fig. 3

Entoloma rimosum Hesl. in Beih. Nova Hedwigia 23: 149. 1967.

'Pileus 30–60 mm broad, convex-umbilicate, expanded, rimose and splitting radially, pale greyish olive, umbilicus black, fibrillose, striatulate when wet, even when dry. Context brittle, thin, whitish, odor and taste slight, not distinctive. Lamellae short-decurrent, close, broad, white then pale flesh, edges concolorous, rough to denticulate. Stipe 40–60 × 3–6 mm, pallid or dingy, apex mealy, equal, hollow.'

Spores 8.7–11 × 6–7 μm, Q = 1.3–1.45–1.6, 5–6(–7)-angled in sideview with dihedral base. Basidia 27–48 × 10–14 μm, 4-spored, with clamp? (see below). Cheilocystidia 28–45 × 9–18 μm, broadly ventricose lageniform, numerous, edge sterile. Pleurocystidia none. Hymenophoral trama regular, made up of cylindrical elements, 55–170 × 6–10 μm. Pileipellis a trichoderm of very long and broad, strongly inflated cells, 60–220 × 10–32 μm, subpellis not differentiated. Pigment intracellular in pileipellis and upper pileitrama. Vascular hyphae numerous in pileitrama. Clamps not seen with certainty (but the base of the basidia shows a distinct knock, probably caused by outgrown clamps).

Collection studied.—U.S.A., North Carolina, Indian Creek near Bryson City, 9 Aug. 1952, L.R. Hesler 20456 (holotype, TENN).

Entoloma pluteicutis (Romagn. & Gilles) Noordel., *comb. nov.*

Basionym: *Rhodophyllus pluteicutis* Romagn. & Gilles in Beih. Nova Hedwigia 59: 465. 1979.

For a description and illustrations of *E. pluteicutis* is referred to the original publication of Romagnesi & Gilles (1979).

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