

Entoloma (Fr.) P. Kumm.

MACHIEL NOORDELOOS

Frb with central, rarely eccentric or lateral stem, crepidotoid, omphalinoid, collybioid, mycenoid or tricholomatoid. Cap conical, bell-shaped, hemispherical, convex, plane, with umbonate or depressed to funnel-shaped centre, glabrous, pruinose, fibrillose, tomentose, finely to distinctly scaly, smooth, rugulose or veined, hygrophanous or not, translucently striate or not, white, cream, ochre, yellow, brown, grey, red, green, blue, violaceous or pink. Gills free, narrowly adnexed, adnate, emarginate or decurrent, distant to crowded, usually medium spaced, white, yellow, grey, brown, blue or violaceous, usually with a pink tinge when mature, edge even or uneven to strongly fimbriate, with same colour as sides or with contrasting colour due to the presence of pigmented cystidia. Stem usually well-developed, glabrous and polished, or covered with longitudinal fibrils, tomentose or with scattered to crowded scales, white, cream, ochre, yellow, brown, grey, red, green, blue, violaceous or pink, at base usually with a tomentum, sometimes with strigose hairs. Smell none or distinct, farinaceous, rancid, like cucumber, fish, garlic or rotten cabbage, or aromatic, in some species reminiscent of the smell of *Hebeloma sacchariolens*. Taste mild or farinaceous-rancid, often unpleasant, rarely bitter. Sp deposit pink with a brownish shade.

Sp 5-22 µm long, angled, usually thick-walled with pronounced angles, more rarely thin-walled and weakly angled or nodulose-angled, iso- to heterodiametrical. Basidia mostly 4-spored, rarely exclusively 2-spored. Cheilocystidia present or absent, cylindrical to clavate, lageniform, fusiform, lecythiform or tibiiform. Pleurocystidia usually absent, rarely present, fusiform to lageniform. Hymenophoral trama regular to subregular. Pileipellis a cutis of narrow cylindrical hyphae, sometimes bi-layered with distinct subpellis, or a trichoderm of inflated elements, or a hymeniderm of clavate to rounded elements; pigment intracellular, homogenous or in granules, or incrusting the outer walls of the hyphae, or a combination of pigment types. Clamps present or absent.

Saprotrophic or ectomycorrhizal, rarely parasitic, in a wide range of habitats from lowland into the alpine and arctic zone.

210 species in the Nordic countries, 232 species in the key.

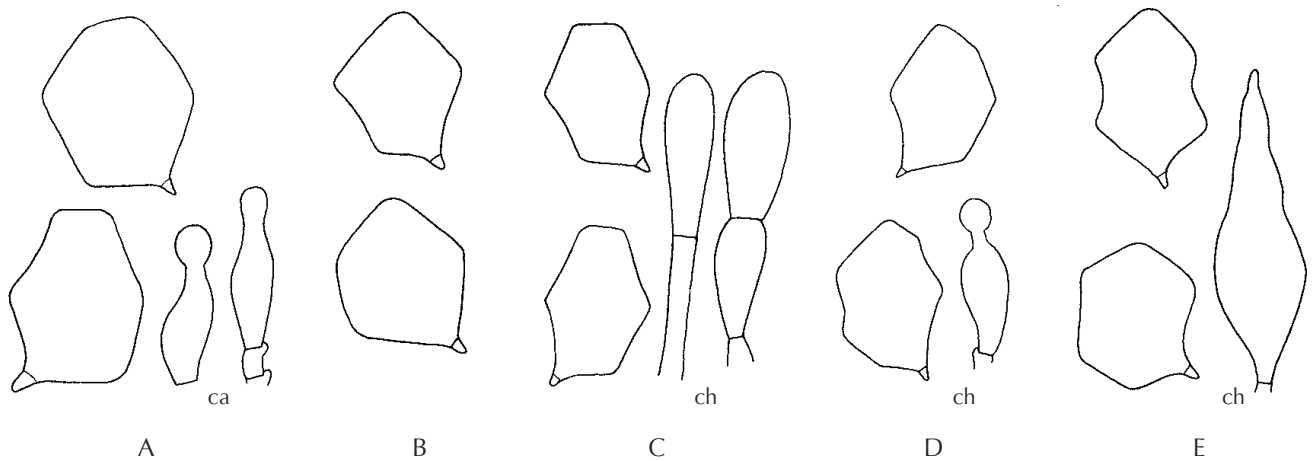
Lit.: Gröger 2006, Ludwig 2007, Noordeloos, 1992, 2004, Vesterholt & Brandt-Pedersen 1990, Vesterholt 2002.

1. Frb crepidotoid, with reduced, eccentric or lateral stem, or stem entirely lacking Key A p. 434
 - Frb omphalinoid, collybioid, mycenoid or tricholomatoid, with well developed, usually central stem 2
2. Gill edge distinctly coloured Key B p. 435
 - Gill edge concolorous with sides 3
3. Cap with blue or violaceous tinge Key C p. 441
 - Cap without blue or violaceous tinge 4
4. Stem with blue or violaceous tinge Key D p. 447
 - Stem without blue or violaceous tinges 5
5. Cap pink or with a pink tinge Key E p. 453
 - Cap without a pink tinge 6
6. Cap convex to flattened, slightly to distinctly depressed at centre; frb collybioid, clitocyboid or omphalinoid with adnate to decurrent gills 7
 - Cap conical to convex, with or without an umbo; frb mycenoid or tricholomatoid with free, adnexed to adnate-emarginate gills 9
7. Cap glabrous, often hygrophanous Key F p. 454
 - Cap fibrillose, tomentose or finely scaly, hygrophanous or not 8

- 8. Pigment parietal-incrusting Key G p. 459
 - Pigment intracellular or lacking Key H p. 461
- 9. Sp cuboid or cruciform (figs 467A-B) Key I p. 466
 - Sp not cuboid or cruciform 10
- 10. Cap glabrous, often distinctly hygrophanous 11
 - Cap fibrillose, tomentose, finely scaly or venose, at least at centre, often not
 or indistinctly hygrophanous 13
- 11. Habit tricholomatoid with convex to plane cap with or without an umbo; gills
 adnate-emarginate to adnate, sometimes with a decurrent tooth; stem fibrous Key J p. 467
 - Habit mycenoid with conical to convex cap, usually with an umbo, gills adnexed,
 free or rarely adnate with a decurrent tooth; stem slender, often rigid 12
- 12. Cheilocystidia absent Key K p. 476
 - Cheilocystidia present Key L p. 483
- 13. Frb mycenoid with a thin, slender stem; cap strongly radially fibrillose to minutely
 scaly, often with micaceous sheen, reminiscent of a small *Inocybe*; gills dark grey to
 chocolate brown; stem with long hairs; pigment incrusting, rarely with additional
 intracellular pigment; basidia often with dark pigment (necropigment) Key M p. 486
 - Frb mycenoid or tricholomatoid; cap pruinose, rimulose, rugulose, venose, fibrillose,
 finely scaly or tomentose; gills white or with brown or grey tinge, not dark grey
 brown to chocolate brown; stem glabrous or pruinose, without long hairs; pigment
 intracellular, rarely incrusting; basidia without dark pigment 14
- 14. Cheilocystidia distinctly capitate, at least a considerable number per gill edge Key N p. 488
 - Cheilocystidia, if present, not capitate Key O p. 489

Key A: Frb crepidotoid with reduced, eccentric or lateral stem, or stem lacking

- 1. Pileo- and caulocystidia capitate (fig. 435A); sp 9.5-13(-15) x 7.5-10(-11.5) μm , 5-6-angled in
 side-view, subisodiametrical to heterodiametrical. Cap 1-15 mm, hemispherical to convex,
 expanding with age, white; gills narrowly adnate to almost free, distant, pink; stem well de-
 veloped in young frb only, soon lateral and reduced to almost lacking. Clamps present. On
 rotten wood of deciduous trees; late summer to autumn; very rare or overlooked in temp.-
 hemib.; DK (DD), FI (U: Helsinki). – FE 5A:1358, FM 9:49, Lud 94.4, Svp 57:35, Win 93:59, ☉.
E. jahni Wölfel & Winterh.
 - Frb without capitate pileo- and caulocystidia; sp different 2
- 2. Frb purely white 3
 - Frb pigmented 4
- 3. On debris of grasses and sedges in marshy places; stem in young stages central,
 then eccentric, 2-6 x 0.2-1 mm; gills distant, often anastomosing or forked
see *E. albotomentosum* key H 2
 - Parasitic on mushrooms, also found on dead wood; stem lateral or absent, at most 5 x 1 mm;
 gills distant, well-developed. Cap 3-9 mm, convex to plane, appressed fibrillose. Sp 9.5-12.5
 x 8-11 μm , 5-6-angled in side-view (fig. 435B); clamps present. Summer to autumn; very rare
 in temp.; SE (LC, Sk: Osby). – FE 5A:1356, Lud 94.7.
E. parasiticum (Quél.) Kreisel
- 4. Clamps present; cheilocystidia absent. Cap 5-35(-60) mm, low convex, often irregularly
 shaped with undulating margin, pale grey to grey brown, densely covered with silvery
 fibrils; gills crowded, L = 10-25, greyish to brownish pink; stem 1-15 x 0.5-3 mm, eccentric to
 lateral, reduced, densely silvery fibrillose, grey to grey brown; smell and taste farinaceous.



Spores, caulocystidia and cheilocystidia: A: *Entoloma jahnii*, B: *E. parasiticum*, C: *E. serrulatum*, D: *E. fuscomarginatum*, E: *E. indutoides* var. *griseorubidum*.

Sp 9.5-12 x 6.5-8 μ m, heterodiametrical, irregularly many-angled. Terricolous or on dead plant remains; autumn; occasional in hemib.-middle bore., rare in temp.; DK (NT), FI (DD, V: Nauvo), NO (NE), SE (LC). – B&K 4:13, FAD 80C, FE 5:71B, FE 5A:1355, R&H 386, ☉.

E. byssisedum (Pers.: Fr.) Donk

- Clamps absent; cheilocystidia present or absent 5
- 5. Parasitic on *Cantharellus* or *Craterellus*. Cap 2-10 mm, plane, subtomentose, pale brown; gills adnate, distant; pale pink; stem 1-4 x 1 mm, eccentric or lateral, finely tomentose, pale brown; smell none. Sp 7.5-10 x 6-7.5 μ m. Summer to autumn; rare in temp.-bore.; FI (VU, V and ES), SE (NE). – FE 5A:323, Jordst 22(3), Lud 94.6.


E. pseudoparasiticum Noordel.

- On rotten wood. Cap 6-20 mm, convex to plane, grey, strongly aeriferous-fibrillose; gills adnate, crowded, pinkish brown; stem strongly reduced, usually absent. Sp 8.5-11 x 7-7.5 μ m; cheilocystidia 30-70 x 3-10 μ m, cylindrical-flexuose. Autumn; rare in temp.-suba.; DK (EN), FI (DD), NO (NE), SE (NE, Sk). – ☉.

E. depluens (Batsch: Fr.) Hesler

Key B: Gill edge coloured

- 1. Cap with blue or violaceous tinges 2
- Cap yellowish, brown, grey brown or pink 7
- 2. Cap and stem soon getting an olivaceous tinge. Cap 10-50 mm, conical-convex or hemispherical, expanding to convex, umbilicate, tomentose to finely scaly, not translucently striate or at margin only, dark brown with an olivaceous tinge; gills adnate-emarginate, with a decurrent tooth, medium spaced, sordid white to grey pink with blue-black, serrulate edge; stem 20-70 x 2-6 mm, blue grey, then olivaceous blue or glaucous, polished; smell and taste indistinct. Sp 8.5-10.5(-11) x 6-8(-9) μ m, 5-7-angled in side-view; clamps absent. Solitary or in small groups in moss and grass, also in humus in mixed forests on moist soil, preferably on base-rich soil; autumn; rare in hemib.-bore.; NO (LC), SE (NA). – Däh 423, FE 5A:1288, GBW 4:168, Lud 94.93.
- E. querquedula* (Romagn.) Noordel.
- Cap and stem without olivaceous tinges 3
- 3. Cap and stem blue; stem polished 4
- Cap and stem blue or violaceous; stem covered with fibrils 5

4. Gills edge blue-black, fimbriate. Cap 5-40 mm hemispherical or conical-convex expanding to low convex, depressed to umbilicate, tomentose, then finely scaly, not translucently striate, dark blackish blue, blue grey or violaceous blue; gills adnate to decurrent, medium spaced to crowded, white or with a blue tinge, then pinkish grey; stem 15-60 x 1-4 mm, dark blue or violaceous blue, polished or with a blue fibrillose covering; smell faint or distinctly aromatic; taste mild to rancid. Sp 9-12 x 6.5-8 μm , 5-7-angled in side-view (fig. 435C); basidia 4-spored; cheilocystidia 25-110 x 3-20 μm , cylindrical to clavate with blue intracellular pigment; clamps absent. In groups in pastures, meadows, natural grassy vegetations, heathland, in humus of deciduous forests, on acid to neutral or base-rich soil; summer to autumn; common in temp.-arc. / alp.; DK (LC), FI (LC), FO, IS, NO (LC), SE (LC). – FAD 77G, G1, FE 5:52a, FE 5A:1286, FND 21:34,35, R&H 382, .

E. serrulatum (Fr.: Fr.) Hesler


- Gills edge brown, entire. Cap 10-50 mm, convex, umbilicate, tomentose to minutely scaly, not hygrophanous, not translucently striate; gills adnate-emarginate or with a decurrent tooth, medium spaced, blue, then blue pink; stem 20-50 x 2-4 mm, blue, polished; smell and taste indistinct. Sp 8.5-12.5 x 6-8.5 μm , heterodiametrical, 5-9-angled in side-view; cheilocystidia 35-75 x 5-25 μm , cylindrical to clavate; pileipellis a cutis to a trichoderm of inflated elements, 6-22 μm wide with intracellular pigment; clamps absent. In groups in grassland, along roads, and in damp, rich coniferous forests among grasses; summer to autumn; occasional in temp.-suba.; DK (NT), FI (LC), FO, NO (LC), SE (LC). – FE 5:53ab, FE 5A:1294-1295, FND 21:10,11, Ves 255.

E. chalybaeum (Fr.: Fr.) Noordel. var. *chalybaeum*


var. *lazulinum* (Fr.) Noordel. differs in having a translucently striate cap. Occasional in temp.-bore.; DK, FI (DD), FO, NO, SE. – Däh 424, FE 5A:1295.

5. Gill edge blue-violaceous, serrulate. Cap 13-30 mm, convex, then flattened, umbilicate, minutely scaly, not translucently striate, blackish brown with a violaceous tinge; gills medium spaced, yellowish blue, then sordid pink; stem 20-45 x 2-5 mm, strongly fibrillose-striate, brown with a violaceous tinge; smell and taste indistinct. Sp 8.5-11 x 6-7.5 μm , 5-6-angled in side-view; gill edge sterile, of the *serrulatum*-type with blue pigmented cheilocystidia, 20-50 x 2.5-7 μm ; clamps absent. Found in a pasture near a mixed forest; late summer; found in a pasture near a mixed forest; late summer; very rare hemib.; FI (V). – FE 5A:1293.

E. violaceoserrulatum Noordel.

- Gill edge brown 6
6. On deciduous wood, mainly on *Alnus*, less often *Corylus*. Cap 5-40(-50) mm, conical or hemispherical, then convex, depressed or umbilicate, minutely scaly, not translucently striate, violet blue, then brown with a violaceous tinge; gills adnate to adnexed, medium spaced, violaceous, then violaceous pink; stem 20-70 x 1-6 mm, fibrillose striate, pale to dark violaceous blue; smell aromatic; taste soapy-nasty. Sp (8-)9-11.5 x 6-8 μm , 5-7-angled in side-view; cheilocystidia 20-60 x 5-15 μm , cylindrical, clavate or lageniform with brown-violaceous intracellular pigment; clamps abundant. Single or in small groups on living and dead wood in moist forests; summer to autumn; rare, but locally occasional in temp.-bore.; DK (NT), FI (VU), NO (NT), SE (LC). – FAD 76A, FE 5:46e, FE 5A:1275, Phil 162b, Ves 254, .

E. euchroum (Pers. Fr.) Donk

- On soil in grassland, rarely in deciduous forests. Gill edge brown. In other characters like the main variety. In groups, preferably on calcareous soil; summer to autumn; rare in temp.-suba.; DK, FI (VU), NO, SE. – FAD 80H, FE 5:56a,87h, FE 5A:1299, GBW 4:164, Svp 21:24, .

E. mougeotii (Fr.) Hesler var. *fuscomarginatum* Noordel.

7. Stem blue, violaceous or steel grey when young and fresh 8
- Stem white, pink, pale cream, yellow or brown 15

8. Gill edge of the serrulatum-type, with blue-black or reddish-lilaceous pigment 9
- Gill edge smooth, not of the serrulatum-type, with brown pigment 11
9. Cap pink to pinkish red. Cap 5-45 mm, conical or hemispherical expanding to convex, depressed to umbilicate, fibrillose or tomentose, then finely scaly, not translucently striate, often with a blue tinge near margin; gills adnate-emarginate, medium spaced, white, then pink, sometimes with slight grey tinge, with fimbriate or flocculose, concolorous or blackish blue edge; stem 20-60 x 1-5 mm, glabrous or with scattered bluish fibrils, pink, lower half grey blue or bright blue; smell weak or sweetish; taste mild. Sp 9-10.5(-11) x 6.5-8 μ m, 6-9-angled in side-view; cheilocystidia 25-75(-100) x 7-20 μ m, cylindrical or fusiform, with or without blue intracellular pigment; clamps absent. In alpine and arctic habitats, often with dwarf shrubs, also found in alvar vegetation at sea level and in *Picea* forests on calcareous ground in bore.; summer to autumn; very rare in temp.-arc./alp.; DK (NA, EJyl: Høstemark). FI (DD, Ks: Kuusamo), NO (DD), SE (NT). – BCat 314, FE 5:58b, FE 5A:1310-1311, FND 21:9, RdM 43:213.
E. catalaunicum (Singer) Noordel.
- Cap flesh-coloured or brown 10
10. Cap pale flesh-coloured to beige. Cap 10-25 mm convex, deeply umbilicate, glabrous or minutely radially fibrillose, with a granulose to minutely scaly centre, deeply translucently striate; gills adnate-decurrent, medium spaced, white, then sordid pink, with blue-black, serrulate edge; stem 20-50 x 1-2 mm, glabrous, polished, pale grey-yellow with faint blue tinge; smell and taste indistinct. Sp 9-11.5(-12.5) x 6-8.5 μ m, 5-7-angled in side-view; gills edge of the serrulatum-type; cheilocystidia 30-60 x 5-20 μ m, cylindrical to clavate with abundant blue, intracellular pigment; clamps absent. In poorly manured grasslands and hay-fields; summer to autumn; very rare in temp.-suba.; DK (NE), FI (DD, PS: Kuopio), NO (NE), SE (DD). – FE 5:52b, FE 5A:1289 (too red).
E. carneogriseum (Berk. & Broome) Noordel.
- Cap brown, yellow brown or red brown. Cap 5-40 mm, hemispherical or conical-convex, then convex or low convex, with depressed to umbilicate centre, fibrillose with a granulose or \pm finely scaly centre, deeply translucently striate; gills adnate-emarginate, medium spaced, white, then grey pink, with blue-black, serrulate edge; stem 20-50 x 1-5 mm, glabrous or with scattered fibrils, grey brown or yellow brown with distinct blue tinge when fresh; smell and taste indistinct. Sp 8.5-11.5(-12.5) x 6.5-7(-8) μ m, 5-7-angled in side-view; gill edge sterile of the serrulatum-type; cheilocystidia 20-120 x 7-20 μ m, cylindrical to clavate with blue, intracellular pigment; pileipellis a cutis to a trichoderm of inflated, 10-45 μ m wide elements with blue intracellular pigment; clamps absent. In groups in grassland and meadows, often on acid, peaty soil, or in *Sphagnum* bogs, also in xerophytic grasslands on calcareous soil; summer to autumn; occasional, but locally common in hemib.-suba., rare in temp.; DK (EN), FI (LC), FO, IS (Au, Na), NO (LC), SE (LC). – B&K 4:14, FE 5:52c, FE 5A:1287-1288, FND21 8, GBW 4:154, ☉.
E. caesiocinctum (Kühner) Noordel.
11. Stem intensely blue with a fine blue flocculose covering. Cap (5-)10-20 mm, convex, then plane with depressed to umbilicate centre, tomentose to finely scaly, not translucently striate, dark grey brown to almost black; gills adnate-emarginate, medium spaced, sordid white, then pinkish brown, with entire, concolorous or brown edge; stem 20-45 x 1-4 mm; smell and taste indistinct. Sp 9-13.5 x 6.5-9 μ m, 5-7-angled in side-view; gill edge sterile; cheilocystidia 20-50 x 5-15 μ m, cylindrical to narrowly clavate, with brown, intracellular pigment; pileipellis a trichoderm of inflated elements, 20-70 x 10-30 μ m, with intracellular pigment; clamps absent. In seminatural grassland and open grassy places in boreal or sub-alpine moist *Betula* or *Alnus* forests; summer to autumn; very rare in temp.-suba.; DK (NA, EJyl: Bygholm Å), NO (vU). – Bol Bres 39:28, BSMF 115:174, FE 5A:1317, Lud 94.114.
E. coeruleoflocculosum Noordel.

- Stem polished 12
- 12. Cap pale brown, yellowish brown or reddish brown, deeply translucently striate 13
- Cap dark brown, sepia or blackish brown, not translucently striate 14
- 13. Cap pale glaucous grey to sordid yellow brown with a darker central spot; stem pale blue or with glaucous green tinges; cheilocystidia 20-100(-120) x 5-20 μm , septate. Cap 5-20 mm, conical, expanding to low convex, often with a small papilla, innately fibrillose with minutely scaly centre, translucently striate; gills adnate-decurrent, medium spaced, white, then pink with a brown edge; stem 20-60 x 1-3 mm, polished; smell and taste indistinct. Sp 9-12(-12.5) x 6-8(-9) μm , 5-7-angled in side-view; gill edge sterile; cheilocystidia often with brown intracellular pigment; pileipellis a cutis or a trichoderm of inflated hyphae, 10-25 μm wide, with intracellular pigment; clamps absent. In groups in mossy grassland and pastures; summer to autumn; locally common in hemib.-suba., occasional in temp.; DK (NT), FI (DD), FO, NO (LC), SE (LC). – Däh 417, FE 5:66b, FE 5A:1329, FND 21:16, GBW 4:230, ☉.
E. exile (Fr.: Fr.) Hesler (*E. pyrospilum* (P.D. Orton) M.M. Moser)
- Cap pale to moderately dark reddish brown with darker centre; stem pale blue to steel grey, soon turning brown; cheilocystidia 35-80 x 4-12 μm , not septate. Cap 10-25 mm, hemispherical to convex, depressed, innately fibrillose with a very minutely scaly centre, deeply translucently striate; gills ascending-adnate, medium spaced, pale to dark brown pink with brown edge; stem 20-40 x 1-2.5 mm, becoming brown, polished; smell and taste indistinct. Sp (10-)-11-13 x (6-)-7-8 μm , (5-)-6-9-angled in side-view; gill edge sterile; cheilocystidia with brown, intracellular pigment; pileipellis a cutis to a trichoderm of cylindrical to inflated elements, 10-20 μm broad, with intracellular pigment; clamps absent. In peat-bogs and mesotrophic, scrubby lake shore bogs; late summer; in bore., poorly known; FI (DD, EH, Ks). – FE 5A:1333.
E. caliginosum (Romagn. & J. Favre) Bon & Courtec.
- 14. Sp 9-11.5(-14) x 6-9 μm , Q = 1.2-1.9, heterodiametrical, 5-7(-8)-angled in side-view; gills without blue tinges. Cap 15-55 mm, conical or hemispherical, then convex, depressed to umbilicate, radially fibrillose or tomentose, then with finely scaly centre, not striate or translucently striate at margin only, very dark sepia or grey brown with almost black centre; gills emarginate or with a decurrent tooth, broadly adnate, pale grey, then sordid pink, with entire or slightly irregular, brown edge; stem 20-70 x 2-4(-5) mm, blue or blue grey, then steel grey, polished; smell and taste none or farinaceous. Gill edge sterile; cheilocystidia 30-80(-110) x 5-20 μm , fusiform, cylindrical to broadly clavate, with brown, intracellular pigment; pileipellis a cutis to a trichoderm of inflated terminal elements, 30-90 x 10-25 μm , with brown, intracellular pigment; clamps absent. In groups in grassland, in forests and among *Sphagnum* in peat-bogs up to suba.; summer to autumn; locally common in hemib.-suba., occasional in temp.; DK (NT), FI (DD), FO, NO (LC), SE (LC). – B&K 4:62 (as var. *parvisporigerum*), FE 5:62B, FE 5A:1323-1324, FND 21:29, Lud 94.109, Ves 257, ☉.
E. poliopus (Romagn.) Noordel. var. *poliopus*
- Sp 7.5-11 x 7-8 μm , Q = 1.05-1.4, subisodiametrical to short heterodiametrical, 4-6-angled in side-view; gills often with a blue tinge. Cap 15-40 mm, convex, depressed, minutely scaly, not translucently striate, blackish at first, then dark umber brown; gills adnate, white with distinct pale blue tinge when young, then greyish pink with a brown edge; stem 40-50 x 2-2.5 mm, dark blue, then grey blue, finally with glaucous or olivaceous tinge, polished; smell and taste indistinct. Gill edge sterile of the serrulatum-type; cheilocystidia, 20-65 x 6-16 μm , clavate with brown intracellular pigment; pileipellis a cutis to a trichoderm, of inflated terminal elements, 20-70 x 9-15 μm , with brown, intracellular pigment; clamps absent. In groups in meadows grazed with cattle on calcareous soil; summer; very rare in temp.-bore.; NO (NE, Nordl: Herøy), SE (Sk: Brösarp). – FE 5A:1321, Lud 94.103.
E. broesarpensis E. Ludw. & Noordel.

15. Stem pink to dull red with fine darker fibrils and scales; gill edge reddish lilaceous. Cap 15-30 mm, convex to low convex, umbilicate, fibrillose with finely scaly centre, slightly translucently striate, dull red with greyish red centre; gills broadly adnate, medium spaced to crowded, pink; stem 30-55 x 2-3 mm; smell and taste indistinct. Sp 8.5-11 x 6-8 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia 22-60 x 3-10 μm , cylindrical to clavate, with intracellular pigment; clamps absent. In mossy meadows and in raw humus of deciduous forests of *Corylus* and *Carpinus* on calcareous soil; late summer to autumn; very rare in temp.-bore.; DK (CR), NO (EN). – FE 5A:1290, SN 2005(1):20, ☉.
E. callirhodon Hauskn. & Noordel.
 - Stem white, pale ochre, ochre, yellow or brown; gill edge blackish blue or brown 16
16. Gill edge blackish blue, of the serrulatum-type 17
 - Gill edge brown, cheilocystidia in a hymeniform layer 18
17. Terrestrial; cap and stem yellow. Cap 10-25 mm, convex to low convex with slightly depressed centre, minutely scaly, slightly translucently striate; gills adnate-emarginate, medium spaced, pink with blue, fimbriate edge; stem 20-40 x 1-3 mm, polished; smell and taste indistinct. Sp 8.5-10.5 x 6-8 μm , 5-6-angled in side-view; gill edge sterile, of the serrulatum-type; cheilocystidia 20-45 x 2.5-9 μm , cylindrical to clavate, with bluish intracellular pigment; pileipellis a trichoderm of swollen elements, 40-90 x 10-25 μm , with brown, intracellular pigment; clamps absent. In small groups in rich deciduous forests; autumn; very rare in hemib.; FI (A: Finström). – FE 5A:1293, Sieniop 263.
E. xanthoserrulatum Noordel. & Vauras
 - On wood; cap and stem dark brown. Cap 10-20 mm, convex, umbilicate, minutely scaly, not hygrophanous, not translucently striate; gills adnate-emarginate, medium spaced, pink with a blue tinge, with a blue, serrulate edge; stem 20-40 x 1-2 mm, polished; smell and taste indistinct. Sp (8-)8.5-10(-10.5) x 6-7(-7.5) μm , 5-7-angled in side-view; gills edge sterile, of the serrulatum-type; cheilocystidia 40-65 x 6-20 μm , with blue intracellular pigment; pileipellis a trichoderm of inflated elements, 20-65 x 8-20 μm , with brown, intracellular pigment; clamps absent. In small groups on rotten wood in deciduous forests; autumn; very rare in temp.; DK (NE). – FE 5A:1289.
E. linkii (Fr.: Fr.) Noordel.
18. Cheilocystidia clavate, lageniform or lecythiform with weakly delimited 2-8 μm wide capitulum (fig. 435D). Cap 15-60 mm, conical, expanding with age to conico-convex or convex with an umbo, not hygrophanous, brown to red brown, innately radially fibrillose breaking up in small scales; gills adnate or emarginate, medium spaced, white, then pink, finally reddish brown, with a brown edge; stem 20-60 x 2-7 mm, pale brown, silvery striate; smell and taste farinaceous to rancid. Sp (8-)9-12(-12.5) x (6-)7-8.5(-9) μm , heterodiametrical, 5-8-angled in side-view; cheilocystidia 20-60 x 5-16 μm ; pileipellis a cutis to a trichoderm of inflated elements, 15-20 μm wide, with intracellular pigment; clamps present. In groups in boggy areas, heathland and grassy places, roadsides, etc.; late summer to autumn; rare in temp. and suba.; DK (EN), NO (NE, Troms: Kåfjord), SE (LC, Sk). – FE 5A:1270.
E. fuscomarginatum P.D. Orton
 - Cheilocystidia not capitate 19
19. Cheilocystidia lageniform to fusiform with acute apex (figs 435E, 467C); clamps present 20
 - Cheilocystidia cylindrical to clavate; clamps absent 21
20. Cap glabrous, pale creamy ochre to pale brown see *E. excentricum* key J 9
 - Cap minutely scaly, brown, sometimes tinged olivaceous. Except for cap colour like the main variety (fig. 435E). In groups in grassland; late summer to autumn; very rare in temp.-arc. / alp.; DK (CR), NO (NE), SE (DD). – Bol Bres 39:35, BSMF 120:348, 349, FE 5:49a, FE 5A:1344, Svp 21:20.
E. indutoides (P.D. Orton) Noordel. var. *griseorubidum* (Noordel.) Noordel. (*E. griseorubidum* Noordel.)

21. Cap pale beige-ochre. Cap 10-35 mm, convex, umbilicate, minutely scaly at centre only; gills medium spaced, white, then pink; stem 35-65 x 1-3 mm, very pale, polished; smell and taste indistinct. Sp 9-11.5 x 7-8.5 μm , heterodiametrical, 5-6-angled in side-view; gill edge sterile; cheilocystidia 20-50 x 7-20 μm , clavate to vesiculose with brown, intracellular pigment; pileipellis a cutis to a trichoderm of inflated elements, 8-22 μm wide, with intracellular pigment; clamps absent. In groups in grassland; summer to autumn; very rare in temp.-suba.; DK (NA), FI (DD), FO. – B&K 4:58, BSMF 122:bis, 124, FE 5:59a, FE 5A:1334-1335, FND 21:26, ☉.
E. ochromicaceum Noordel. & Liiv
- Cap darker, brown, red brown or yellow brown 22
22. Cap yellow to reddish yellow (fulvous) 23
- Cap red brown to grey brown 24
23. Gills yellow ochre, then yellow pink; sp (9-)10-15 x 6.5-9.5 μm . Cap 5-50 mm, convex, umbilicate, minutely scaly, weakly hygrophanous, translucently striate, yellow to reddish yellow; gills adnate-decurrent, medium spaced to distant, with brown, entire edge; stem 30-70 x 2-4 mm, polished, yellow; smell fruity or indistinct; taste unpleasant. Sp heterodiametrical, 5-9-angled in side-view; gill edge sterile; cheilocystidia 25-90 x 5-30 μm , cylindrical to clavate with brown intracellular pigment; pileipellis a cutis to a trichoderm of inflated elements, 15-30 μm wide, with intracellular pigment; clamps absent. In small groups in grassland and at roadsides; summer to autumn; occasional in hemib.-suba., but very common in FO, very rare in temp.; DK (EN), FO, NO (NE), SE (NE). – B&K 4:96, FE 5A:1337-1338, FND 21:40, Svp 21:29, ☉.
E. xanthochroum (P.D. Orton) Noordel.
- Gills white, then pink; sp 10-13 x 7-9 μm . Cap 10-22 mm, hemispherical to convex, umbilicate, minutely scaly, not hygrophanous, not or slightly translucently striate, warm brown to yellow red; gills adnate with a decurrent tooth, medium spaced, with fimbriate, brown edge; stem 20-90 x 1-4 mm, polished, yellowish white or with grey tinge; smell none; taste slightly bitter to rancid. Sp heterodiametrical, 6-9-angled in side-view; gill edge sterile; cheilocystidia 30-90 x 5-15 μm , cylindrical to clavate, with brown, intracellular pigment; pileipellis a cutis to a trichoderm of inflated elements, 10-25 μm wide, with brown, intracellular pigment; clamps absent. In groups in *Sphagnum* of peat bogs; summer to autumn; very rare in bore., one locality in NO (NE, Oppl: Lunner). – B&K 4:85, FE 5A:1338.
E. sphagnorum (Romagn. & J. Favre) Noordel.
24. Cap dark grey brown, with or without a reddish tinge, not translucently striate; gills and base of stem turning reddish when bruised. Cap 10-50 mm, convex, umbilicate, not hygrophanous; gills adnate-emarginate or decurrent, medium spaced, brown with a pink tinge, with brown edge; stem 20-70 x 1-7 mm, polished or with scattered fibrils, brown; smell and taste indistinct to farinaceous. Sp 9-12.5(-14.5) x 6-9 μm , heterodiametrical, 5-7-angled in side-view; gill edge sterile; cheilocystidia 20-80 x 5-20 μm with brown, intracellular pigment; pileipellis a cutis to a trichoderm of inflated elements, 10-25 μm wide, with brown, intracellular pigment; clamps absent. In groups in grassland, preferably on calcareous soil; summer to autumn; locally occasional in hemib.-arc./alp., rare in temp.; DK (EN), FO, NO (NT), SE (LC). – Cet 2325, FE 5:70a, FE 5A:1341, FND 21:37, 38, Svp 21:29.
E. turci (Bres.) M.M. Moser
- Cap yellow brown to grey brown, translucently striate; gills and stem not staining red when bruised 25
25. Cap pale cream yellow to pale yellow brown with well-delimited, distinctly darker centre; often with glaucous tinges, particularly in basal part of stem; sp 6-7-angled in side-view see *E. exile* 13
- Cap dull yellow to yellow brown, sometimes with grey tinge, without well-delimited

darker centre; sp 5-9-angled in side-view. Cap 15-50 mm, convex, umbilicate, not or slightly hygrophanous, minutely scaly in central part, slightly to distinctly translucently striate; gills adnate-decurrent, medium spaced, white, then pink, then brownish pink with a brown edge; stem 20-80 x 1-3 mm, polished, pale brown; smell and taste none to farinaceous. Sp (9-)10-14.5(-15) x 6-9(-10) μm ; gill edge sterile; cheilocystidia 20-55 x 6-20 μm , cylindrical to clavate, often with brown intracellular pigment; pileipellis a cutis to a trichoderm of inflated elements, 10-30 μm wide, with brown, intracellular pigment; clamps absent. In groups in grassland and in open forests, peat-bogs and arctic and alpine tundra; summer to autumn; locally common in hemib.-arc./alp., rare in temp.; DK (EN), FI (DD), FO, NO (LC), SE (LC). – B&K 4:50, FE 5:69a,85c, FE 5A:1331, FND 21:26, Ves 258, ☉.

E. longistriatum (Peck) Noordel. var. *longistriatum* (*E. sarcitulum* (P.D. Orton) Noordel.) var. *microsporum* Noordel. differs in sp 6.5-10 x 5.5-9 μm . NO.

Key C: Cap with blue or violet colours

1. Cap smooth or at most slightly wrinkled at centre; pileipellis two-layered, of a thin suprapellis of narrow, 2-7(-10) μm wide hyphae, laying on a subpellis of strongly inflated elements; clamps abundant 2
 - Cap fibrillose, tomentose, finely scaly or rugulose; pileipellis a trichoderm, a cutis with transitions to a trichoderm, or a hymeniderm, of inflated elements, at least 10 μm wide; clamps present, or more frequently absent 4
2. Frb collybioid, thin-fleshed; cap slightly depressed, translucently striate; stem polished. Cap 5-30 mm, hygrophanous, translucently striate, first blue, soon dark brown tinged purple or violaceous; gills adnate-emarginate, medium spaced, dark grey, then grey pink, veined on the sides; stem 15-60 x 2-5 mm, sky blue fading to brown blue; smell and taste indistinct. Sp 8-10(-11) x 6.5-8 μm , subisodiametrical, 5-6-angled in side-view; cheilocystidia absent; pileipellis an ixocutis of 3-8(-11) μm wide hyphae with intracellular pigment; clamps present. In small groups in moss in coniferous forests; late summer to autumn; rare in hemib.-bore., very rare in temp.; DK (EN), NO (NT). – FE 5:21b, Lud 94.72, Svp 21:41.
E. caeruleopolitum Noordel. & Brandt-Ped.
 - Frb mycenoid or tricholomatoid, thin- or thick-fleshed; cap conical to convex or umbonate, not striate; stem fibrillose 3
3. Habit tricholomatoid; gills crowded, L = 30-40; often in grassland, but also in fertile deciduous woods. Cap 30-80 mm, conical, then convex, umbonate, glabrous, not hygrophanous, not translucently striate, deep blue, grey blue or indigo, then violaceous brown; gills adnate-emarginate, white, then salmon pink; stem 35-70 x 10-35 mm, tapering towards base, fibrillose, steel blue, grey blue, grey violaceous, with yellow tinged base; smell and taste weakly farinaceous. Sp (7-)7.5-9 x 6.5-8 μm , subisodiametrical, 5-6-angled in side-view; cheilocystidia absent; pileipellis an ixocutis of 2.5-7 μm wide hyphae with intracellular pigment; clamps present. In grassland, often in \pm natural vegetation, poorly manured meadows, etc., mostly on calcareous soil; autumn; very rare in temp.-suba.; DK (CR), FO (Velbastður), NO (VU), SE (VU). – B&K 4:12, FE 5:1-2, FE 5A:1168, GBW 4:152, Jordst 13(2).
E. bloxamii (Berk. & Broome) Sacc. (*E. madidum* (Fr.) Gillet, nom. inval.)
 - Habit mycenoid or slenderly tricholomatoid; gills medium spaced, L \leq 25; in deciduous and coniferous forests. Cap 20-40(-50) mm, conical to convex, umbonate, glabrous or radially fibrillose, not hygrophanous, not translucently striate, grey blue; gills adnate-emarginate, white, then pink; stem 30-100 x 2-5 mm, fusiform, blue to blue grey with distinct yellow tinge near base, fibrillose striate; smell and taste weak to slightly farinaceous. Sp (6.5-)7-8.5 (-9) x (5.5-)6-7.5(-8) μm , 5-8-angled in side-view; cheilocystidia absent; pileipellis an ixocutis of 2-6 μm wide hyphae with blue, intracellular pigment; clamps abundant. In deciduous and coniferous forests, often in \pm acidulous habitats, frequently also on calcareous soil where the upper layer is acidified; summer to autumn; occasional, but locally common in

hemib.-bore., rare in temp. and suba.; DK (NT), FI (LC), NO (LC), SE (LC). – FAD 74A, FE 5:4, FE 5A:1169, R&H 376, Ves 254, ☉.

E. nitidum Quél.

- 4. Gills blue or violaceous, at least when young 5
- Gills without blue or violaceous tinge, also when young 9
- 5. Clamps present. Cap 5-30 mm, bell-shaped, then convex, umbonate, fibrillose with finely scaly centre, not hygrophanous, not translucently striate, blackish blue; gills adnate to deeply emarginate, medium spaced, pale blue grey, then pink; stem 25-60 x 1-3 mm, dark blue, polished or with scattered fibrils; smell and taste indistinct. Sp 7.5-11(-12) x 6-8 μ m, heterodiametrical, 6-8-angled in side-view; gill edge heterogeneous; cheilocystidia 20-60 x 5-20 μ m, cylindrical, scattered to abundant; pileipellis a trichoderm of inflated, 5-20 μ m wide hyphae with blue intracellular pigment. Single or in groups in humus and on fallen sticks and on rotten stumps in deciduous and coniferous forests; late summer to autumn; very rare in temp.-suba.; DK (EN), FO (Søldarfjörður), NO (NE). – Däh 425, FE 5:46F, FE 5A:1284, Lud 94.102, Svp 21:20.

E. lepidissimum (Svrček) Noordel.

- Clamps absent 6
- 6. Beside blue tinges, also green tinges present, at least in stem. Cap 8-20 mm, convex to plane, not hygrophanous, not translucently striate; dark ultramarine blue with sulphur-yellow tinges at centre, silky tomentose; gills adnate-emarginate, distant, ultramarine blue, then glaucous with a sulphur-yellow tinge; stem 20-40 x 1-2 mm, polished, ultramarine blue fading to greenish blue or glaucous green; smell and taste indistinct. Sp 8.5-11 x 7-8 μ m, heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of inflated, 5-18 μ m wide hyphae with intracellular pigment; clamps absent. In groups in grassland; summer to autumn; very rare in temp.-suba.; SE.

E. cyaneoviridescens (P.D. Orton) Noordel.

- No green tinges present 7
- 7. Blue tinges ephemeral, quickly disappearing, then frb pale to moderately dark brown; stem rather pale yellow or grey. Cap 10-20 mm, convex to low convex, umbilicate, fibrillose with minutely scaly centre, hygrophanous, translucently striate, pale brown with darker centre; gills almost free, medium spaced, white with a faint blue tinge when young, then pink; stem 30-45 x 11-20 mm, polished; smell and taste indistinct. Sp 9-12 x 7.5-9.5 μ m, heterodiametrical, 5-7-angled in side-view (fig. 445A); cheilocystidia 25-70 x 6-15 μ m, cylindrical to clavate; pileipellis a cutis to a trichoderm of inflated, 12-22 μ m wide hyphae with pale intracellular pigment; clamps absent. In groups in grassland and in grass in deciduous forests; summer to autumn; very rare in temp.-bore.; DK (NA), FI (DD, A: Jomala). – B&K 4:53, FE 5:61, FE 5A:1322, FND 21:26, Lud 94.119.

E. mutabilipes Noordel. & Liiv

- Blue or violaceous tinges persistent 8
- 8. Cheilocystidia present; stem without orange-yellow tinges, also when bruised
see *E. chalybaeum* key B 4
- Cheilocystidia absent; stem with a bright yellow-red or orange splotch, particularly when bruised. Cap 5-30 mm, convex, umbilicate, with minutely scaly centre, not hygrophanous, translucently striate, dark blackish blue to ultramarine; gills adnate-emarginate, medium spaced, blue, then bluish pink; stem 15-50 x 1-3 mm, blue, fading to greenish blue; smell and taste indistinct. Sp 8-11(-11.5) x 6.5-8 μ m, heterodiametrical, 5-7-angled in side-view; pileipellis a cutis to a trichoderm of inflated hyphae, 12-40 μ m wide, with blue intracellular pigment; clamps absent. In groups in unfertilized grassland; summer to autumn; very rare in temp.-suba.; DK (CR), NO (VU). – FE 5A:1296, FND 21:15, Svp 21:24.

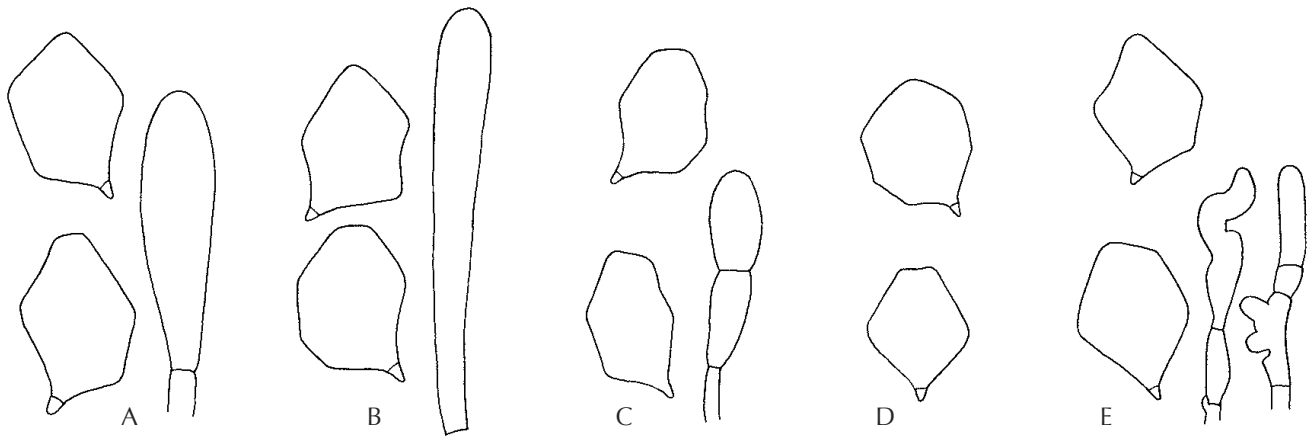
E. cruentatum (Quél.) Noordel.

9. Clamps present 10
- Clamps absent 13
10. Sp 6.5-8.5 x 5.5-6 μm ; cap with about the same colour as the stem; stem polished. Cap 5-10 mm, conical to conical-convex with a small umbo, fibrillose with finely scaly centre, not hygrophanous, not translucently striate, blackish blue; gills adnate-emarginate, medium spaced, white, then pink; stem 20-40 x 0.5-1 mm, polished, blue; smell and taste indistinct. Sp subisodiametrical, 5-6-angled in side-view; cheilocystidia absent; pileipellis a trichoderm of cylindrical to slightly inflated hyphae, 10-19 μm wide, with blue intracellular pigment; clamps present. In small groups in mixed forests; autumn; very rare in bore.; NO (NE, Nordl: Rana). – FE 5A:1284.
E. coelestinum (Fr.) Hesler
- Sp larger; cap and stem differently coloured; stem covered with fibrils or small scales 11
11. Sp many-angled, relatively thin-walled see *E. tjallingiorum* key D 9
- Sp with 5-8 angles, with walls of normal thickness 12
12. Stem lilac blue or steel blue, appressed fibrillose; pigment intracellular in pileipellis. Cap 5-40 mm, conical, then convex, blunt or umbonate, fibrillose, tomentose, becoming minutely scaly, not hygrophanous, not translucently striate, deep blue, then violaceous blue or brown blue; gills adnate-emarginate, medium spaced, white, then brownish pink; stem 20-65 x 2-6 mm; smell and taste spermatic to farinaceous. Sp (9-)9.5-12 x 7-9.5(-10) μm , heterodiametrical, 6-8-angled in side-view; gill edge heterogeneous; cheilocystidia 20-45 x 5-20 μm , cylindrical, clavate to lageniform; pileipellis a trichoderm of septate hyphae, 20-45 μm wide, with intracellular pigment; clamps present. In small groups on humus and dead wood in deciduous forests on rich clay or calcareous soil and in dry grassland; summer to autumn; very rare in temp.-bore.; DK (VU), FI (DD), NO (VU), SE (NT). – FE 5:47b, FE 5A:1276, Jordst 13(2), Svp 21:20.
E. dichroum (Pers.: Fr.) P. Kumm.
- Stem pale violaceous with darker violaceous, fibrillose covering; pigment intracellular in suprapellis, incrusting in subpellis. Cap 25-40 mm, conical, then convex, umbonate, tomentose to minutely scaly, not hygrophanous, not translucently striate, violaceous to violaceous grey; gills adnate-emarginate, medium spaced, sordid cream, then with pink tinge; stem 40-70 x 3-6 mm; smell and taste indistinct. Sp 9-12.5 x 7-9.5 μm , heterodiametrical, 6-9-angled in side-view; gill edge heterogeneous; cheilocystidia 30-55 x 5-10 μm , cylindrical to flexuous or lageniform; pileipellis a trichoderm of septate hyphae, up to 40 μm wide, with intracellular pigment; clamps present. In small groups in raw humus in deciduous forests; summer to autumn; very rare in temp.-bore.; DK (NA), NO (DD, M&R: Norddal & Tingvoll). – FE 5A:1279, FND 14:7, SN 2006(1):27.
E. allochroum Noordel.
13. Cap translucently striate when moist and fresh. Cap 13-26 mm, convex, umbilicate, with minutely scaly centre, slightly hygrophanous, violaceous brown to grey brown with violaceous tinge; gill adnate-emarginate, medium spaced, white, then pink; stem 20-40 x 1.5-2.5 mm, polished, pale grey-blue; smell and taste indistinct. Sp 8-11 x 5.5-8.5 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia absent. Pileipellis a cutis to a trichoderm of inflated, 15-25 μm wide hyphae, with intracellular pigment; clamps absent. In groups in unfertilized grassland; summer to autumn; rare in temp.-suba.; DK (NA), NO (NT), SE (NE). – B&K 4:65, FE 5:54a, FE 5A:1297-1298, FND 21:30, Lud 94.122.
E. pseudocoelestinum Arnolds
- Cap not translucently striate, opaque 14
14. Cheilocystidia 60-125 x 5-14 μm (fig. 445B); gills beige brown to grey brown when young; cap violaceous to brown violaceous, zonate. Cap 20-55 mm, truncate-conical, umbilicate, not hygrophanous, not translucently striate; gills adnate-decurrent, medium spaced; stem 40-95

x 4-8 mm, innately fibrillose, violaceous grey; smell and taste indistinct to subfarinaceous. Sp 10-11.5 x (7-)7.5-8.5 μm , heterodiametrical, 5-6-angled in side-view; cheilocystidia cylindrical; pileipellis a trichoderm of inflated elements, 8-20 μm wide, with blue intracellular pigment; clamps absent. In groups in unfertilized grassland on calcareous soil (alvar); late summer to autumn; DE, EE. – FE 5:48, FE 5A:1280, Lud 94.99.

E. violaceozonatum Noordel. & Liiv

- Cheilocystidia absent or $\leq 70 \mu\text{m}$ long; gills white or very pale coloured when young; cap differently colored, usually not zonate 15
- 15. Sp 11.5-15 μm long 16
- Sp $\leq 12.5 \mu\text{m}$ long 17
- 16. Cap 4-10 mm, deeply translucently striate; gill edge sterile with abundant cheilocystidia. Cap conical, then convex, umbonate or not, minutely scaly at centre only, grey blue, violaceous blue or blackish blue; gills adnate to free, medium spaced to distant, white, then pink; stem 15-65 x 0.5-1 mm, deep blue to grey blue, polished; smell and taste indistinct. Sp (10-)11-15.5(-16) x 6.5-11 μm , heterodiametrical, 6-9-angled in side-view; cheilocystidia 20-70 x 5-20 μm , cylindrical to clavate; pileipellis a cutis to a trichoderm of inflated elements, 10-35 μm wide, with intracellular pigment; clamps absent. In groups in unfertilized grass and among *Sphagnum* in moist places; summer to autumn; very rare in temp.-bore.; DK (DD), FI (DD, PS: Kuopio), NO (NE), SE (NE). – FE 5:54b, FE 5A:1297, Lud 94.107, Svp 21:24.
E. cyanulum (Lasch: Fr.) Noordel. var. *cyanulum*
- Cap 15-40 mm, not translucently striate; gill edge heterogeneous with scattered cheilocystidia. Cap convex, umbilicate, rugulose to minutely scaly, not hygrophanous, black with a faint blue tinge, blackish brown with age; gills adnate, medium spaced, pale grey, then salmon pink; stem 30-50 x 1.5-4.5 mm, blackish blue like cap, polished; smell and taste indistinct. Sp 11.5-14.5 x 8-11 μm , heterodiametrical, 5-8-angled in side-view; cheilocystidia 20-50 x 4-10 μm , cylindrical to clavate; pileipellis a cutis to a trichoderm of up to 45 μm wide, inflated terminal elements, with intracellular pigment; clamps absent. In small groups in deciduous forests and unfertilized grassland; summer to autumn; very rare in bore.; NO (VU). – B&K 4:6, BSMF 122:opp. 126, FE 5:56C, FE 5A:1303.
E. aethiops (Scop.) G. Stev.
- 17. Stem glabrous, polished 18
- Stem fibrillose or covered with small flocks or scales 21
- 18. Gill edge sterile; cheilocystidia abundant. Cap 10-50 mm, convex, umbilicate, fibrillose to minutely scaly, not hygrophanous, not translucently striate, blackish blue, fading to brown with a bluish-violaceous tinge; gills adnate-emarginate, medium spaced, white or yellow, then pink; stem 15-50 x 1-5 mm, polished, ultramarine or deep blue black with a licaceous tinge, fading with age; smell none or sweetish; taste indistinctive. Sp (8-)9-11.5(-12.5) x 6-7.5 μm , heterodiametrical, 5-7-angled in side-view (fig. 445C); cheilocystidia 20-45 x 4-16 μm , cylindrical to clavate; pileipellis a cutis to a trichoderm of inflated terminal elements, 6-20 μm wide, with intracellular pigment; clamps absent. In groups in unfertilized grassland; summer to autumn; very rare in temp.-suba.; DK (NA, EJyl: Vingum), IS (Na: Gil Öxnadal), NO (DD), SE (NE). – Bol Bres 39:25, FE 5A:1301, FND 21:7.
E. caeruleum (P.D. Orton) Noordel.
- Gill edge fertile without cheilocystidia, or cheilocystidia rare and scattered among basidia 19
- 19. Cap very dark blue, almost black, not distinctly changing colour when old. Cap 10-45 mm, convex, umbilicate, minutely scaly at centre; gills adnate to adnexed, medium spaced, sordid grey with a pink tinge; stem 25-50 x 1-3 mm, polished, grey blue to steel grey; smell and taste indistinct. Sp 9-11 x 6-7 μm , heterodiametrical, 5-8-angled in side-view; cheilocystidia 25-50 x 7-15 μm , cylindrical to clavate; pileipellis a cutis to a trichoderm of inflated ele-



Spores and cheilocystidia: A: *Entoloma mutabilipes*, B: *E. violaceozonatum*, C: *E. caeruleum*, D: *E. juniperinum*, E: *E. lidbergii*.

ments, 10-20 μm wide, with intracellular pigment; clamps absent. In groups in unfertilized grassland on calcareous soil; summer to autumn; very rare in temp.-suba.; DK (NA), NO (DD). – FE 5A:1303.

E. melanochroum Noordel.

- Cap blue or blue-violaceous, gradually loosening its blue or violaceous tinges with age towards sordid brown 20
- 20. Smell strong, unpleasant, reminiscent of *Lepiota cristata*; taste rancid-farinaceous; cap 10-30 mm, conical to bell-shaped, with a small papilla, occasionally umbilicate. Cap entirely tomentose or fibrillose with a finely scaly centre, not hygrophanous, translucently striate when old, dark blackish brown, tinged blue, blue black, blackish-violaceous, grey blue, finally brown or sepia; gills adnate, emarginate or with a short decurrent tooth, distant to medium spaced, cream, then pinkish brown; stem 38-66 x 1-3 mm, cylindrical, polished, indigo blue when young, then blue grey, steel grey, rarely with a green tinge. Sp 9-11 x 6-8 μm , heterodiametrical, 6-8-angled in side-view; cheilocystidia absent; pileipellis a cutis to a trichoderm of inflated elements, 10-25 μm wide, with intracellular pigment; clamps absent. In groups in deciduous forests, often on bare, black soil; summer to autumn; very rare in hemib.-bore.; NO (NE, Tel: Bamble, Oppl: Jevnaker). – FE 5:85d, FE 5A:1320, Tin 34:48.
E. lepiotosme (Romagn.) Noordel.
- Smell and taste indistinct; cap 20-70 mm, convex-umbilicate. Cap strongly fibrillose, then finely scaly, not hygrophanous, not translucently striate, blue grey to violaceous grey; gills adnate or with a small decurrent tooth, medium spaced, sordid pink; stem 40-130 x 5-12 mm, cylindrical to compressed, polished, blue, then violaceous blue or violaceous brown. Sp 9.5-12.5 x 7-9.5 μm , heterodiametrical, 5-8-angled in side-view; cheilocystidia absent; pileipellis a cutis to a trichoderm of inflated elements, 15-25 μm wide, with intracellular pigment; clamps absent. In groups in mixed forests on calcareous soil; summer to autumn; very rare in hemib.; FI (DD, A: Lemland), SE. – FE 5:57, FE 5A:1300.
E. viiduense Noordel. & Liiv
- 21. Stem pale grey, then yellowish ochre; cap dark greyish-violaceous with carmine centre when young. Cap 15-40 mm, convex, umbilicate, fibrillose; gills adnate-emarginate, medium spaced, sordid white, then pinkish brown; stem 45-65 x 2.5-4 mm, polished; smell and taste indistinct. Sp (8-)8.5-11.5(-12) x (6-)6.5-8.5(-9.5) μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis to a trichoderm of inflated elements, 8-20 μm wide, with intracellular pigment; clamps absent. In unfertilized grassland on calcareous soil; late summer; very rare in temp.; SE. – FE 5A:1306.
E. prunicolor Örstadius & A. Ryberg

- Stem blue, violaceous or violaceous black; cap without carmine tinges 22
- 22. Cap blue to bluish black when young 23
 - Cap violaceous to violaceous black 25
- 23. Gill edge fertile; cheilocystidia absent. Cap 10-40 mm, convex, umbilicate, tomentose, then minutely scaly, not hygrophanous, not translucently striate, bluish black, then grey brown with a purple to bluish-violaceous tinge; gills adnate-emarginate, medium spaced, white, then sordid pink; stem 25-70 x 2-6 mm, innately fibrillose to flocculose, blue, grey blue or violaceous blue; smell and taste indistinct to farinaceous-rancid. Sp 8-12 x 6-8 μm , heterodiametrical, 4-7-angled in side-view; pileipellis a cutis to a trichoderm or hymeniderm at centre, of inflated 10-25 μm wide hyphae with intracellular pigment; clamps absent. In unfertilized grassland, hay-fields and open woodland; summer to autumn; occasional in temp.-suba.; DK (NT), FI (DD), FO, NO (NT), SE (NT). – FE 5:56b, FE 5A:1304, FND 21:6, GBW 4:152, Ves 254, ☉.
E. atrocoeruleum Noordel.
- Gill edge sterile with abundant cheilocystidia 24
- 24. Cap and stem deep blue to almost black, not changing colour with age; gills purely white when young. Cap 15-55 mm, convex, umbilicate, tomentose, then minutely scaly, not hygrophanous, not translucently striate; gills adnate-emarginate or with a decurrent tooth, medium spaced; stem 30-70 x 1.5-4 mm, fibrillose; smell and taste indistinctive. Sp 8-11(-11.5) x 6-7.5(-8) μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia 20-60 x 5-15 μm , cylindrical to clavate; pileipellis a cutis to a trichoderm, of inflated, 15-30 μm wide elements with intracellular pigment; clamps absent. In unfertilized grassland; summer to autumn; rare in temp.-arc./alp.; DK (EN), FI (NT), FO, NO (NT), SE (NT). – B&K 4:25, FE 5:55, FE 5A:1299, GBW 4:156, FND 21:14, ☉.
E. corvinum (Kühner) Noordel.
- Cap and stem initially blackish blue, soon fading to greyish brown with a blue tinge; gills often yellowish when young, later pink with yellowish spots see *E. caeruleum* 18
- 25. Cheilocystidia absent 26
 - Cheilocystidia present 27
- 26. Sp 6.5-8(-8.5) x 5.5-7(-7.5) μm ; cap 14-18 mm. Cap conical, then conical-convex, not hygrophanous, not translucently striate, with small, violaceous scales on a paler flesh-colored background; gills adnexed to almost free, crowded, greyish white, then pinkish grey; stem 17-22 x 3-3.5 mm, fibrillose, dark violaceous brown; smell and taste indistinct. Sp iso- to heterodiametrical, (4-)5-6(-7)-angled in side-view; cheilocystidia absent; pileipellis a trichoderm of long, fusiform elements, 52-110 x 3.5-9 μm , with intracellular pigment; clamps absent. In small group among *Urtica dioica* in damp forests of *Alnus glutinosa* on peaty soil; autumn; NL. – FE 5A:1255.
E. pachydermum Arnolds & Noordel.
- Sp 9.5-14 x 7-10 μm ; cap 10-50(-75) mm. Cap conical to convex, umbonate or umbilicate, strongly radially fibrillose to finely scaly, not hygrophanous, not translucently striate, violaceous black, then violaceous brown; gills broadly adnate, deeply emarginate, medium spaced, white, then sordid pink; stem 30-120 x 1.5-8 mm, fibrillose, bluish violaceous or violaceous brown; smell and taste indistinct or rancid. Sp heterodiametrical, 6-9-angled in side-view; cheilocystidia absent; pileipellis a trichoderm of inflated elements, 15-30 μm wide, with intracellular pigment; clamps absent. In mossy, unfertilized grassland and among *Sphagnum*; summer to autumn; very rare in hemib.; SE (Vg). – FE 5A:1302, Lud 94.95.
E. nigroviolaceum (P.D. Orton) Hesler
- 27. Sp 8.5-9.5(-10) x 6-7.5 μm . Cap 10-25 mm, convex to low convex, umbilicate, not hygrophanous, not translucently striate, blackish-violaceous with small, darker scales; gills adnate-

emarginate, medium spaced, white, then pink; stem 25-50 x 1-3 mm, cylindrical, violaceous, fibrillose-finely scaly; smell and taste indistinct. Sp heterodiametrical, 5-6-angled in side-view; gill edge sterile; cheilocystidia in dense clusters, 30-70 x 7-15 μm , cylindrical to clavate; pileipellis a trichoderm to a hymeniderm of inflated elements, 30-90 x 10-25 μm , with intracellular pigment; clamps absent. In small groups in open unfertilized *Juniperus* alvar on calcareous soil; autumn; EE. – FE 5A:1305.

E. alvarens Noordel. & Vauras

- Sp 9-11.5(-12.5) x 6-8(-9) μm . Cap 10-50 mm, convex, umbilicate, entirely minutely tomentose-finely scaly, not hygrophanous, not translucently striate, dark violaceous black or violaceous grey; gills adnate-emarginate or with a decurrent tooth, medium spaced, white or cream, then pink; stem 30-80 x 2-4.5 mm, fibrillose, violaceous grey; smell none or slightly aromatic; taste mild to rancid. Sp heterodiametrical, 5-9-angled in side-view; cheilocystidia 15-70 x 8-20 μm , cylindrical to clavate; pileipellis a trichoderm of inflated terminal elements, 12-25 μm wide, with intracellular pigment in pileipellis; clamps absent. In groups in grassland, preferably on calcareous soil; summer to autumn; occasional in hemib.-suba., very rare in temp.; DK (EN), IS, NO (LC), SE (LC). – BSMF 119:291, FE 5:56a,87h, FE 5A:1299, Lud 94.98, RdM 40:13.

E. mougeotii (Fr.) Hesler var. *mougeotii*

Key D: Stem with blue or violaceous colours; cap without blue or violaceous tinges

1. Cap glabrous; pileipellis an ixocutis of 2.5-8 μm wide, cylindrical hyphae 2
 - Cap fibrillose, rugulose, tomentose or finely scaly, at least at centre; pileipellis a trichoderm or hymeniderm, at least at centre, of at least 10 μm wide elements 3
2. Sp 6-8 x 5.5-7 μm , very thin-walled, almost isodiametrical. Stem violaceous blue. In other characters like the main variety. In grassland and heathland, on acidulous, sandy or peaty soil; late summer to early winter; NL.

E. vinaceum (Scop.) Arnolds & Noordel. var. *violeipes* Arnolds & Noordel.

 - Sp 8-10(-11) x 6.5-8 μm , subisodiametrical, 5-6-angled in side-view
see *E. caeruleopolitum* key C 2
3. Clamps present, at least at base of basidia; pileipellis a trichoderm or a transition between a cutis and trichoderm, of long, septate hyphae with intracellular and often also incrusting pigment 4
 - Clamps absent; pileipellis a cutis or transition between a cutis and trichoderm, sometimes a true trichoderm or hymeniderm of inflated elements 12
4. Stem glabrous, polished 5
 - Stem fibrillose to minutely scaly 6
5. Sp 8-10 x 6-8 μm , isodiametrical (fig. 445D), Q = 1-1.2. Cap 5-20 mm, convex, then plane, slightly umbilicate or umbonate, glabrous to fibrillose, at centre sometimes minutely scaly, weakly hygrophanous, translucently striate, dark grey brown, rarely with blue tinges near margin; gills adnate-emarginate, medium spaced, white or grey brown, then pink; stem 20-45 x 1-2 mm, polished, blue or steel grey; smell and taste (sub)farinaceous. Sp 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis to a trichoderm, of cylindrical, 5-20 μm wide hyphae with brown intracellular pigment; clamps present. Between mosses, needles and grass, preferably in *Juniperus* heathland on sandy or loamy soil; late summer to autumn; very rare in temp.-bore.; DK (VU), NO (NE), SE (NE).

E. juniperinum Barkman & Noordel.

 - Sp 8-11.5 x 6.5-8 μm , heterodiametrical, Q = 1.2-1.5. Cap 5-15 mm, convex, then low convex, slightly umbilicate, minutely granulose to \pm finely scaly, not hygrophanous, not translucently striate, very dark brown to almost black; gills adnate-emarginate, medium spaced, white or pale brown, then sordid; stem 25-50 x 1-3 mm, polished, blue grey to violaceous;

smell none or farinaceous; taste slightly to distinctly farinaceous. Sp 5-6-angled in side-view; cheilocystidia absent; pileipellis a cutis to a trichoderm of inflated, 10-20 μm wide hyphae with brown intracellular pigment; clamps abundant. In poorly manured grasslands, hayfields, open deciduous forests, at roadsides; late summer to autumn; very rare in hemib.-suba.; NO (NE).

E. insidiosum Noordel.

- 6. Cap pale pinkish brown or pinkish lilac 7
- Cap yellow brown, brown, grey brown or almost black 8
- 7. Cap pinkish lilac; sp 10-12.5 x 7-9 μm , 5-9-angled in side-view, thin-walled, almost nodulose. Cap 10-25 mm, convex, umbonate, radially fibrillose, not hygrophanous, not translucently striate; gills adnate-emarginate, medium spaced, whitish with lilac tinge; stem 20-40 x 1-2 mm, longitudinally fibrillose-striate, steel blue; smell and taste indistinct. Sp heterodiametrical; cheilocystidia absent; pileipellis a cutis to a trichoderm of cylindrical to slightly inflated, 10-18 μm wide hyphae with intracellular pigment; clamps present. Terrestrial, in small groups in deciduous scrub or forests of *Alnus incana*; late summer to autumn; very rare in temp.-hemib.; DK (NA, EJyl: Buderupholm), NO (DD, Nordl: Herøy). – FE 5A:1281.

E. callichroum E. Horak & Noordel.

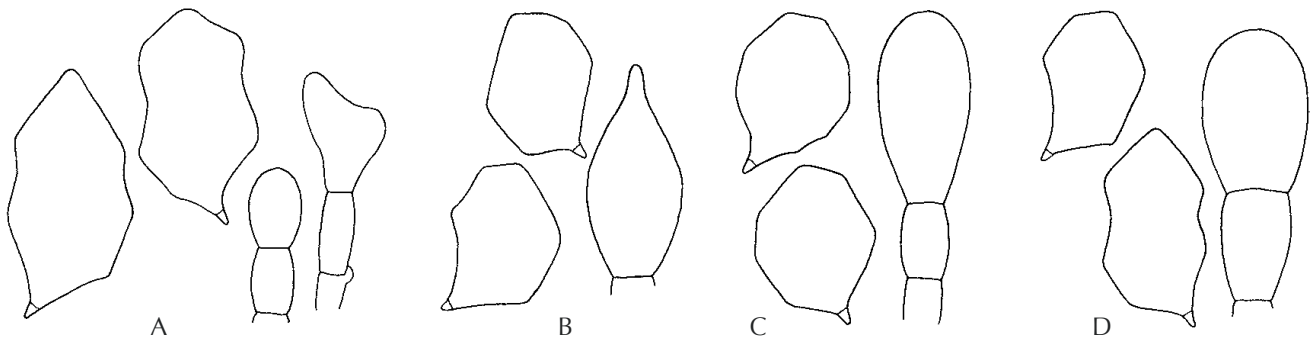
- Cap pale pinkish brown; sp 9-11 x 7-8 μm , 5-7-angled in side-view, with pronounced angles (fig. 445E). Cap 4-10 mm, convex, then plane, finely punctate to tomentose, hygrophanous, translucently striate; gill free, distant, pink; stem 12-30 x 0.5-1 mm, finely striate with blue fibrils, violaceous pink; smell and taste indistinct. Sp heterodiametrical; gill edge heterogeneous; cheilocystidia 30-90 x 5-10 μm , often septate, irregularly coralloid; pileipellis a cutis to a trichoderm of clavate terminal elements, 40-70 x 8-17 μm with intracellular pigment; clamps present. Found singly, terrestrial, on gravelly soil at roadside in a boreal *Picea* forest with scattered *Salix caprea*, on slightly calcareous soil; autumn; very rare in bore.; SE (Mpd: Borgsjö).

E. lidbergii Noordel.

- 8. Stem finely scaly with darker fibrillose scales 9
- Stem silvery fibrillose-striate 10
- 9. Stem violaceous, with darker scales; sp thick-walled, 5-9-angled in side-view, with rather acute angles see *E. allochroum* key C 12
- Stem blue, dark blue, or violaceous grey with darker scales; sp thin-walled, many-angled in side-view, with weak angles. Cap 20-80 mm, conical, then convex or plane, umbonate, rarely depressed, radially fibrillose, tomentose, then finely scaly, not hygrophanous, not translucently striate, dark grey brown, sometimes with a blue violaceous tinge; gills adnate-emarginate, medium spaced, white, then sordid pink; stem 25-110 x 2-12 mm; smell none; taste mild to bitter. Sp 9-11(-11.5) x 6-7 μm , heterodiametrical; gill edge heterogeneous; cheilocystidia 20-60 x 6-15 μm , cylindrical-flexuose to lageniform; pileipellis a cutis to a trichoderm, of septate, cylindrical to inflated, 7-20 μm wide hyphae, with inflated terminal elements 20-90 x 5-30 μm with brown intracellular and blue incrusting pigment; clamps abundant. Single or in groups on rotten wood or in raw humus of *Quercus* and *Betula* in deciduous forests, also in coniferous forests; late summer to autumn; rare in temp.-bore.; DK (NT), FI (DD, V: Dragsfjärd, EH: Tampere), NO (NT), SE (VU). – FE 5:47a, FE 5A:1277, R&H 381, Sienio 262, Svp 21:20.

E. tjallingiorum Noordel.

- 10. Terrestrial, in grassy and mossy vegetation; smell none. Cap 10-40 mm, conical or hemispherical, then convex, radially fibrillose-finely scaly, not hygrophanous, not translucently striate, very dark brown to almost black; gills adnate-emarginate, medium spaced, white, then pale grey or brown with a pink tinge; stem 40-80 x 1-5 mm, striate with dark blue fibrils on a steel-blue background; taste indistinct. Sp 8.5-11.5 x 6-8.5 μm , heterodiametrical,



Spores and cheilocystidia: A: *Entoloma wynnei*, B: *E. rhynchocystidium*, C: *E. glaucobasis*, D: *E. sodale*.

6-9-angled in side-view (fig. 449A); cheilocystidia absent; pileipellis a cutis to a trichoderm, of inflated, 5-20 μm wide hyphae with brown, intracellular pigment; clamps present. Terrestrial, solitary or in groups in grassy places, natural grasslands, roadsides in coniferous and deciduous forests, open places, etc., also in needle litter, preferably on \pm calcareous soil; late summer to autumn; rare in temp.-bore.; DK (EN), FI (DD), NO (DD), SE (NE). – Lud 94.111, Svp 21:20.

E. lampropus (Fr.: Fr.) Hesler

- On wood, wood chips or sawdust 11
- 11. On rotten wood of *Fagus*, including sawdust; smell farinaceous; sp 8-11(-11.5) \times 6-7(-7.5) μm . Cap 20-40 mm, conical, then convex, umbilicate, minutely scaly, not hygrophanous, not translucently striate, dark grey to grey brown; gills broadly adnate-emarginate, medium spaced, white, then pink; stem 30-60 \times 2-4 mm, silvery striate, dark indigo or blue grey; taste farinaceous. Sp heterodiametrical, 6-8-angled in side-view; cheilocystidia absent; pileipellis a cutis to a trichoderm, of 6-24 μm wide, cylindrical, septate hyphae with brown, intracellular pigment; clamps present. Late summer to autumn; occasional in temp., very rare in hemib.-bore.; DK (VU), NO (LC), SE (DD). – FE 5:88b, FE 5A:1282-1283, Lud 94.108, Svp 21:20.

E. placidum (Fr.: Fr.) Zerova

- In groups on wood and sawdust in coniferous forests; smell strong, like bugs; sp 10-18 \times 7-10 μm (fig. 449A). Cap 20-40 mm, convex, then plane, umbonate, velvety, then finely scaly, slightly hygrophanous, translucently striate at margin only, dark brown; gills adnexed to almost free, medium spaced; stem 25-50 \times 3-6 mm, cylindrical, fibrillose striate, blue-brown; taste unknown. Sp heterodiametrical, 5-9-angled in side-view; gill edge heterogeneous; cheilocystidia cylindrical to irregularly inflated, 20-60 \times 8-20 μm ; pileipellis a trichoderm of 5-20 μm wide, inflated hyphae with brown, intracellular pigment; clamps present. Autumn; UK. – FE 5:83, FE 5A:1280.

E. wynnei (Berk. & Broome) Sacc.

- 12. Gill edge sterile or heterogeneous; cheilocystidia present 13
- Gill edge fertile; cheilocystidia absent 22
- 13. Gills with a distinct blue tinge when young, then grey with a pink tinge; sp very irregularly shaped, from almost iso- to distinctly heterodiametrical
see *E. broesarpensis* key B 14
- Gills without blue tinge; sp regularly shaped 14
- 14. Cheilocystidia rostrate or almost tibiiform with a small, rounded capitulum on a long neck, much longer than basidia (fig. 449B). Cap 30-60 mm, convex to plane, slightly umbilicate, fibrillose, not hygrophanous, not translucently striate, grey brown with an ochraceous tinge, with a distinct violaceous tinge at margin; gills adnate-emarginate, medium spaced, sordid pink; stem 30-75 \times 3-6 mm, grey with a distinct violaceous tinge, polished; smell and taste

indistinct. Sp (8-)8.5-11(-11.5) x 7-8.5 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia, 25-45(-70) x 7-15(-20) μm ; pileipellis a trichoderm of inflated terminal elements, 30-80(-110) x 10-25 μm with brown, intracellular pigment; clamps absent. In groups in open *Juniperus* heath (alvar); EE. – FE 5:51a.

E. rhynchocystidiatum Noordel. & Liiv

- Cheilocystidia clavate or cylindrical, with about the same length as basidia 15
- 15. Sp on av < 10 μm long 16
- Sp on av > 10 μm long 17

- 16. Cap sordid grey brown or dark sepia, not translucently striate or at margin only; stem usually intensely blue or bluish-violaceous. Sp 8-11(-11.5) x 6-8 μm , heterodiametrical, 5-8-angled in side-view. In other characters like the main variety. In groups in unfertilized grassland; summer to autumn; rare in temp.-suba.; DK, NO, SE. – FE 5A:1325.

E. poliopus (Romagn.) Noordel. var. *parvisporigerum* Noordel.

- Cap porphyry brown, deeply translucently striate; stem steel grey with a faint blue tinge. Cap 15-30 mm, conical-convex, then convex, umbilicate, minutely scaly at centre; gills adnate-emarginate, medium spaced, grey, then grey pink; stem 5-60 x 1-4 mm, polished; smell and taste indistinct or slightly aromatic. Sp 7.5-10 x 6-8 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia 30-60 x 6-15 μm , cylindrical to clavate; pileipellis a cutis to a trichoderm of inflated hyphae, 5-25 μm wide, with brown intracellular pigment; clamps absent. In groups in unfertilized grassland; summer to autumn; very rare in temp.; DK (CR, EJyl: Grønnestrand, Lien). – Bol Bres 39:45, FE 5A:1326, Svp 21:25.

E. porphyrogriseum Noordel.

- 17. Cap pale beige with dark brown, minutely scaly centre see *E. mutabilipes* key C 7
- Cap yellow brown, brown or grey brown 18

- 18. Stem bicoloured, brown above, blue below; sp 9-13.5 x 7-10 μm , many-angled in side-view, almost nodulose (fig. 449C). Cap 10-30 mm, convex, umbilicate, entirely minutely scaly, not hygrophanous, deeply translucently striate, sordid brown; gills adnate-decurrent, medium spaced, sordid pink; stem 20-60 x 1-3 mm, white fibrillose; smell and taste indistinct. Sp heterodiametrical; cheilocystidia 20-95 x 10-35 μm , broadly clavate; pileipellis a cutis to a trichoderm of inflated hyphae, 15-35 μm wide, with brown intracellular pigment; clamps absent. In groups in unfertilized grassland; summer to autumn; very rare in temp.-suba.; DK (CR), SE (NE). – FE 5:5a, FE 5A:1326, FND 21:18, GBW 4:159, Lud 94.117, ☉.

E. glaucobasis Noordel.

- Stem uniformly coloured; sp regularly angled in side-view, 6-9 μm broad 19
- 19. Stem intensely blue with fine blue flocculose covering see *E. coeruleoflocculosum* key B 11
- Stem glabrous, polished 20

- 20. Cap fulvous, contrasting the delicate violaceous brown stem. Cap 10-25 mm, convex, umbilicate, tomentose, not hygrophanous, not or indistinctly translucently striate, then minutely scaly; gills adnate-emarginate, medium spaced, cream, then pink; stem 20-50 x 1-3 mm, polished; smell and taste indistinct. Sp 8.5-11(-11.5) x 6-8(-8.5) μm , heterodiametrical, 5-7-angled in side-view; gill edge heterogeneous; cheilocystidia 20-40 x 6-12 μm , cylindrical to clavate; pileipellis a trichoderm of inflated elements, 20-40 x 10-35 μm , with intracellular pigment; clamps absent. Terrestrial, in groups in mixed deciduous forests on calcareous soil; summer; FI (EH: Urjala). – FE 5A:1328, Sieniop 260.

E. fulvoviolaceum Noordel. & Vauras

- Cap yellow brown to dull brown, sepia or blackish brown; stem blue to blue grey 21
- 21. Cap moderately dark yellow brown, deeply translucently striate; cheilocystidia broadly clavate (fig. 449D). Cap 10-40 mm, bell-shaped to conical, then convex, umbilicate, minutely

scaly at centre, weakly hygrophanous; gills adnate-emarginate, medium spaced, white, then pink; stem 10-60 x 1-4 mm, polished, pale blue grey; smell and taste indistinct. Sp 9.5-14 x 7-9 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia 20-80 x 10-30 μm , broadly clavate; pileipellis a cutis to a trichoderm of inflated, 10-25 μm wide hyphae with intracellular pigment; clamps absent. In groups in unfertilized grassland; summer to autumn; occasional in hemib.-bore., rare in temp.-suba.; DK (VU), NO (NT), SE (LC). – B&K 4:84, FE 5:62a, FE 5A:1323, FND 21:36, Ves 257.

E. sodale Noordel.

- Cap dark brown, sepia or greyish brown, not or only short translucently striate; cheilocystidia fusiform to cylindrical-clavate. Cap 15-55 mm, conical, then convex, umbilicate, with minutely scaly centre, not hygrophanous, slightly translucently striate; gills adnate-emarginate, medium spaced, pale grey, then sordid pink; stem 20-70 x 2-4(-5) mm, polished, blue or blue grey, then steel grey; smell and taste none. Sp 9-11.5 x 6.5-9 μm , 6-8-angled in side-view; cheilocystidia 20-40 x 6-20 μm , fusiform, cylindrical to broadly clavate, with brown, intracellular pigment; pileipellis a cutis to a trichoderm of inflated terminal elements, 20-75 x 10-20 μm , with brown, intracellular pigment; clamps absent. In groups in unfertilized grassland, in forests and among *Sphagnum* in peat-bogs; summer to autumn; very rare in temp.-suba.; DK, NO (Tel: Bamble). – FE 5A:1325.

E. poliopus (Romagn.) Noordel. var. *discolor* Noordel.

- | | | |
|-----|---|----|
| 22. | Stem pruinose, fibrillose, fibrillose-striate or finely scaly | 23 |
| - | Stem glabrous, polished | 25 |

23. Cap pale to medium brown; stem pale blue grey, densely silvery striate. Cap 15-50 mm, conical, then conical-convex, indistinctly umbilicate, minutely scaly, not hygrophanous, not translucently striate; gills adnate-emarginate, medium spaced, white, then pink; stem 40-120 x 2-8 mm, cylindrical; smell and taste indistinct. Sp 9-13.5(-14) x 6.5-8(-9) μm , heterodiametrical, 5-9-angled in side-view, with blunt angles; cheilocystidia absent; pileipellis a trichoderm of inflated hyphae, 15-40 μm wide, with intracellular pigment; clamps absent. In groups in unfertilized grassland; summer to autumn; occasional in hemib.-suba., rare in temp.; DK (VU), FI (LC), NO (NT), SE (NT). – FAD 73C, FE 5:63b, FE 5A:1316, FND 21:19, R&H 382.

E. griseocyaneum (Fr.: Fr.) P. Kumm.

- Cap dark brown; stem either pruinose or with appressed, dark fibrils 24
24. Stem finely pruinose all over; cap up to 30 mm, convex to low convex. Cap minutely scaly, not hygrophanous, not translucently striate, very dark brown almost black; gills adnate-emarginate, medium spaced, sordid grey pink; stem 20-70 x 1-5 mm, dark blue grey; smell and taste indistinct. Sp 9-12(-12.5) x 6.5-8 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a trichoderm of inflated hyphae, 8-25 μm wide, with intracellular pigment; clamps absent. In groups in grassland; summer to autumn; very rare in hemib.-suba.; FI (DD), NO (EN). – BSMF 115:175, FE 5:64b, FE 5A:1317.

E. viaregale Noordel.

- Stem with innate, dark fibrils; cap 20-70 mm, conical to conical-convex. Cap finely to recurved scaly, not hygrophanous, not translucently striate, dark sepia to blackish brown; gills adnate to adnexed, medium spaced, sordid pink; stem 20-90 x 1-6 mm, ultramarine to indigo, with a fibrillose covering; smell and taste indistinct. Sp 9-14 x 6.5-8 μm , heterodiametrical, 5-9-angled in side-view; cheilocystidia absent; pileipellis a trichoderm of inflated hyphae, 6-20 μm wide, with intracellular pigment; clamps absent. In groups in unfertilized grassland; summer to autumn; rare in temp., very rare in hemib.-suba.; DK (EN), NO (NE), SE. – FE 5:63a, FE 5A:1315, FND 21:3, Lud 94.116, Svp 53:36, ☉.

E. anatinum (Lasch: Fr.) Donk

- | | | |
|-----|------------------------|---------------------------------|
| 25. | Cap pinkish | see <i>E. ianthinum</i> key E 4 |
| - | Cap pale to dark brown | 26 |

26. Cap dark brown, not translucently striate or at margin only 27
 - Cap moderately dark or pale brown, distinctly translucently striate 28
27. Cap minutely scaly all over; stem grey with a slight blue tinge; sp 10-12.5 x 6.5-9 μm . Cap 20-60 mm, convex, umbilicate, indistinctly hygrophanous, not or indistinctly translucently striate, dark grey brown; gills adnate-emarginate, medium spaced, brown, then pinkish brown; stem 40-90 x 3-6 mm, polished; smell and taste indistinct or aromatical. Sp heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a trichoderm of inflated hyphae, 15-30 μm wide, with intracellular pigment; clamps absent. In groups in grassland; summer to autumn; very rare in temp.-bore.; DK (EN), FI (DD), NO (NE), SE (NE). – B&K 4:76, FE 5:64a, FE 5A:1315, FND 21:32, ☉.
E. scabrosum (Fr.) Noordel.
- Cap scaly at centre only; stem blue; sp 9-11 x 6-8 μm see *E. lepiotosme* key C 20
28. Sp isodiametrical. Cap 5-20 mm, convex, then plane, umbilicate, minutely scaly, not hygrophanous, not or distinctly translucently striate, pale to dark grey brown; gills adnate-decurrent, medium spaced, brown, then brownish pink; stem 25-50 x 1-2 mm, scattered fibrillose, almost polished, grey blue; smell and taste indistinct. Sp 7-10 x 7-9 μm , 4-6-angled in side-view; cheilocystidia absent; pileipellis a trichoderm of inflated elements, 5-25 μm wide, with intracellular pigment; clamps absent. Terrestrial in unfertilized grassland and open *Betula* forests; summer to autumn; UK.
E. allospermum Noordel.
- Sp heterodiametrical 29
29. Sp < 10 μm long 30
 - Sp > 10 μm long 31
30. Cap pale yellow brown with dark brown centre; gills adnate-emarginate; stem deep blue, violaceous blue or sky blue. Cap 10-35 mm, convex, umbilicate, minutely scaly at centre only, slightly hygrophanous, deeply translucently striate; gills medium spaced, white, then pink; stem 25-60 x 1-3 mm, polished; smell and taste indistinct. Sp 7-10 x 6.5-7.5 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis to a trichoderm of inflated, 10-20 μm wide hyphae with intracellular pigment; clamps absent. In groups in unfertilized grassland; summer to autumn; occasional in hemib.-bore., rare in temp. and suba.; DK (EN), FI (DD, PS: Kuopio), NO (LC), SE (NT). – Däh 419, FE 5:60b, FE 5A:1318, FND 21:24, GBW 4:162, ☉.
E. lividocyanulum Noordel.
- Cap pinkish to pinkish brown with darker centre; gills deeply decurrent; stem blue. Cap 5-40 mm, bell-shaped to convex, depressed to umbilicate, hygrophanous, deeply translucently striate, minutely scaly at centre only; gills medium spaced, pink, often with a brown tinge; stem 15-70 x 1-3 mm, polished; smell and taste mild to farinaceous. Sp 8-10.5(-11) x 6-8 (-9) μm , Q = 1.1-1.6, subiso- to heterodiametrical, 5-7-angled in side-view; gill edge fertile, cystidia absent; pileipellis a cutis to a trichoderm of inflated elements, 20-70 x 4-22 μm , with intracellular and minutely incrusting pigment; clamps absent. In groups in humus on fertile soil in deciduous woods, parks and gardens. Summer to autumn; rare in temp.-hemib.; DK (LC), NO (NE). – FE 5:85, FE 5A:1350, Lud 94.121, Ves 247, ☉.
E. incarnatofuscens (Britzelm.) Noordel. (*E. leptonipes* (Romagn.) M.M. Moser)
31. Cap minutely scaly all over; stem deep blue; basidia 4-spored. Cap 10-30 mm, conical to convex, slightly umbilicate, weakly hygrophanous, deeply translucently striate, red brown to grey brown; gills adnate-emarginate, medium spaced, sordid grey, then grey pink; stem 20-60 x 1-4 mm, cylindrical, polished; smell and taste slightly to distinctly farinaceous. Sp 9-14 x 6-10 μm , heterodiametrical, 5-8-angled in side-view; cheilocystidia absent; pileipellis a cutis to a trichoderm of inflated, 10-25 μm wide hyphae with intracellular pigment; clamps absent. In unfertilized grassland and pastures; summer to autumn; occasional in

temp.-arc. / alp.; DK (NT), FI (LC), FO, NO (LC), SE (LC). – B&K 4:11, FE 5:60a, FE 5A:1318, FND 21:4,5, Ves 256.

E. asprellum (Fr.: Fr.) Fayod

- Cap finely scaly at centre only; stem violaceous grey; basidia 2- and 4-spored. Cap 15-60 mm, convex, umbilicate, not hygrophanous, deeply translucently striate, dark grey brown or sepia; gills adnate-emarginate, medium spaced, pale grey, then pink; stem 25-90 x 1-3 mm, cylindrical, polished; smell and taste indistinct. Sp 9.5-14 x 6-9 μ m, heterodiametrical, 5-9-angled in side-view; cheilocystidia absent; pileipellis a cutis to a trichoderm of inflated, 15-30 μ m wide hyphae with intracellular pigment; clamps absent. In unfertilized grassland; summer to autumn; very rare in temp.-suba.; DK (CR), FI (DD, EH: Tampere), NO (NE), SE. – FE 5:87f, FE 5A:1319, Svp 21:28.

E. huijsmanii Noordel.

Key E: Cap pink or with pink tinges

1. Habit mycenoid; cap convex, often with an umbo 2
 - Habit collybioid or omphalinoid; cap convex with a slightly to distinctly depressed centre 4
2. Stem white, fibrillose striate; cheilocystidia lageniform to lecythiform. Cap 10-30(-50) mm, conical to low convex, umbonate, rarely umbilicate, not hygrophanous, not translucently striate, violaceous grey to pinkish lilaceous; gills almost free, medium spaced, white, then pinkish grey; stem 10-50(-60) x 1-4 mm; smell and taste farinaceous or indistinct. Sp 6.5-10 x 5-7 μ m, heterodiametrical, 6-7-angled in side-view; cheilocystidia 15-50 x 10-19 x 5-10 μ m; pileipellis a cutis to a trichoderm, of cylindrical or inflated, 5-20 μ m wide hyphae with intracellular pigment; clamps absent. Terrestrial among mosses and in humus in very damp places with *Salix* or other deciduous trees; autumn; NL. – Bol Bres 27:91, FE 5A:1255.
E. lilacinoroseum Bon & Guinberteau
 - Stem pink or yellow, polished; cheilocystidia cylindrical-clavate or absent 3
3. Frb entirely pink; sp 11.5-13(-15) x 8-9.5 μ m. Except for the pink frb like the main variety. Among *Sphagnum* in peat bog; autumn; NL.
E. cyanulum (Lasch: Fr.) Noordel. var. *roseolum* Noordel. & Sullock-Enzlin
 - Cap pink to pinkish brown, fading to ochraceous pink; stem yellow; sp 9-11(-11.5) x 7-8 μ m. Cap 15-25 mm, conical, then convex, smooth, hygrophanous, deeply translucently striate; gills almost free, medium spaced, pink; stem 25-30 x 1-2 mm, polished; smell and taste indistinct. Sp heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2.5-11 μ m wide hyphae with intracellular pigment; clamps present. In seminatural, nutrient poor grasslands; late summer to autumn; NL. – FE 5:85a.
E. verecundum (Fr.: Fr.) Noordel.
4. Stem lilac at top, downwards pink, polished; cheilocystidia absent. Cap 10-30 mm, hemispherical, then bell-shaped to conical, umbilicate, slightly rugulose, minutely scaly at centre, hygrophanous, deeply translucently striate, pink with a faint lilac tinge when fresh, more brownish at centre; gills adnate-emarginate with a decurrent tooth, medium spaced, pink; stem 40-55 x 1-3 mm; smell none; taste slightly raphanoid. Sp 9.5-11.5 x 6-7 μ m, heterodiametrical, 6-8-angled in side-view; cheilocystidia absent; pileipellis a cutis to a trichoderm, of 10-12 μ m wide hyphae with intracellular pigment; clamps absent. In marshy places, on peaty soil, among *Sphagnum*; summer to autumn; very rare in bore.; SE (NE, Jmt). – FE 5:80b, FE 5A:1311, FND 21:21.
E. ianthinum (Romagn. & J. Favre) Noordel.
 - Stem without lilac tinges; cheilocystidia present 5
5. Cap when fresh with distinct pink-lilaceous tinges, turning uniformly ochraceous under influence of daylight, entirely tomentose, not translucently striate; stem yellow to yellow

ochre, densely white-fibrillose striate. Cap 10-50 mm, bell-shaped, then convex, not hygrophanous; gills adnate-emarginate or with a decurrent tooth, medium spaced, white, then pink; stem 10-75 x 1-4 mm, cylindrical; smell and taste indistinct. Sp 10-13 x 6.5-9(-9.5) μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia 20-80 x 10-15 μm , cylindrical to subclavate; pileipellis a trichoderm of inflated terminal elements, 25-95 x 10-30 μm , with intracellular pigment; clamps absent. Terrestrial and on mossy trunks of trees in swampy deciduous forests (*Alnus*, *Fraxinus*, *Populus*), less often in *Sphagnum* or unfertilized grassland, preferably on rich soil; summer to autumn; rare in temp.-bore.; DK (EN), FI (VU), NO (VU), SE (VU). – B&K 4:68, Bol Bres 27:90, FE 5:68, FE 5A:1339-1340, Svp 21:29, ☉.

E. queletii (Boud.) Noordel.

- Cap without lilaceous tinges, fibrillose, translucently striate or not; stem grey or pink, polished or with scattered fibrils in upper part 6
 - 6. Cap light grey with a distinct pink tinge, not translucently striate, radially fibrillose; stem grey. Cap 15-35 mm, convex, umbilicate, not hygrophanous; gills free, white, then pink; stem 25-50 x 2-3 mm, polished; smell and taste indistinct. Sp 9-11 x 6-7.5 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia 25-60 x 8-13 μm , clavate to lageniform; pileipellis a trichoderm to a hymeniderm of broadly clavate terminal elements, 30-70 x 12-20 μm , with intracellular pigment; clamps absent. In groups in forests; EE. – FE 5:59b, FE 5A:1312. *E. roseotinctum* Noordel. & Liiv
 - Cap more purely pink, usually translucently striate, glabrous or minutely granulose to finely scaly, particularly at centre, fibrillose or glabrous towards margin; stem pink 7
 - 7. Gill edge of the serrulatum-type, lilac-pink; stem minutely scaly-fibrillose in upper part, downwards polished or with scattered fibrils see *E. callirhodon* key B 15
 - Gill edge a hymeniform layer, concolorous with sides or pink; stem polished. Cap 10-30 mm, conical to bell-shaped or conical-convex, then low convex, umbilicate, entirely tomentose to almost scaly, not hygrophanous, not translucently striate, pink to pinkish red; gills adnate-emarginate, medium spaced, white, then pink; stem 20-60 x 1-6 mm, pink; smell and taste indistinct. Sp 8.5-10.5(-11) x 7-8 μm , heterodiametrical, 6-9-angled in side-view; cheilocystidia 20-60 x 5-20 μm , cylindrical to clavate or lageniform; pileipellis a cutis to a trichoderm, of strongly inflated, 20-40 μm wide terminal elements with intracellular pigment; clamps absent. In groups in seminatural grassland and in black soil of deciduous forests; summer to autumn; very rare in temp.-bore.; DK (CR), FI, FO (Sandvik), NO (EN), SE (EN). – BCat 819, B&K 4:71, BSMF 120:344, 346, FE 5:58c, FE 5A:1308-1309, ☉.
- E. roseum* (Longyear) Hesler

Key F: Frb collybioid, clitocyboid or omphalinoid with glabrous, convex to flattened, depressed, umbilicate or funnel-shaped, hygrophanous cap and adnate to deeply decurrent gills

- 1. Cap white or at most with yellow tinge at centre 2
 - Cap distinctly pigmented 4
 - 2. Cap and stem with capitate cystidia (fig. 457A); clamps absent. Cap 2-15 mm, convex, slightly depressed, glabrous or slightly fibrillose, not hygrophanous, not translucently striate, white; gills adnate-emarginate, distant, white, then pink; stem 10-30 x 0.5-2 mm, polished, white or tinged yellow, hyaline; smell strongly farinaceous; taste rancid. Sp 8-12.5 x 6-7(-7.5) μm , heterodiametrical, 5-7-angled; cheilocystidia absent; pileipellis a cutis of cylindrical, non-pigmented hyphae, 10-30 μm wide. In small groups on bare soil in damp forests; summer to autumn; rare in temp.-bore.; DK (LC), FI (LC), NO (NE, Troms), SE (LC, Sk). – BCat 709, FE 5:46d, FE 5A:1274, GBW 4:172, Lud 94.52, ☉.
- E. cephalotrichum* (P.D. Orton) Noordel. (*Rhodophyllus molliusculus* (Qué.) Romagn. nom. illeg.)

- Cap and stem without capitate cystidia; clamps present 3
- 3. Sp 8-11.5 x 6-8 μm ; cap 15-30 mm. Cap conical-convex to convex, not depressed, glabrous, hygrophanous, translucently striate, white, tinged yellow at centre; gills adnate-emarginate with a decurrent tooth, medium spaced, white, then pink; stem 20-60 x 1-3 mm, with a fibrillose covering; smell and taste indistinct. Sp heterodiametrical, 6-10-angled in side-view; cheilocystidia absent; pileipellis a cutis of entangled, cylindrical, 10-25 μm wide, pigmentless hyphae. Terrestrial, single or in small groups in grassland and in *Sphagnum* bogs; summer to autumn; DE, NL. – FE 5:46d, FE 5A:1273.
E. olorum (Romagn. & J. Favre) Noordel.
- Sp 7-10 x 5.5-7 μm ; cap 4-10 mm. Cap convex, not depressed, glabrous, hygrophanous, deeply translucently striate, brilliantly white with a slight yellow tinge with age; gills adnate-emarginate or slightly decurrent, distant, white; stem (13-)24-45 x 0.5-2 mm, glabrous, white, hyaline; smell and taste indistinct. Sp heterodiametrical; cheilocystidia absent; pileipellis a cutis of cylindrical, 4-12 μm wide, unpigmented hyphae; clamps present. Terrestrial in shadowy, moist places in or near deciduous forests and in grasslands; summer to autumn; rare in temp.-bore.; DK (DD), NO (NE, Akh: Nannestad), SE (LC). – FE 5:46C, FE 5A:1274.
E. percanidum Noordel. (*Rhodophyllus omphaliiformis* Romagn. non *Entoloma o.* (Velen.) Noordel.)
- 4. Stem slightly to distinctly fibrillose-striate or fibrillose-flocculose 5
- Stem smooth, polished or slightly ribbed, not covered with fibrils 9
- 5. Smell strong, like ripe apples; stem substriate see *E. melenosmum* 14
- Smell none or nitrous; stem fibrillose striate or fibrillose-finely scaly 6
- 6. Frb omphalinoid with deeply decurrent gills; cap 5-20 mm see *E. rusticoides* key G 7
- Frb clitocyboid, gills adnate with a decurrent tooth; cap mostly > 20 mm 7
- 7. Smell nitrous; stem white, strongly silvery striate. Cap 20-40 mm, low convex, slightly umbilicate, glabrous, hygrophanous, deeply translucently striate, medium dark grey brown or yellow brown; smell strong, nitrous; taste farinaceous-rancid. In other characters like the main variety. Often in large groups on black humus in damp alluvial forests (*Alnus*, *Fraxinus*, *Salix*); SE. – FE 5A:1180.
E. rhodopolium (Fr.: Fr.) P. Kumm. var. *pseudopolitum* Noordel.
- Smell none or farinaceous; stem coloured underneath striation 8
- 8. Smell and taste indistinct; stem grey brown to red brown, fibrillose-costate; pigment intracellular. Cap (10-)20-65 mm, convex, umbilicate, glabrous, hygrophanous, not translucently striate, dark grey brown, sepia, red brown or blackish brown; gills broadly adnate with a decurrent tooth, crowded, pale brown, then brown pink; stem 25-90 x 3-9 mm. Sp (7-)7.5-9.5(-10.5) x (6-)7-8(-9) μm , subisodiametrical, (4-)5-6-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2.5-8 μm wide, cylindrical hyphae with brown pigment; clamps absent. In groups in poorly manured grasslands, roadsides or clearings in deciduous forests; late summer to late autumn; very rare in temp.-southern bore.; DK (DD, not observed since 1937), FI (DD), SE (NE). – FAD 76F, FE 5:88f.
E. costatum (Fr.: Fr.) P. Kumm.
- Smell and taste farinaceous-rancid; stem dark brown, fibrillose-striate; pigment incrusting. Cap 15-60 mm broad; gills crowded, adnate with only a short decurrent tooth; stem strongly silvery striate. Cap convex to low convex, umbilicate, glabrous, hygrophanous, not translucently striate, sepia or red brown; gills sordid brownish pink; stem 20-40 x 2-6 mm, dark brown. Sp 7-9 x 6-8 μm , (sub-)isodiametrical, 5-6-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-7 μm wide, cylindrical hyphae with incrusting pigment; clamps absent. In groups on dry, sunny spots, preferably on calcareous soil; spring to autumn; very rare in temp.; DK (DD, Fyn, not observed since 1938). – Däh 439, FAD 198E, FE 5:28B, FE

5A:1214, Lud 94.77.

E. sericeoides (J.E. Lange) Noordel.

- 9. Pigment incrusting, sometimes in addition with intracellular pigment 10
- Pigment intracellular only 13
- 10. Cap pale brown to pale yellow brown 11
- Cap medium dark brown to blackish brown 12

- 11. Cheilocystidia 20-70 x 2-8 μ m, cylindrical or lageniform (fig. 457B). Cap 3-10 mm, convex, umbilicate, hygrophanous, translucently striate, pinkish brown or yellow brown; gills decurrent, distant, white, then pink; stem 15-40 x 0.5-1(-2) mm, yellowish, hyaline, polished; smell and taste indistinct. Sp 8-10 x 7-9 μ m, isodiametrical, 5-6-angled in side-view; gill edge heterogeneous; pileipellis a cutis of 2-7 μ m wide, cylindrical hyphae with minutely incrusting pigment; clamps present. In groups on mosses (e.g. *Leucobryum glaucum*), also on rotten, mossy trunks of deciduous and coniferous wood in forests on nutrient poor, sandy soil, once found in a flower pot (Svb); summer to autumn; common in temp.-hemib., occasional in bore.; DK (LC), FI (LC), NO (LC), SE (LC). – FE 5:81c, 86a, FE 5A:1362, Lud 94.11, Svp 55:17, Ves 247, ☉.

E. rhodocalix (Lasch: Fr.) M.M. Moser ('*rhodocylix*')

- Cheilocystidia absent. Cap 8-13 mm, low convex to depressed, glabrous, hygrophanous, deeply translucently striate, very pale greyish brown; gills arcuate-decurrent, medium spaced, pale pink; stem 7-20 x 1-2 mm, polished, hyaline ochre grey; smell like iodoform; taste mild. Sp (7.5-)8-9.5(-10) x (6-)6.5-8 μ m, Q = 1.05-1.25(-1.3), isodiametrical, 5-7-angled in side-view; pileipellis a cutis of 3-9 μ m wide, cylindrical hyphae with minutely incrusting pigment; clamps absent. In small groups in mossy vegetation on calcareous sandy soil; NL. – FE 5A:1362.

E. iodiolens Arnolds & Noordel.

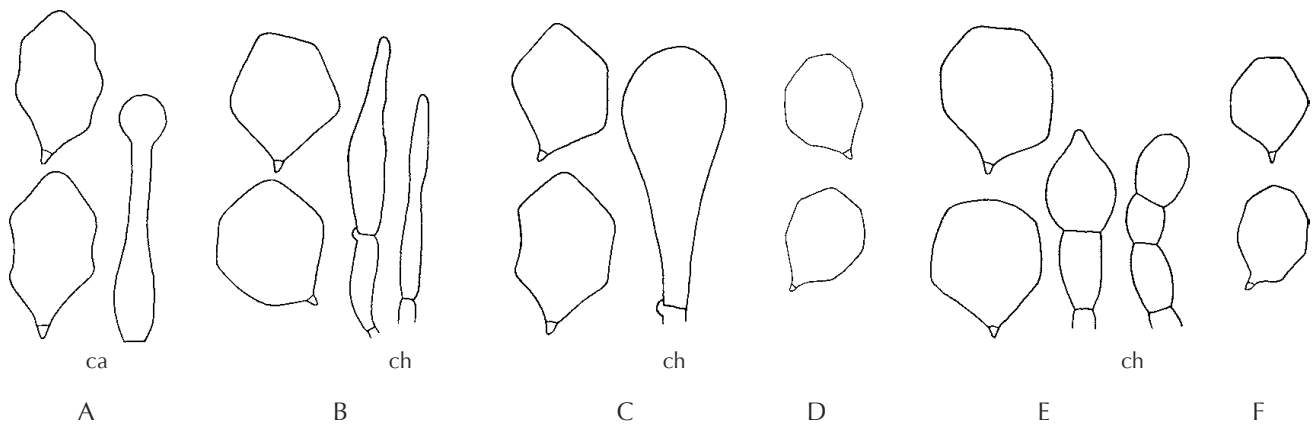
- 12. Pileipellis of up to 25 μ m broad, inflated elements with intracellular pigment; hyphae in lower layers of pileipellis minutely incrusting; clamps present. Cap 10-30 mm, convex, umbilicate, glabrous except for the slightly scaly centre, hygrophanous, translucently striate, dark brown; gills arcuate, decurrent, distant, pale pink; stem c. 30 x 2-3 mm, cylindrical, dark brown, polished; smell and taste indistinct. Sp 9-11 x 7-8 μ m, heterodiametrical, 5-6-angled in side-view; cheilocystidia absent. In deciduous forests under *Fraxinus*, in *Salix* bogs and in xerophytic grassland on calcareous soil; summer to autumn; rare in temp.; DK (VU). – FE 5A:1350, ☉.

E. parkensis (Fr.) Noordel.

- Pileipellis a cutis of 5-15 μ m wide hyphae with incrusting walls, in addition some intracellular pigment present; clamps absent. Cap 5-20 mm, convex to plane, subumbilicate, glabrous, hygrophanous, translucently striate, very dark brown to blackish brown; gills decurrent, thick, distant, dark grey brown with pink tinge; stem 10-20 x 1-2.5 mm, very dark brown to blackish brown; smell and taste farinaceous. Sp 9-12 x 7-9 μ m, heterodiametrical, 5-8-angled in side-view; cheilocystidia absent. In groups in coastal sand dunes among scanty vegetation, often with *Salix repens*; also found on very rotten wood; summer to autumn; very rare in temp.-hemib.; DK (DD, no recent finds), NO (NE, Busk: Hurum).

E. nigellum (Quél.) Noordel.

- 13. Basidia exclusively 2-spored. Cap 10-35(-55) mm, convex or flattened, slightly depressed, glabrous, strongly hygrophanous, translucently striate, sepia or greyish brown, horn brown or reddish brown; gills adnate with a decurrent tooth or adnate-emarginate, medium spaced, white, then pink; stem 15-50 x 1.5-4 mm, cylindrical, polished, white to pale yellow or yellow-brown; smell farinaceous; taste farinaceous-rancid. Sp (9.5-)10-12(-13) x (7-)8-9.5(-10.5) μ m, heterodiametrical, 6-9-angled in side-view; cheilocystidia absent; pileipellis a cutis of 3-12(-18) μ m wide, cylindrical hyphae with intracellular pigment; clamps abundant.



Spores, caulocystidia and cheilocystidia: A: *Entoloma cephalotrichum*, B: *E. rhodocalix*, C: *E. nausiosme*. Spores: D: *E. vinaceum*, E: *E. phaeocyathus*, F: *E. chelone*.

Terrestrial, in groups in moist deciduous forests (*Salix*, *Populus*, *Fraxinus*, *Alnus*); summer to autumn; rare in temp.-bore.; DK (LC), NO (NE, Østf: Halden, Troms: Tromsø), SE (NE). – FE 5:20b, FE 5A:1198.

E. bisporigerum (P.D. Orton) Noordel.

- Basidia, at least in majority, 4-spored 14
- 14. Smell strong, of ripe apples; stem polished or substriate with scattered fibrils. Cap 20-50 mm, convex, umbilicate or weakly umbonate, glabrous, hygrophanous, translucently striate, moderately dark brown; gills adnate-emarginate, medium spaced, white, then pink; stem 30-50 x 3-7 mm, yellow brown; taste farinaceous. Sp 8-10 x 7-8 μm , heterodiametrical, 5-6-angled in side-view; cheilocystidia absent; pileipellis an ixocutis of 2-9 μm wide hyphae with intracellular pigment; clamps abundant. In groups in grassy spots near *Betula*; late summer; very rare in suba.; IS (Au: Egilsstaðaskógur). – FE 5A:1199.
- E. melanosmum* Noordel.
- Smell different or indistinct; stem polished 15
- 15. Cheilocystidia present 16
- Cheilocystidia absent 17
- 16. Smell strong, unpleasant, reminiscent of burnt rubber or burnt meat; sp 5-7 angular, 9-11.5 x 7-9.5 μm (fig. 457C). Cap 10-40 mm, convex, umbilicate, almost glabrous when moist, but becoming rather strongly radially fibrillose-felty when dry, hygrophanous, not translucently striate, dark grey to almost black; gills arcuate-decurrent, medium spaced, dark grey, then brownish pink; stem 20-70 x 2-7 mm, cylindrical, polished, dark grey brown to blackish; taste rancid. Sp heterodiametrical; cheilocystidia 30-100 x 8-30 μm , clavate to globose; pileipellis a cutis of up to 9 μm wide, cylindrical hyphae, at centre sometimes with \pm ascending, clavate terminal elements, 30-90 x 10-20 μm , with brown, intracellular pigment; clamps abundant. Terrestrial in moist places in mixed deciduous forests, often on \pm peaty soil, found under *Alnus*, *Betula*, *Salix* and *Quercus*; late summer to autumn; very rare in hemib.; NO (DD, S&F: Bremanger). – FE 5:21a, FE 5A:1200.
- E. nausiosme* Noordel.
- Smell absent or farinaceous; sp 5-9-angled in side-view, 7.5-12.5 x 5.5-8.5(-9) μm . Cap 10-50 mm, convex, umbilicate, glabrous, weakly hygrophanous, not translucently striate, dark reddish or greyish brown; gills adnate-decurrent, distant, white, then pink; stem 20-60 x 1-5 mm, yellow brown to grey brown, polished; taste indistinct. Sp heterodiametrical; cheilocystidia 40-90 x 12-25 μm , clavate to globose; pileipellis a cutis of cylindrical, 2-8 μm wide

hyphae with brown, intracellular pigment; clamps abundant. In dry grasslands, on sandy or loamy, often somewhat calcareous soil; *NL.* – FE 5A:1201.

E. fridolfingense Noordel. & Lohmeyer

- 17. Sp (sub-)isodiametrical, $Q = 1-1.2$ 18
- Sp heterodiametrical, $Q > 1.3$ 19

- 18. Sp 6-8 x 5.5-7 μm , very thin-walled, many-angled in side-view (fig. 457D). Cap 20-40 mm, convex, slightly depressed, glabrous, hygrophorous, deeply translucently striate, brown, grey brown or reddish brown; gills adnate-emarginate, medium spaced, grey, then grey pink; stem 25-60 x 1-3 mm, polished, yellow; smell and taste indistinct. Cheilocystidia absent; pileipellis an ixocutis of 2.5-7 μm wide, cylindrical hyphae with brown, intracellular pigment; clamps present. In grassland and heathland, on acidulous, sandy or peaty soil; late summer to early winter; occasional in temp.-bore.; DK (LC), FI (DD), NO (LC), SE (LC). – FE 5:23a, 88e, FE 5A:1210-1211, Jordst 9(2), Ves 249.

E. vinaceum (Scop.) Arnolds & Noordel. var. *vinaceum*

var. *fumosipes* Arnolds & Noordel. differs in having a smoke grey stem. FI.

- Sp (7.5-)8-10(-10.5) x (6.5-)7-8(-8.5) μm , with walls of normal thickness, 5-6-angled in side-view. Cap 5-50 mm, convex, slightly depressed to umbilicate, glabrous, hygrophorous, translucently striate, dark grey brown, sepia, yellow brown; gills adnate-emarginate or with a decurrent tooth, medium spaced to distant, white, then pink; stem 15-85 x 1-6 mm, polished, pale grey brown or yellow brown; smell nitrous or inconspicuous; taste oily-rancid. Cheilocystidia absent; pileipellis an (ixo-)cutis of 2-7 μm wide, cylindrical hyphae with intracellular pigment; clamps present. In groups in moist forests (*Alnus*, *Salix*, *Fraxinus*), also in subalpine and arctic habitats; summer to autumn; common in temp.-arc./alp.; DK (LC), FI (LC), NO (LC), SE (LC). – FE 5:20a, FE 5A:1196, Lud 94.37, Ves 246, ☉.

E. politum (Pers.: Fr.) Donk

- 19. Sp 8-9 x 5.5-6.5 μm . Cap 5-15 mm, hemispherical to convex, umbilicate, glabrous, hygrophorous, translucently striate, dark grey brown to almost black; gills adnate-emarginate, medium spaced, pinkish grey; stem 15-40 x 1-3 mm, polished, sordid grey; smell and taste farinaceous. Sp heterodiametrical, nodulose-angled; cheilocystidia absent; pileipellis a cutis of 1-7 μm wide, cylindrical hyphae with brown, intracellular pigment; clamps abundant. In small groups among mosses in subalpine *Picea abies* forests and in alpine *Salix* heathland and snow bed communities; late summer to autumn; rare in arc./alp.; NO (LC, Svb). – FE 5A:1198.

E. engadinum (E. Horak) Noordel.

- Sp 6.5-10 μm wide 20
- 20. Whole frb almost black; cap not translucently striate; in dwarf-shrub vegetation in arc./alp. Cap 15-30 mm, convex, depressed, glabrous or somewhat rugulose at centre, hygrophorous, not translucently striate; gills adnate-emarginate, medium spaced, white, then grey brown with a pink tinge; stem 10-40 x 2-8 mm, polished; smell and taste farinaceous. Sp 8.5-12 x 6.5-10 μm , $Q = 1.1-1.4$, heterodiametrical, in outline with 5-8 angles in side-view; basidia 4-spored, clamped; cheilocystidia absent; pileipellis a cutis to thin ixocutis of narrow, cylindrical hyphae, 3-15 μm wide; with brown, intracellular pigment; clamps present in all tissues. In moist places, often in association with dwarf *Salix* species; summer to autumn; rare; NO (LC, Svb). – FE 5A:1199.

E. anthracinum (J. Favre) Noordel.

- Cap dark red brown or grey brown; stem paler, in forests or grassland at lower altitudes and latitudes 21
- 21. Sp 7.5-12.5 x 6.5-9.5(-10) μm , $Q_{\text{av}} = 1.3-1.4$; smell farinaceous; in moist deciduous forests (*Alnus*, *Fraxinus*, *Salix*, etc.). Cap 10-40 mm, convex to concave, depressed, glabrous, hygrophorous, translucently striate at margin, dark red brown; gills arcuate-decurrent,

medium spaced, pale brown, then pinkish brown; stem 10-50 x 1-3(-4) mm, polished, yellow brown to grey brown; taste farinaceous-rancid. Sp heterodiametrical; cheilocystidia absent; pileipellis a (ixo-)cutis of 7-15 μm wide, cylindrical hyphae with brown, intracellular pigment; clamps abundant. In groups on humus-rich soil; summer to autumn; occasional in temp.-bore.; DK (LC), FI (DD, PK: Valtimo), NO (NE), SE (LC). – FE 5:20C, FE 5A:1197, Lud 94.88, ☉.

E. caccabus (Kühner) Noordel.

- Sp 9-16(-18) x 6-9 μm , Qav > 1.5; smell none; in grassland. Cap 20-35 mm, convex, umbilicate centre, glabrous, hygrophanous, slightly translucently striate, dark sepia brown; gills adnate to subdecurrent, distant, brown pink; stem 20-40 x 2-4 mm, brown, innately fibrillose, slightly striate; taste mild. Sp heterodiametrical, irregularly 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 10-25 μm wide hyphae with brown, intracellular pigment; clamps present. Summer to autumn; very rare in hemib.; SE (LC, Dls). – FE 5A:1355, Lud 94.21.

E. sarcitum (Fr.) Noordel.

Key G: Frb collybioid or omphalinoid; cap fibrillose, tomentose or finely scaly, sometimes zonate; gills decurrent; pigment parietal-incrusting

1. Cap distinctly zonate with concentric zones, with or without aeriferous fibrils 2
- Cap not distinctly zonate, without aeriferous fibrils 3

2. Cap aeriferous-fibrillose; sp (7-)7.5-10 x 6-7 μm ; stem with scattered longitudinal fibrils. Cap 8-40 mm, convex-umbilicate to funnel-shaped, zonate, not hygrophanous, not translucently striate, dark grey brown; gills adnate-decurrent to arcuate-decurrent, medium spaced, grey, then grey pink; stem 10-30 x 1-4 mm, pale brown to yellow brown; smell and taste farinaceous-rancid. Sp heterodiametrical, 6-8-angled in side-view; cheilocystidia absent; pileipellis a cutis of 5-15 μm wide, cylindrical hyphae with incrusting pigment; clamps present. In groups in open spots, grassy or mossy places, also on naked soil, in or near deciduous forests, also on \pm sandy soils under *Juniperus* and in *Pinus* plantations; summer to autumn; common in temp.-bore., occasional in suba.-arc. / alp.; DK (LC), FI (LC), FO, IS, NO (LC), SE (LC). – FAD 79A, FE 5:71a, FE 5A:1360, R&H 387, Ves 246, ☉.

E. undatum (Fr.) M.M. Moser

- Cap not aeriferous-fibrillose; sp 9.5-11.5(-11.5) x 6.5-8 μm ; stem with white floccose covering. Cap 8-25 mm, zonate, not hygrophanous, not translucently striate, sepia with almost black centre. In other characters like the main variety. In small groups in grassland on calcareous soil; late summer; very rare or overlooked in temp.; SE (Sk: Ivö). – Lud 94.20.

E. korhonenii Noordel. var. *gradizonatum* E. Ludw. & Noordel.

3. Cheilocystidia 15-40(-50) x 5-20 μm , often septate (fig. 457E). Cap 5-20 mm, convex, umbilicate to funnel-shaped, tomentose, then finely scaly, weakly hygrophanous, translucently striate, dark grey brown or reddish brown; gills decurrent, distant, dark grey brown, then brown pink; stem 5-20 x 0.5-2 mm, yellow brown to dark brown, polished; smell and taste farinaceous-rancid. Sp (7.5-)8-10 x (6.5-)7-9 μm , isodiametrical; 5-9-angled in side-view; pileipellis a cutis to a trichoderm of inflated terminal elements, 50-120 x 15-35 μm , with coarsely incrusting pigment; clamps absent. In groups on bare sandy or gravelly, slightly to distinctly calcareous soil, at roadsides, also in coastal dunes with *Ammophila arenaria*; autumn; rare in temp.-hemib.; DK (DD, WJyl: Rømø), NO (EN, M&R: Fræna), SE (LC). – Bol Bres 39:42, FE 5A:1364, RdM 43:221.

E. phaeocyathus Noordel.

- Cheilocystidia absent 4
- 4. Sp 6.5-7.5 x 5-6.5 μm (fig. 457F). Cap 5-12 mm, convex, then plane, weakly hygrophanous, translucently striate, horn brown with darker striae and centre, dry, cracked in irregu-

lar scaly patches with age; gills emarginate, broadly adnate, distant, pale beige, then pink; stem 10-15 x 0.5-1 mm, pale yellow brown, fibrillose; smell and taste indistinct. Sp isodiametrical, 5-8-angled in side-view; cheilocystidia absent; pileipellis a cutis of cylindrical, 3-6 μm wide hyphae with minutely incrusting pigment; clamps present. In small groups on rotten wood (*Picea*, *Alnus viridis*) or on soil under *Alnus viridis*, in subarctic and subalpine forests; late summer to autumn; very rare; NO (DD, Nordl: Mo [type]). – FE 5A:1364.

E. chelone Noordel. & E. Horak

- Sp > 7.5 μm long 5
- 5. Gills adnate with a short decurrent tooth; cap with slightly depressed centre 6
- Gills deeply decurrent; cap deeply depressed to funnel-shaped 7
- 6. Cap finely rugulose at centre, \pm glabrous and translucently striate towards margin. Cap 10-30 mm, low convex to depressed, rugulose, particularly at centre, slightly hygrophanous, slightly translucently striate, reddish brown; gills adnate-emarginate, medium spaced, brownish pink; stem 30-50 x 1-3 mm, brown, polished; smell very weak; taste unknown. Sp (7-)9-11 x 6-7.5 μm , heterodiametrical, 5-6-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 3-9 μm wide, cylindrical hyphae with incrusting pigment; clamps present. In small groups, terrestrial in clearing in a deciduous forest; autumn; very rare in temp.; DK (NA, EJyl: Gærums Hede [type]). – FE 5A:1361, Svp 51:58.

E. depressum Noordel. & Vesterh.

- Cap entirely tomentose to minutely scaly. Cap 10-40 mm, convex, depressed, finally funnel-shaped, felty-tomentose, dark brown; gills broadly adnate with a long decurrent tooth, medium spaced, brown to grey brown, then red brown; stem 20-70 x 2-5 mm, brown, silvery fibrillose to subtomentose; smell and taste farinaceous-rancid. Sp 8-10.5(-11.5) x 5.5-7(-7.5) μm , heterodiametrical, 6-7(-8)-angled in side-view; cheilocystidia absent; pileipellis a cutis or a trichoderm of septate, 5-12 μm wide hyphae with dark brown, rather coarsely incrusting walls; clamps present. In groups in grassy roadsides and in grassland, on slightly calcareous soil; summer to autumn; very rare in bore.; FI, NO (Finm), SE (Mpd). – FE 5A:1361.

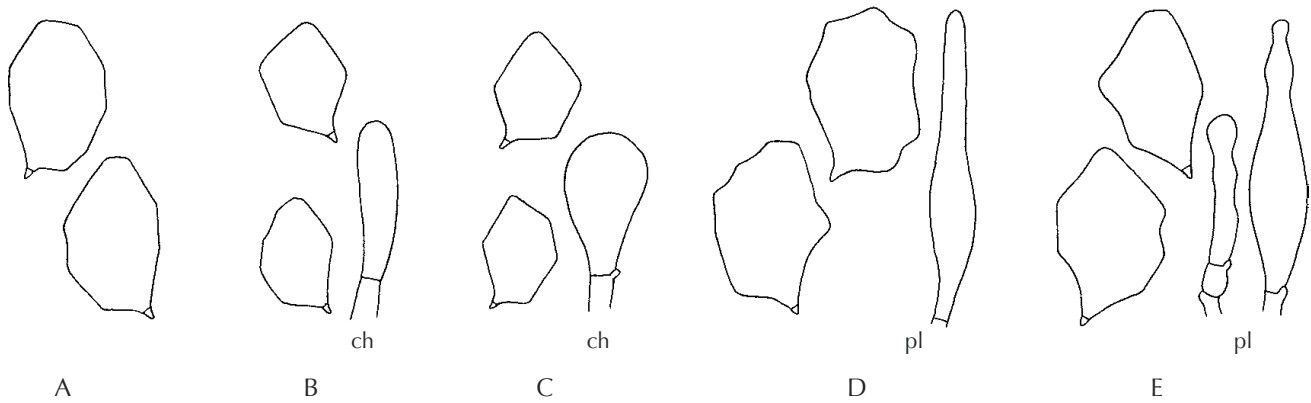
E. korhonenii Noordel. var. *korhonenii*

- 7. Cap very dark brown; cap diam. about equal to length of stem. Cap 5-20 mm, convex, umbilicate, glabrous or slightly rugulose at centre, hygrophanous, deeply translucently striate; gills brownish pink; stem 3-30 x 1-2 mm, yellow brown; smell and taste indistinct. Sp 8-10.5(-11) x 7-9(-9.5) μm , rounded-isodiametrical, 5-6-angled in side-view; cheilocystidia absent; pileipellis a cutis of cylindrical to inflated, 5-35 μm wide hyphae with incrusting pigment and intracellular pigment in lower pileitrama; clamps absent. In humus-rich places in gardens, parks and deciduous forests, at roadsides and in open, sun-lit xerophytic vegetation; spring to autumn; rare or overlooked in temp.-bore.; DK (LC), FI (DD), NO (NE), SE. – FE 5:72a, FE 5A:1363, Lud 94.18.

E. rusticoides (Gillet) Noordel.

- Cap pinkish brown; cap diam. smaller than length of stem. Cap 5-20(-30) mm, convex to low convex, depressed, finely felty, weakly hygrophanous, not translucently striate, not zonate; gills adnate-decurrent, medium spaced, pinkish brown to pinkish grey; stem 10-20 x 1-2 mm, brown with a pink tinge, white pruinose; smell and taste farinaceous. Sp 7-9 x 5.5-7 μm , heterodiametrical, 5-9-angled in side-view; cheilocystidia absent; pileipellis a cutis of 1.5-7 μm wide, cylindrical hyphae with minutely incrusting pigment; clamps present. In groups, terrestrial in open spots, paths, lawns, seminatural grasslands, etc.; summer to autumn; very rare or overlooked in temp.; DK (DD, no recent finds). – FAD 80O, FE 5:86g, Lud 94.14.

E. lanicum (Romagn.) Noordel.



Spores, cheilocystidia and cheilocystidia: A: *Entoloma neglectum*, B: *E. olivaceotinctum*, C: *E. weholtii*, D: *E. indutoides* var. *pleurocystidium*, E: *E. insolitum*.

Key H: Frb collybioid or omphalinoid; cap fibrillose, tomentose or finely scaly, sometimes zonate; gills adnate to decurrent; pigment intracellular

1. Frb white 2
- Frb pigmented 4
2. Stem central only in very young stages, soon eccentric; clamps absent. Cap 2-10 mm, conical-convex, expanding to plane and irregularly shaped, fibrillose-tomentose, white; gills often anastomosing or forked, distant; stem 2-6 x 0.2-1 mm, glabrous or with pubescent base, white; smell none. Sp 9-12.5 x 6-8 μ m, 4-6-angled in side-view; cheilocystidia absent; clamps absent. On debris of grasses and sedges in marshy places; summer to autumn; very rare or overlooked in temp.-hemib.; DK (NA, EJyl: Åsted Ådal), NO (LC). – FE 5:72c, FE 5A:1358, Jordst 19(1), Lud 94.5, ☉.
E. albotomentosum Noordel. & Hauskn. 3
- Stem central; clamps present
3. Stem innately fibrillose or glabrous, polished, without well-differentiated caulocystidia. Cap 5-40 mm, conical-convex to convex, slightly umbilicate, tomentose to finely scaly, not hygrophanous, not translucently striate, white; gills adnate-emarginate or subdecurrent, medium spaced, white, then pink; stem 20-60 x 2-4 mm, white to cream, hyaline; smell and taste none or faintly farinaceous. Sp 8-12 x 6-9 μ m, heterodiametrical, 5-8-angled in side-view; cheilocystidia scattered among basidia, 25-85 x 8-16 μ m, cylindrical to lageniform; pileipellis a trichoderm of inflated, 10-35 μ m wide, pigmentless hyphae; clamps present. In groups in seminatural grassland, also in damp deciduous forests and along ditches; summer to late autumn; common in temp.-suba., rare in arc./alp.; DK (LC), FI (LC), FO, NO (LC), SE (LC). – FE 5:46a, FE 5A:1272-1273, FND 21:33, Phil 163e, R&H 380, ☉.
E. sericellum (Fr.: Fr.) P. Kumm. (*Rhodophyllus carneoalbus* (With.) Quél.)
- Stem minutely pruinose with cylindrical to coralloid caulocystidia. Cap 5-15 mm, convex, umbilicate, minutely tomentose, white; gills decurrent, medium spaced, white, then pink; stem 10-20 x 0.5-1 mm, hyaline; smell and taste indistinct. Sp 9.5-12 x 7.5-9 μ m, heterodiametrical, many-angled to nodulose; cheilocystidia scattered, 24-50 x 3-8 μ m, cylindrical to lageniform; pileipellis a cutis to a trichoderm of slightly inflated, pigmentless hyphae, 3-17 μ m wide; clamps present. Among mosses in grassland, outside the area also in damp places in deciduous forests; summer to autumn; very rare in bore.; NO (DD, Nordl: Alstahaug). – FE 5A:1364.
E. rugosum (Malençon) Bon
4. Cap very pale cream to flesh-coloured; sp irregularly many-angled to nodulose (fig. 461A). Cap 5-40 mm, convex to plane, depressed to umbilicate, tomentose, not hygrophanous,

not translucently striate, pale creamy white, sometimes zonate; gills broadly adnate to decurrent, medium spaced, white, then pink; stem 10-25 x 2-2.5(-3) mm, fibrillose, white or hyaline; smell and taste farinaceous-rancid. Sp 9-12.5 x 6-9(-10) μ m; cheilocystidia absent; pileipellis a cutis to a trichoderm, of cylindrical to slightly inflated 4-16 μ m wide hyphae with very pale intracellular pigment; clamps present. In mossy grassland, meadows, road sides, etc., preferably on (slightly) calcareous soil, also found in marshy vegetation with *Sphagnum*; summer to autumn; occasional in hemib.-bore., rare in temp.-suba.; DK (VU), FI (DD, EH: Tampere), IS (Au: Hengifossárgil, Fljótsdal), NO (DD), SE (LC). – FAD 79D, FE 5:71c, FE 5A:1354, Lud 94.12, ☉.

E. neglectum (Lasch: Fr.) M.M. Moser (*E. cancrinum* (Lasch: Fr.) M.M. Moser)

- Cap pale to rather dark yellow, green, brown or grey; sp regularly-angled, not nodulose 5
- 5. Cap very pale grey. Cap 15-35 mm, low convex, depressed, fibrillose, not hygrophanous, not translucently striate, pale yellow or grey pink with slightly darker concentric zones; gills decurrent, distant, white, then pink; stem 14-25 x 2-4 mm, fibrillose, white or pale ochre; smell and taste farinaceous. Sp 9.5-11 x 7-8 μ m, regularly 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of cylindrical, 2-9 μ m wide hyphae with very pale intracellular pigment; clamps present. In poorly manured grassland on nutrient poor soils; summer to autumn; very rare in bore.; SE (NE, Mpd: Borgsjö) – Lud 94.13.

E. pallens (Maire) Arnolds

- Cap pale to rather dark yellow, green, brown or grey 6
- 6. Cap pale yellow or ochre; cheilocystidia scattered among basidia, protruding through the hymenium, 25-85 x 8-16 μ m, cylindrical to lageniform see *E. sericellum* 3
- Cap colour different; cheilocystidia different or absent 7
- 7. Stem bright yellow green, green or olivaceous green; smell strong, of mice excrements. Cap 10-40 mm, bell-shaped to convex, umbilicate, minutely scaly at centre, slightly hygrophanous, deeply translucently striate, olivaceous green, yellow green, yellow, yellow brown or reddish brown; gills adnate-emarginate or with a decurrent tooth, medium spaced, white or pale green, then pink; stem 20-80 x 1-4 mm, turning bright blue green when bruised, polished, at base white tomentose; taste unpleasant. Sp 10-14 x 7.5-10, heterodiametrical, 6-9-angled in side-view; cheilocystidia absent; pileipellis a trichoderm of 7-30 μ m wide, inflated elements with intracellular pigment; clamps absent. In groups in calcareous unfertilized grassland, rarely also in deciduous forests; summer to autumn; rare, but locally occasional in temp.-suba.; DK (NT), FO, NO (NT), SE (LC). – FAD 77C, FE 5:58a, FE 5A:1306-1307, FND 21:22, R&H 380, ☉.

E. incanum (Fr.: Fr.) Hesler

- Stem without bright green tinges, with or without glaucous-greenish tinges; smell none or farinaceous to faintly aromatic 8
- 8. Clamps present 9
- Clamps absent 20
- 9. Cheilocystidia, if present, cylindrical, clavate or spheropedunculate and with about the same length as basidia 10
- Cheilocystidia well differentiated, fusiform, lageniform or clavate-mucronate, or with a capitate neck, much longer than basidia 15
- 10. Cheilocystidia present 11
- Cheilocystidia absent 12
- 11. Cap and stem very dark brown to blackish brown; smell very strong, nasty, like burnt rubber or meat see *E. nausiosme* key F 16
- Cap and stem yellow brown or grey brown, with or without an olivaceous tinge; smell indistinct 13

12. Cap and stem yellow brown or grey brown with a distinct olivaceous tinge; cheilocystidia 15-40 x 6-10 μm , clavate (fig. 461B). Cap 5-20 mm, bell-shaped to convex, umbilicate, fibrillose to finely scaly, hygrophanous, translucently striate; gills adnate-emarginate or with a decurrent tooth, medium spaced, white then pink; stem 10-40 x 1-3 mm, polished; smell and taste indistinct. Sp 7-9 x 5.5-7 μm , heterodiametrical, 5-7-angled in side-view; pileipellis a cutis to a trichoderm of inflated, 15-25 μm wide hyphae with intracellular pigment; clamps present. In groups in grassland and deciduous forests; summer to autumn; very rare in hemib.-suba.; FI (EN, PS: Kuopio), NO (DD, Tel: Bamble, STr: Midtre Gauldal), SE (Boh: Orust). – FE 5:50b.

E. olivaceotinctum Noordel.

- Cap and stem yellowish to ochraceous; cheilocystidia 20-70 x 10-20 μm broadly clavate (fig. 461C). Cap 10-25 mm, convex, umbilicate, finely scaly at centre, hygrophanous, translucently striate; gills adnate with a decurrent tooth, medium spaced to distant, pale brown, then pinkish brown; stem 30-50 x 1-3 mm, polished; smell and taste indistinct. Sp 7-9(-10) x 5.5-7 μm , heterodiametrical, 5-7-angled in side-view; pileipellis a cutis to a trichoderm, of inflated, 10-25 μm wide hyphae with intracellular pigment; clamps present. In unfertilized grassland and in open deciduous forests; summer to autumn; very rare in temp.-hemib.; DK (EN), NO (DD, Tel: Bamble). – FE 5:1349, FND 21:39, Svp 21:21.

E. weholtii Noordel.

13. Stem vivid yellow with a white basal mycelium; smell indistinct. Cap 10-35 mm, convex, umbilicate, finely scaly at centre, hygrophanous, translucently striate, yellow brown with a brown centre; gills adnate-emarginate or with a decurrent tooth, medium spaced, white, then pink; stem 30-50 x 1-2 mm, polished; taste indistinct. Sp 7-9.5 x 6-8.5 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis to a trichoderm of inflated, 10-20 μm wide hyphae with intracellular pigment; clamps present. In grassland on calcareous soil; summer to autumn; rare in bore.-suba.; NO (vU). – FE 5:50a, FE 5A:1347.

E. politoflavipes Noordel. & Liiv

- Stem grey brown; smell farinaceous 14
- 14. Sp 9-16(-18) x 6-9 μm , irregularly angular-nodulose see *E. sarcitum* key F 21
- Sp 8-10(-11) x 6.5-7.5 μm , 6-8-angled in side-view. Cap 5-25 mm, bell-shaped to convex, umbilicate, minutely tomentose in central part, hygrophanous, translucently striate, brown grey; gills adnexed, distant, greyish, then greyish pink; stem 20-40 x 1-4 mm, polished, grey brown; smell and taste strongly farinaceous. Sp heterodiametrical; cheilocystidia absent; pileipellis a cutis to a trichoderm of inflated, 10-20 μm wide hyphae with intracellular pigment; clamps present. In groups in unfertilized grassland or deciduous forests; late summer to autumn; very rare in hemib.-middle bore.; FI (DD), NO (NE). – BSMF 120:350,351, FE 5:81a, FE 5A:1346.

E. farinasprellum Arnolds

15. Pleurocystidia present 16
- Pleurocystidia absent 17

16. Cheilo- and pleurocystidia lageniform with a long, tapering neck (fig. 461D). Except for the presence of 40-145 x 5-15 μm large cheilo- and pleurocystidia like the main variety. In groups in grassy places in mixed woodland on somewhat calcareous soil; late summer to autumn; very rare; SE.

E. indutoides (P.D. Orton) Noordel. var. *pleurocystidiatum* Noordel., Wölfel & Hauskn.

- Cheilo- and pleurocystidia in part \pm capitate (fig. 461E). Cap 15-20 mm, low convex, depressed, slightly hygrophanous, not translucently striate, very dark blackish brown, coarsely fibrillose; gills medium spaced, adnate with a decurrent tooth, grey brown; stem 10-30 x 1-2 mm, dark brown, slightly fibrillose; smell and taste indistinct. Sp 11-12.5 x 7-9.5 μm , heterodiametrical, 6-9-angled in side-view; cheilocystidia 20-60 x 5-17 μm , cylindri-

cal to lageniform; pleurocystidia 25-75 x 5-20 x 3-7 μm , similar to cheilocystidia, abundant; pileipellis a cutis of cylindrical to inflated 10-20 μm wide hyphae with intracellular pigment; clamps abundant. In groups in mossy, unfertilized grassland on calcareous soil; autumn; very rare in suba.; FO. – BSMF 122:opp. 132, Jordst 24(2):22, Lud 94.87.

E. insolitum Noordel.

- 17. Stem polished or with only a few scattered fibrils 18
- Stem fibrillose or flocculose 19

- 18. Cap pale grey ochre to pale brown with dense fibrillose covering, reminiscent of an *Inocybe* species; sp 9-14 x 7-9 μm . Cap 15-20 mm, hemispherical to convex, depressed, not or weakly hygrophanous, translucently striate; gills medium spaced, adnate-emarginate, pale grey-brown, then greyish pink; stem 25-50 x 1-3 mm, polished, pale cream; smell and taste indistinct. Cheilocystidia 27-100 x 5-20 μm , cylindrical, clavate, lageniform to lecythiform; pileipellis a cutis to a trichoderm of inflated, 10-15 μm wide hyphae with intracellular pigment; clamps present. In groups in unfertilized grassland or open woodland on calcareous soil; late summer to autumn; very rare in hemib.; NO (NE, Hord: Bømlø, M&R: Giske).

E. calaminare Noordel.

- Cap dark brown, almost smooth; sp 9.5-14(-14.5) x 8-10.5 μm . Cap 10-20 mm, truncate-conical to convex, depressed to umbilicate, hygrophanous, translucently striate; gills medium spaced to distant, adnate to adnexed, pale grey, then greyish pink; stem 20-45 x 1-2 mm, pale brown, polished; smell and taste slightly farinaceous. Cheilocystidia 35-80 x 7.5-16 x 2.5-8 μm , lageniform to lecythiform; pileipellis a cutis to a trichoderm of inflated, 15-20 μm wide hyphae with intracellular pigment; clamps present. In groups in unfertilized grassland and heathland, on loamy soil; late summer to autumn; rare in temp.-bore.; DK (EN), NO (NT), SE (NE). – FE 5A:1345, FND 21:12, Svp 21:21.

E. cocles (Fr.) Noordel.

- 19. Cap yellow brown with an olivaceous tinge. Cap 10-20 mm, convex, umbilicate, minutely scaly, hygrophanous, short translucently striate; gills adnate-decurrent, medium spaced, grey, then pink, with entire, brown edge; stem 15-70 x 2-6 mm, finely floccose at top, fibrillose below, white at top, pale beige brown to brown below; smell and taste indistinct. Sp (9.5-)10-14 x 7.5-10.5 μm , heterodiametrical, 5-9-angled in side-view; gill edge sterile; cheilocystidia 38-85 x 10-22 x 4-7.5 μm , with brown intracellular pigment; pileipellis a trichoderm of clavate to fusiform elements, 40-90 x 10-25 μm with intracellular pigment; clamps present. In groups in grassland; late summer to autumn; very rare in bore.; SE (LC). – FE 5:49b, FE 5A:1344.

E. indutoides (P.D. Orton) Noordel. var. *indutoides*

- Cap brown, chocolate brown or grey brown, without olivaceous tinge
see *E. indutoides* var. *griseorubidum* key B 20

- 20(8) Stem with glaucous-greenish tinges 21
- Stem without glaucous-greenish tinges 22

- 21. Cheilocystidia absent. Cap 10-30 mm, convex, umbilicate, minutely scaly at centre, weakly hygrophanous, translucently striate, pale yellow brown or grey brown; gills adnate-emarginate, medium spaced, white, then pink; stem 20-40 x 1-2 mm, polished, pale grey with a glaucous tinge, often turning blood red at base; smell and taste indistinct. Sp 9-11 x 6.5-7.5 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis to a trichoderm of inflated, 10-30 μm wide elements with intracellular pigment; clamps absent. In groups in unfertilized grassland and open deciduous forests; summer to autumn; rare in temp.-bore.; NO, SE (DD). – FE 5A:1330.

E. chloropolium (Fr.) M.M. Moser

- Cheilocystidia present see *E. exile* key B 13

22. Cap and stem deep red to wine-coloured. Cap 10-30 mm, bell-shaped to convex, then plane, umbilicate, tomentose or granulose to finely scaly, not hygrophanous, not translucently striate; gills adnate-emarginate or with a decurrent tooth, medium spaced, pale brown, then pinkish brown; stem 40-75 x 1-3 mm, fibrillose; smell and taste indistinct. Sp 10-12.5 x 7-8 μm , heterodiametrical, 5-6(-7)-angled in side-view; cheilocystidia absent; pileipellis a cutis to a trichoderm, of inflated terminal elements, 20-75 x 15-25 μm , with intracellular pigment; clamps absent. In small groups among mosses and herbs in grassy vegetation, in open forests, from lowland up into the subalpine meadows; late summer to autumn; *PL.* – FE 5:75a, FE 5A:1339.
E. rufocarneum (Berk.) Noordel.
 - Cap and stem not red to wine-coloured 23
23. Frb ochre, yellow, orange yellow or reddish yellow 24
 - Frb dull yellow, yellow brown, brown grey or dark greyish brown, porphyry brown to purplish grey 27
24. Cap yellow to orange yellow. Cap 10-50 mm, conical to convex, umbilicate, minutely scaly at centre, not hygrophanous, translucently striate; gills adnate-emarginate or with a decurrent tooth, medium spaced, white, then pink; stem 25-100 x 1-4 mm, pale yellow to yellow, polished; smell and taste indistinct. Sp 9-14 x 6-9 μm , heterodiametrical, 5-9-angled in side-view; cheilocystidia 20-50 x 5-15 μm , cylindrical to clavate; pileipellis a cutis to a trichoderm of inflated, 12-30 μm wide hyphae with intracellular pigment; clamps absent. In groups in unfertilized grassland; summer to autumn; occasional in hemib.-suba., rare in temp.; DK (VU), FI (DD), FO, NO (LC), SE (LC). – FE 5:67a, FE 5A:1336-1337, FND 21:17, GBW 4:231, Jordst 24(3):39, ☉.
E. formosum (Fr.: Fr.) Noordel. (*E. fulvum* (P.D. Orton) Arnolds)
 - Cap ochre 25
25. Stem polished; cap not translucently striate, minutely micaceous-granulose all over see *E. ochromicaceum* key B 21
 - Stem fibrillose-flocculose; cap fibrillose-finely scaly, translucently striate or not 26
26. Cap when fresh with a carmine flush, which soon disappears under the influence of sunlight see *E. queletii* key E 5
 - Cap ochre without a carmine flush. Cap 10-40 mm, convex, umbilicate, tomentose to finely scaly, not hygrophanous, not translucently striate; gills adnate-emarginate or with a decurrent tooth, medium spaced, yellow, then yellow pink; stem 20-70 x 2-5 mm, fibrillose all over, ochre; smell and taste indistinct. Sp 9-11(-11.5) x 6-8 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia 30-80 x 4-12 μm , cylindrical to clavate; pileipellis a trichoderm of inflated terminal elements, 25-70 x 10-25 μm , with intracellular pigment; clamps absent. In groups in unfertilized grassland; summer to autumn; very rare in temp.-suba.; DK (NA, EJyl: Vingum), FO, NO (DD), SE (EN). – B&K 4:46, FE 5:76b, FE 5A:1340, FND 21:23, GBW 4:235.
E. kervernii (de Guern.) M.M. Moser
27. Cap distinctly translucently striate, slightly hygrophanous see *E. longistriatum* key B 25
 - Cap not translucently striate, not hygrophanous 28
28. Stem fibrillose-striate 29
 - Stem glabrous, polished 30
29. Cap porphyry brown to purplish grey; cheilocystidia abundant see *E. porphyrogriseum* D 16
 - Cap sordid grey brown or yellowish grey; cheilocystidia absent. Cap 10-40 mm, conical, then convex, minutely scaly all over, not hygrophanous, not translucently striate; gills adnate-emarginate, medium spaced, white, then pink; stem 20-45 x 3-7 mm, densely silvery striate, very pale grey brown; smell and taste indistinct. Sp 9-12 x 6.5-8.5 μm , heterodiametrical, 5-7-angled in side-view; pileipellis a trichoderm of inflated elements, 50-110 x 8-22

μm , with intracellular pigment; clamps absent. In groups in unfertilized grassland; autumn; very rare in temp.-suba.; DK (EN), FI (EN, V: Korppoo, PS: Kuopio), NO (VU), SE (NA). – FE 5A:1343, FND 21:32, Svp 21:28.

E. scabropellis Noordel.

30. Cheilocystidia absent. Cap 10–40 mm, conical, then convex, umbilicate, granulose-finely scaly all over, not hygrophanous, not translucently striate, pale to dark yellowish grey; gills adnate-emarginate, medium spaced, white, then pink; stem 50–90 x 2–4 mm, polished, yellowish grey; smell none; taste bitter. Sp 9–13 x 7–8 μm , heterodiametrical, 5–9-angled in side-view; pileipellis a trichoderm to a hymeniderm of inflated elements, 100–300 x 4–25 μm , with intracellular pigment; clamps absent. In groups in unfertilized grassland and deciduous forests; EE. – FE 5:66a.

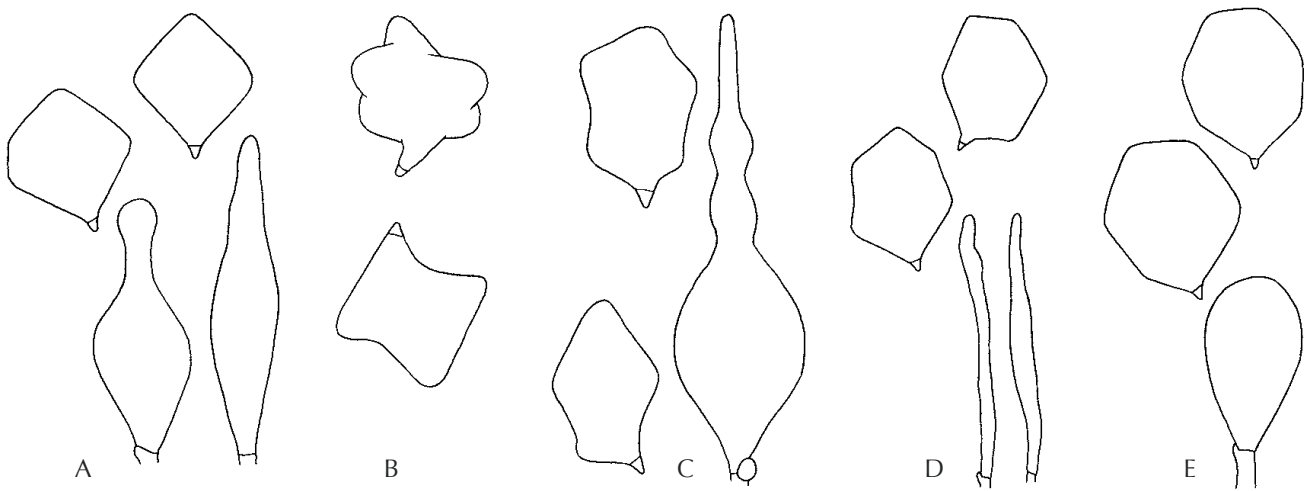
E. leochromus Noordel. & Liiv var. *leochromus*

var. *obscurum* Noordel. & Prüfert differs by having a dark brown-grey cap. DE. – FE 5A:1334.

- Cheilocystidia present 31
 - 31. Sp 10–12 x 7–8 μm ; base of stem usually turning red when handled see *E. turci* key B 24
 - Sp 8.5–10 x 6.5–7 μm ; base of stem not turning red. Cap 10–50 mm, truncate-conical to convex, umbilicate, tomentose to finely scaly, not hygrophanous, not or slightly translucently striate, dark red brown or grey brown; gills adnate-emarginate, medium spaced, brown, then pinkish brown; stem 25–50 x 2–4 mm, polished, dark grey brown or red brown; smell and taste indistinct or slightly aromatic. Sp heterodiametrical, 5–7-angled in side-view; cheilocystidia 20–60 x 5–15 μm , cylindrical to clavate; pileipellis a trichoderm of inflated elements, 25–90 x 5–20 μm , with intracellular pigment; clamps absent. In groups in unfertilized grassland; summer to autumn; rare in temp.-arc. / alp.; DK (NA), FI (DD), NO (NE), SE (NE). – Bol Bres 39:47, 48, BSMF 120:343, 344, FE 5:70b, FE 5A:1342, GBW 4:235.
- E. pseudoturci* Noordel.

Key I: Sp cuboid or cruciform

1. Sp cuboid (fig. 467A). Cap 20–50 mm, conical, bell-shaped or hemispherical, expanding to plane, umbonate, glabrous, hygrophanous, deeply translucently striate, dark yellow brown; gills almost free, medium spaced, pink; stem 30–80(–110) x 2–5 mm, polished, yellow or yellow brown; smell faint, slightly aromatic; taste rancid-farinaceous. Sp 8–10.5(–11) x 7–10.5 μm ; gill edge sterile or heterogeneous; cheilocystidia 35–80 x 10–25 x 3–9 μm , fusiform, lageniform or tibiiform; pileipellis a cutis of cylindrical, 2–9 μm wide hyphae with intracellular and incrusting pigment; clamps abundant. Single or in small groups in moist, unfertilized grassland, often in *Sphagnum*; summer to autumn; rare in temp.-suba.; DK (EN), NO (NT), SE (LC). – FE 5:26b, FE 5A:1257, Lud 94.82, Ves 252, ☉.
- E. rhombisporum* (Kühner & Boursier) E. Horak var. *rhombisporum*
var. *floccipes* Noordel. differs by having an entirely floccose stem. DK, NO. – FE 5A:1258
- Sp cruciform-stellate (fig. 467B). Cap 20–60 mm, conical, hemispherical or bell-shaped, expanding with age, umbonate, glabrous, strongly hygrophanous, translucently striate, dark grey brown, sepia, reddish brown or yellow brown; gills adnate-emarginate to almost free, medium spaced; white, then pink with or without grey tinge; stem 20–80 x 1–7 mm, cylindrical or compressed, yellow brown or grey brown, densely silvery striate; smell and taste mild to farinaceous-rancid. Sp 7.5–13(–14) x 7–13 μm ; cheilocystidia absent; pileipellis a cutis to a trichoderm of 6–15 μm wide, cylindrical hyphae with slightly inflated terminal elements, 10–20 μm wide; with intracellular pigment; clamps absent. Terrestrial in groups in grasslands, marshes, pastures, meadows, hayfields, peat bogs among *Sphagnum* and damp places in deciduous and coniferous forests; spring to autumn; very common in temp.-arc. / alp.; DK (LC), FI (LC), FO, IS, NO (LC), SE (LC). – B&K 4:23, FAD 77A, FE 5:41, FE 5A:1256, Ves 250, ☉.
- E. conferendum* (Britzelm.) Noordel. var. *conferendum* (*E. staurosporum* (Bres.) E. Horak)



Spores and cheilocystidia: A: *Entoloma rhombisporum*, B: *E. conferendum*, C: *E. excentricum*, D: *E. kallioi*, E: *E. inusitatum*.

var. *incrustatum* (Largent & Thiers) Noordel. & Hauskn. differs in having incrusting pigment in pileipellis. NO.

var. *pusillum* (Velen.) Noordel. differs in being smaller, cap 10-15 mm, and growing on wood.

Key J: Frb tricholomatoid; cap glabrous; trama of short, inflated elements

1. Frb white or whitish 2
 - Frb pigmented 4
2. In spring, associated with *Rosaceae*. Cap 20-145 mm, conical to convex or plane, glabrous, indistinctly hygrophanous, translucently striate at margin, white; gills adnate-emarginate, medium spaced, white, then pink; stem 40-120 x 5-15(-20) mm, fibrillose-striate, white; smell and taste farinaceous. Sp 8-10(-11.5) x 7.5-10(-11) μm , 5-8-angled in side-view; cheilocystidia absent; pileipellis an ixocutis of 2-10(-12) μm wide, not pigmented hyphae; clamps abundant. In groups under various *Rosaceae*, preferably *Prunus* and *Crataegus* in hedges and margins of deciduous forests; spring to early summer; very rare in temp.-hemib.; DK (DD, Lol), FI (DD), NO (NE, Vestf.: Larvik), SE (LC). – FE 5:7, FE 5A:1177, Lud 94.24.
E. niphoides Noordel.
 - In summer and autumn, not associated with *Rosaceae* 3
3. Sp heterodiametrical, relatively thick-walled, 9-12.5(-13.5) x 7.5-10 μm . Cap 15-40 mm, convex, then plane, umbonate, weakly hygrophanous, translucently striate at margin or not, white; gills adnate-emarginate, medium spaced, white, then pink; stem 20-70 x 2-6 mm, silvery fibrillose, white; smell and taste weakly to distinctly farinaceous. Cheilocystidia absent; pileipellis a cutis of 2-7 μm wide, not pigmented hyphae; clamps abundant. In groups, terrestrial in deciduous forests on humus-rich soils; summer to autumn; rare in temp.-bore.; DK (NE), FI (DD, InL: Utsjoki), NO (STr: Trondheim), SE (NE). – FE 5A:1182, Lud 94.53.
E. speculum (Fr.) Quél.
 - Sp isodiametrical, thin-walled, 6.5-8(-9) x 6.5-8 μm . Cap 20-70 mm, convex or plane, umbonate, glabrous to innately fibrillose, not hygrophanous, not translucently striate, white to pale cream or ochre brown; gills adnate-emarginate, distant, white, then pink; stem 30-80 x 3-12 mm, fibrillose striate, white, tinged yellow near base; smell and taste farinaceous. Cheilocystidia absent; pileipellis a cutis of cylindrical, 2-7 μm wide hyphae with intracellular pigment; clamps abundant. In poorly manured, and extensively grazed meadows,

especially on calcareous soil in montane to (sub-)alpine regions, occasionally also in the lowlands and on more acid soil; summer to autumn; occasional in hemib.-suba., rare in temp.; DK (VU), FI (EN, A: Jomala, U: Espoo), FO, NO (NT), SE (NT). – AAF 3:39, FAD 73A, FE 5:1, FE 5A:1165, Ves 243, ☉.

E. prunuloides (Fr.: Fr.) Quél.

- 4. In spring, associated with *Rosaceae* or *Ulmus* 5
- In summer and autumn, not particularly associated with *Rosaceae* or *Ulmus* 9
- 5. Cap with distinct aeriferous-fibrillose or micaceous aspect; sp 10-12(-14) x 10-12 μm , isodiametrical, many-angled; with *Ulmus*. Cap 30-130 mm, conical or convex, umbonate, not hygrophanous, not translucently striate, sordid white, then pale greyish or ochraceous brown; gills adnate-emarginate, white, then pink; stem 35-120 x 8-22 mm, fibrillose striate, white, then grey or greyish brown; smell and taste strongly farinaceous-rancid. Cheilocystidia absent; pileipellis an ixocutis of 4.5-7(-10) μm wide hyphae with pale grey-brown, intracellular pigment; clamps abundant. In groups on heavy clayey or loamy soil; (winter to) spring; very rare in temp.-southern bore.; NO (LC). – Bol Bres 39:51, FE 5:9, FE 5A:1178-1179.

E. saundersii (Fr.) Sacc.

- Cap glabrous; sp 8-11 x 7-10 μm , regularly 5-7-angled in side-view; with *Rosaceae* or *Ulmus* 6
- 6. Cap pale, cream or pale grey 7
- Cap moderately dark to dark yellow brown or grey brown 8
- 7. Cap not hygrophanous; flesh and often also surface staining orange yellow when bruised or cut. Cap 25-125 mm, conical-convex, then low convex, umbonate, glabrous, not hygrophanous, not translucently striate, pale creamy or yellow brown, silky-shiny; gills adnate-emarginate, medium spaced; stem 30-120 x 5-22 mm, fibrillose, white, bruising yellowish red; smell and taste farinaceous. Sp (7.5-)8-11(-12) x (6.5-)7-10(-11) μm , Q= 1-1.3, (sub-)isodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis an ixocutis of 1.5-7(-9) μm wide hyphae with pale brown intracellular pigment; clamps abundant. Under various *Rosaceae* in forests, hedges, gardens, orchards, etc., often in large groups; spring to early summer; rare in temp.-bore.; DK (LC), NO (LC), SE (LC). – FE 5:8; FE 5A:1178, Däh 401, GBW 4:195, Ves 243.

E. sepium (Noulet & Dass.) Richon & Roze

- Cap distinctly hygrophanous; flesh and surface not staining orange yellow when bruised or cut. Cap pale creamy grey, brown grey or yellowish grey, fading or drying to almost white. In other characters like the main form. NL.

E. clypeatum (L) P. Kumm. f. *pallidogriseum* Noordel.

- 8. Frb relatively thin-fleshed; stem soon hollow and brittle; cap often translucently striate up to half the radius, under *Ulmus*. Cap 15-60 mm, conical to conical-convex, umbonate, hygrophanous, dark sepia, grey brown or reddish brown; gills adnate-emarginate, medium spaced, pale grey, then pink; stem 30-90 x 4-12 mm, fibrillose, grey to grey brown; smell and taste farinaceous-rancid. Sp 9-11(-12) x 7-10(-11) μm , subisodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis an ixocutis of 2-7 μm wide hyphae with brown, intracellular pigment; clamps present. In groups in forests, parks, etc.; spring to early summer; occasional in hemib., rare in temp. and bore.; DK (VU), FI (DD, V: Turku), NO (NE), SE (LC). – B&K 4:9, FE 5:7, FE 5A:1175-1176, Phil 163g, R&H 378.

E. aprile (Britzelm.) Sacc.

- Frb relatively thick-fleshed; stem not hollow, firm; cap not or short translucently striate; under *Rosaceae*. Cap (20-)30-120 mm, conical, convex or low convex, umbonate, glabrous, hygrophanous, brown, usually with grey or olivaceous tinges; gills adnate-emarginate, medium spaced, white, pale grey, then brownish pink; stem 40-150 x 4-20 mm, fibrous, white or pale grey; smell and taste farinaceous to rancid. Sp (8.5-)9-11(-12) x (7-)7.5-10 μm , subiso-

diametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis an ixocutis of 2-7 μm wide hyphae with brown, intracellular pigment; clamps abundant. In groups in forests, hedges and gardens; spring; very common in temp., common in hemib., rare, but locally occasional in bore.; DK (LC), FI (LC), NO (LC), SE (LC). – B&K 4:22, FE 5:6, FE 5A:1173-1174, R&H 379, Ves 244, ☉.

E. clypeatum (L.) P. Kumm. f. *clypeatum* (*E. bahusiense* S. Lundell)

9. Cheilocystidia very prominent, 40-110 x 10-25 μm , lageniform to fusiform (fig. 467C); hymenial elements often with brown necropigment. Cap 20-80 mm, convex, then plane with a low umbo or not, not hygrophanous, not translucently striate, pale creamy-ochre to pale brown, glabrous; gills crowded, adnate-emarginate, white, then brownish pink, finally chocolate brown, with concolorous or brown edge; stem 30-100 x 4-8 mm, white with brown or yellow tinges, fibrillose; smell and taste subfarinaceous. Sp (10-)11-12.5(-14) x 7-8.5(-9.5) μm , heterodiametrical, 5-8-angled in side-view; pileipellis a cutis or ixocutis of narrow, cylindrical, up to 10 μm wide hyphae with intracellular and minutely incrusting pigment; clamps present. In small groups in poorly manured, seminatural, xerophytic grasslands, preferably on calcareous soils; late summer to autumn; occasional in calcareous areas, otherwise very rare in temp.-hemib.; NO (EN), SE (NT). – B&K 4:30, Cet 240, FE 5:24, FE 5A:1216, Lud 94.25.

E. excentricum Bres.

- Cheilocystidia, if present, not so prominent, and usually with about the same size as the basidia; necropigment absent 10
10. Cap and stem with olivaceous green tinges. Cap 30-40 mm, conical to convex, umbonate, glabrous to subrugulose, not hygrophanous, not translucently striate, dark grey brown; gills emarginate, medium spaced, greyish green, then pink; stem 40-60 x 6-9 mm, cylindrical, fibrillose-striate, greyish; smell and taste indistinct. Sp (7.5-)8-9(-9.5) x 6.5-8 μm , isodiametrical, 6-8-angled in side-view; cheilocystidia absent; pileipellis an ixocutis of 2.5-8 μm wide hyphae with intracellular pigment; clamps abundant. In moist places in deciduous forests (*Quercus*); autumn; very rare in temp.; SE. – Lud 94.27.

E. viridans (Fr.) P. Karst.

- Cap and stem without olivaceous green tinges 11
11. Gills yellow, then salmon pink. Cap 30-250 mm, conical-convex to convex or plane, umbonate, glabrous, not hygrophanous, not translucently striate, pale grey livid, grey ochraceous or cream; gills adnate-emarginate, medium spaced to distant; stem 40-150 x 5-35 mm, glabrous, white to sordid cream-ochre; smell acidulous-nauseous; taste nasty-unpleasant. Sp 8-11 x 7-9.5 μm , 5-7-angled in side-view; cheilocystidia absent; pileipellis an (ixo-)cutis of 2-5 μm wide hyphae with pale yellow brown, intracellular pigment; clamps abundant. In deciduous forests (*Quercus*) on rich soil, up north also with *Betula*; summer to autumn; rare in temp.-hemib.; DK (VU), FI (NT, V: Turku), NO (NT), SE (LC). – FAD 74c, FE 5:2, FE 5A:1171, R&H 375, Ves 242, ☉. – Poisonous.

E. sinuatum (Bull.: Fr.) P. Kumm. (*E. lividum* (Bull.) Quél., *E. eulividum* Noordel.)

- Gills without yellow tinges 12
12. Frb staining yellow orange when bruised; cheilocystidia present. Cap 20-120 mm, conical, then hemispherical or convex, glabrous, not hygrophanous, not translucently striate, white to cream with an ochre tinge; gills adnate-emarginate, thick, medium spaced, white, then pink; stem 40-120 x 5-14 mm, fusiform, fibrillose, white; smell and taste mild to farinaceous. Sp 9-11.5(-12) x 8-9.5 μm , isodiametrical, 5-6-angled in side-view; cheilocystidia 20-70 x 4-10 μm , cylindrical to clavate; pileipellis an ixocutis of 2-5 μm wide hyphae without pigment; clamps abundant. In deciduous forests (*Quercus*), in relatively open, sun-lit places; summer to autumn; DE, NL. – FE 5A:1172, RdM 41:45.

E. moserianum Noordel.

- Frb not staining yellow orange when bruised; cheilocystidia rarely present 13

13. Stem porphyry brown with yellow base. Cap 25-50 mm, conical-convex, then convex, umbonate, not hygrophanous, not translucently striate, dark sepia brown; gills adnate-emarginate, medium spaced, white, then pinkish; stem 60-80 x 8-14 mm, cylindrical; smell and taste farinaceous. Sp 6-8 x 6-7 μm ; cheilocystidia absent; pileipellis an ixocutis of 2-4.5 μm wide hyphae with brown, intracellular pigment; clamps abundant. In mixed deciduous forests, e.g. *Acer*, *Quercus*, *Fagus*, *Carpinus*, *Populus*, on calcareous loam; autumn; DE. – FE 5:73a, Lud 94.38.
E. luteobasis Ebert & E. Ludw.
- Stem white, grey or brown, mostly lacking yellow tinges at base 14
14. Sp 6-8(-8.5) μm long, thin-walled, often appearing weakly angled with many angles 15
- Sp on av > 8.5 μm long, with walls of normal thickness, definitely angled, with 5-7(-9) angles in side-view 17
15. Cap pale cream, yellow brown or ochre brown see *E. prunuloides* 3
- Cap grey brown to dark grey brown 16
16. Stem white, silvery striate; smell and taste indistinct. Cap 15-70 mm, conical, bell-shaped or convex, umbonate, hygrophanous, translucently striate at margin, grey brown to sepia, glabrous; gills medium spaced, adnate-emarginate, pale grey then pinkish grey; stem 25-100 x 3-15 mm, fusiform with a tapering, yellow-tinged base. Sp 6.5-8.5(-9) x 6-7(-7.5) μm , subisodiametrical, very thin-walled and many-angled with weak angles, appearing almost nodulose; cystidia absent; pileipellis an ixocutis of 2.5-5 μm wide hyphae with intracellular pigment; clamps present. In small groups in heathland and in coniferous forests on acid, peaty soil; late summer to autumn; very common in temp.-suba.; DK (LC), FI (LC), FO, NO (LC), SE (LC). – B&K 4:89, FAD 76D, FE 5:22, FE 5A:1210, Ves 249, ☉.
E. turbidum (Fr.: Fr.) Quél.
- Stem brown grey, fibrillose-striate; smell and taste farinaceous. Cap 30-60 mm, conical to convex, hygrophanous, translucently striate at margin only, dark brown to sepia, glabrous; gills crowded, almost free, grey to grey brown, then tinged pink; stem 70-120 x 6-13 mm, fusiform. Sp 6.5-8 x 6.5-7.5 μm , subisodiametrical, 5-7-angled in side-view, with weak angles; cystidia absent; pileipellis of cylindrical 3.5-7 μm wide hyphae with intracellular pigment; clamps abundant. In groups in deciduous forests; late summer to autumn; rare in temp.-bore.; NO (NE), SE (NE, Sk). – B&K 4:66, Däh 399, FE 5:74, FE 5A:1212.
E. pseudoturbidum (Romagn.) M.M. Moser
17. Smell of older frb very peculiar, nasty, reminiscent or rotten cabbage or fishy. Cap 35-60 mm, conical-convex, umbonate, glabrous, not hygrophanous, not translucently striate; dark grey brown, often olivaceous; gills emarginate, crowded, white, then pink; stem 35-60 x 6-10 mm, cylindrical, fibrillose-striate, white; taste strong, like rotten cabbage. Sp 8.5-11 x 7-9 μm , subisodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-12 μm wide hyphae with intracellular pigment; clamps abundant. In *Salix* scrubs and *Betula* forests; summer to autumn; rare in bore.-arc. / alp.; NO (LC, incl. Sv), SE. – FE 5A:1172.
E. olidum Noordel. & T. Borgen
- Smell not like rotten cabbage or fishy, different 18
18. In arc. / alp. habitats, usually associated with *Salix*, *Betula*, *Dryas* or *Polygonum viviparum* 19
- Not in arc. / alp. habitats 30
19. Cheilocystidia present 20
- Cheilocystidia absent 22
20. Basidia 2-spored. Cap 5-20 mm, conical, then convex with a papilla, glabrous, not hygrophanous, not translucently striate, dark brown or black; gills adnate-decurrent, medium spaced, white, then brownish pink; stem 25-30 x 1-3 mm, smooth, brown to grey brown; smell and taste farinaceous. Sp 9-12 x 7-10 μm , heterodiametrical, 5-7-angled in side-view; gill edge

heterogeneous; cheilocystidia scattered, 18-50 x 5-15 x 2-8 μm , lageniform; pileipellis an ixocutis of 2-12 μm wide hyphae with minutely incrusting pigment; clamps abundant. In small groups in tundra with *Salix herbacea* and *Polygonum viviparum*; summer to autumn; very rare in arc. / alp.; NO (LC).

E. bicornae Noordel.

- Basidia 4-spored 21
- 21. Cap rimulose; pigment incrusting. Cap 35-60 mm, convex to low convex, grey brown; gills adnate-emarginate, medium spaced, grey brown; stem 10-35 x 2-6 mm, densely fibrillose, watery grey; smell slightly nitrous; taste farinaceous. Sp 8-11 x 6.5-8(-9.5) μm , heterodiametrical, 6-8-angled in side-view; gill edge heterogeneous; cheilocystidia 20-55 x 4-12 μm , cylindrical to lecythiform; pileipellis a cutis to a trichoderm, of inflated elements, up to 15 μm wide; clamps present. Among grass and moss in tundra with *Salix* species and *Polygonum viviparum*; late summer; rare in suba.-arc. / alp.; FO (Sornfelli), IS (Au: Neskaupstaður), NO (LC, SvB). – FE 5A:1205.
E. rimulosum Noordel.
- Cap smooth; pigment incrusting and intracellular. Cap 10-30 mm, low convex, umbonate, weakly hygrophanous, not translucently striate, sordid brown; gills adnate-emarginate, medium spaced, grey brown; stem 55-65 x 3-5 mm, fibrillose, grey brown; smell and taste farinaceous. Sp (8-)9-11 x (7-)8-9 μm , isodiametrical, 5-7-angled in side-view; gill edge heterogeneous; cheilocystidia 35-50 x 5-8(-10) μm , cylindrical to clavate; pileipellis a cutis of 2-9 μm wide hyphae with incrusting walls; clamps abundant. In tundra among *Dryas*; late summer; rare in arc. / alp.; NO (LC, SvB). – FND 32:45.
E. svalbardense Noordel.
- 22. Smell strong, like ripe apples see *E. melenosmum* key F 14
- Smell and taste indistinct or farinaceous 23
- 23. Pigment intracellular only 24
- Pigment incrusting, sometimes in addition intracellular 26
- 24. Gills and stem with grey tinges; stem 3-6 mm broad. Cap yellow brown to medium brown; gills with a grey tinge. Cap 25-70 mm, convex, umbonate, glabrous, hygrophanous, translucently striate, brown to grey brown; gills adnate, becoming pink; stem 35-40 mm long, fibrillose, pale grey; smell none; taste farinaceous. Sp 8-11 x 7-10 μm , subisodiametrical, 5-8-angled in side-view; cheilocystidia absent; pileipellis a cutis of 1.5-9 μm wide hyphae with brown intracellular pigment; clamps present. In groups in *Salix herbacea* communities, summer to autumn; occasional in arc. / alp.; FO, NO (LC). – FE 5A:1205.
E. subsepiaceum (Kühner) Noordel.
- Gills and stem whitish; stem 3-20 mm broad 25
- 25. Cap dark brown to almost black. Cap 25-65 mm, conical to low convex, umbonate, glabrous, hygrophanous, short translucently striate or not; gills adnexed to adnate-emarginate, crowded, white, then pink; stem 20-70 x 3-15 mm, fibrillose, white; smell and taste mild to farinaceous. Sp 8-10 x 7-9 μm , subisodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis an ixocutis of 2-9 μm wide hyphae with brown, intracellular pigment; clamps present. In groups in snow bed vegetations in association with *Salix herbacea* and other dwarf *Salix* species; summer to early autumn; common in arc. / alp., rare in suba.; FO, IS, NO (LC, incl. SvB), SE (LC). – AAF 1:23, Bor 60, FE 5A:1204.
E. alpicola (J. Favre) Noordel.
- Cap yellowish brown to sepia see *E. lividoalbum* 37
- 26. Pigment incrusting only 27
- Pigment incrusting and intracellular 29
- 27. Sp heterodiametrical, Q = 1.15-1.5. Cap 10-35 mm, conical then convex, glabrous to fibril-

lose, hygrophanous, translucently striate, very dark grey brown to blackish brown; gills deeply emarginate, almost free, medium spaced or adnate-decurrent, grey to brown grey; stem 10-35 x 1-4 mm, polished, dark brown grey; smell and taste weak to distinctly farinaceous. Sp 7.5-12.5 x (5.5-)6-10 μm ; cheilocystidia absent; pileipellis a cutis of 4-9 μm wide hyphae with coarsely incrusting walls; clamps abundant. In small groups among moss (*Sphagnum*) in snow beds with *Salix* and *Dryas*; late summer; rare in suba.-arc./alp.; FI (DD), NO (LC).

E. anthracinellum (M. Lange) Noordel.

- Sp isodiametrical, Q = 1-1.2 28
- 28. Cap moderately dark brown; gills white, then greyish pink; stem white to greyish. Cap 20-40 mm, glabrous, hygrophanous, translucently striate at margin; gills adnate-emarginate, medium spaced; stem 30-80 x 2-7 mm, fibrillose; smell and taste weak or slightly farinaceous. Sp 9-11 x 7.5-9 μm , 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-9 μm wide hyphae with incrusting walls. In groups in shrub vegetation; late summer; rare in suba.-arc./alp.; NO (LC). – Bor 61, FE 5A:1204.
E. subarcticum Noordel.
- Cap dark grey brown to black; stem grey brown. Cap 20-35 mm, bell-shaped, then convex or flattened, glabrous, hygrophanous, not translucently striate; gills adnate-emarginate, medium spaced, very dark brown to brown grey; stem 30-70 x 3-6 mm, cylindrical, fibrillose; smell and taste farinaceous. Sp 8-10 x 6.5-9 μm , subisodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-7 μm wide hyphae with incrusting pigment; clamps abundant. In groups in tundra; late summer; probably occasional in bore.-arc./alp.; NO (LC), SE (LC). – FE 5A:1202 (as var. *fusipes*), Lud 94.39.
E. atrosericeum (Kühner) Noordel. var. *atrosericeum*
var. *fusipes* Noordel. differs in cap 20-45 mm and stem 40-70 x 3-8 mm, fusiform. NO.
- 29. Cap 30-40 mm, umbonate; gills adnexed to adnate; incrusting pigment dominant in suprapellis, intracellular pigment only in subpellis. Cap glabrous, very dark brown, hygrophanous, not translucently striate; gills medium spaced to crowded, grey, then brownish pink; stem 35-60 x 4-8 mm, cylindrical, pale brown, silvery fibrillose; smell and taste farinaceous. Sp 7-10.5(-11) x 6-9(-10) μm , subisodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-9 μm wide hyphae; clamps abundant. In groups in heathland and tundra; late summer; rare in arc./alp.; FO (Sornfelli), NO (LC, incl. Svb). – FE 5A:1203.
E. bipelle Noordel. & T. Borgen
- Cap 15-30 mm, flattened to slightly depressed; gills often adnate with a decurrent tooth; intracellular pigment dominant in suprapellis, incrusting pigment mainly in subpellis. Cap glabrous, hygrophanous, not translucently striate, brown to almost black; gills medium spaced, brown grey with pink tinge; stem 10-25 x 1-4 mm, fibrillose, dark brown grey; smell and taste farinaceous. Sp (7.5-)8-10(-11) x 7-9 μm , subisodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-9 μm wide hyphae; clamps present. In alpine habitats; late summer; occasional in arc./alp.; FO, NO (LC, incl. Svb). – FE 5A:1203.
E. borgenii Noordel.
- 30(18) Basal half of stem with a distinct red flush. Cap 25-70 mm, convex, umbonate, glabrous, hygrophanous, not translucently striate, dark grey brown or red brown; gills adnate-emarginate, medium spaced, sordid yellow grey, then grey pink; stem 15-100 x 4-15 mm, cylindrical to fusiform, fibrillose, pale brown; smell and taste strongly farinaceous. Sp 8-10.5 x 7-9 μm , subisodiametrical, 5-7-angled in side-view; cheilocystidia present or absent, 28-45 x 7-14 μm , spheropedunculate to lageniform, rarely weakly capitate; pileipellis an ixocutis of 3-10 μm wide hyphae with brown, intracellular pigment and minutely incrusting pigment; clamps abundant in all tissues. In groups in *Sphagnum* in moist *Picea* forests; late summer to early autumn; very rare in hemib.-bore.; FI (CR, PH: Saarijärvi), SE. – FE 5:14, FE 5A:1184.
E. rubrobasis Noordel.

- Stem without a reddish flush 31
- 31. Cheilocystidia present 32
- Cheilocystidia absent 33
- 32. Cheilocystidia narrow, up to 10 μm wide, filiform to subcylindrical (fig. 467D); cap very dark brown, almost black, not translucently striate. Cap 35-40 mm, convex, umbonate, hygrophanous; gills adnate-emarginate, medium spaced, brownish pink; stem 30-60 x 5-12 mm, fibrillose, pale brown grey; smell and taste farinaceous. Sp 8-10 x 7-8.5 μm , subisodiametrical, 5-6-angled in side-view; pileipellis an ixocutis of 4-12 μm wide hyphae with intracellular pigment; clamps abundant. In grassland; late summer to early autumn; rare in suba.; FI (DD, InL: Utsjoki). – FE 5A:1195.
E. kallioi Noordel.
- Cheilocystidia 10-30 μm wide, clavate (fig. 467E); cap pale to dark grey brown or yellow brown, translucently striate at margin. Cap 30-70 mm, convex with a small umbo, glabrous; gills adnate-emarginate, medium spaced, white, then pink to brown pink; stem 30-70 x 2-8 mm, innately fibrillose, pale brown; smell indistinct; taste mild to farinaceous. Sp 9-12 x 8.5-11 μm , subisodiametrical to subheterodiametrical, 5-7-angled in side-view; pileipellis a cutis of 3-9 μm wide hyphae with minutely incrustated walls and intracellular pigment in upper pileitrama; clamps present. In groups, often on bare soil in deciduous forests; DE, NL. – Bol Bres 39:36, FE 5A:1188, ZM 61:193, Lud 94.35.
E. inusitatum Noordel., Enderle & Lammers
- 33. Sp heterodiametrical, many-angled to almost nodulose in outline; cap with fibrillose patches at margin when young and fresh. Cap 15-120 mm, conical to bell-shaped, hygrophanous, not translucently striate, red brown; gills free or deeply emarginate, medium spaced, pale cream, then reddish brown; stem 35-150 x 3-17 mm, fusiform, fibrillose, grey brown to reddish brown; smell and taste mild to subfarinaceous. Sp 9.5-12.5 x 6.5-9 μm ; cheilocystidia absent; pileipellis an ixocutis of 2.5-9 μm wide hyphae with brown, intracellular pigment; clamps present. In groups on peat and in *Sphagnum* bogs; late summer to autumn; rare in temp.-bore.; DK (EN, EJyl), NO (LC), SE (LC). – FE 5:16, FE 5A:1195, Lud 94.43, Ves 248.
E. sphagneti Naveau
- Sp iso- to heterodiametrical, regularly 5-7-angled in side-view; cap without fibrillose patches 34
- 34. Pigment intracellular, sometimes hardly visible in pale specimens 35
- Pigment incrusting, at least the narrowest hyphae in pileipellis or subpellis, in addition frequently also with intracellular pigment present either in supra- or subpellis 39
- 35. Cap relatively pale; pigment difficult to locate, strongly hygrophanous, translucently striate at margin 36
- Cap yellow brown, brown, reddish brown or chocolate brown; pigment abundant and easy to locate in pileipellis, translucently striate or not 37
- 36. Smell none or nitrous; cap yellow brown to pale brown, hygrophanous, fading to sordid yellow brown. Cap 40-120 mm, convex to plane, umbonate or slightly depressed, glabrous, shortly translucently striate; gills adnate-emarginate or subdecurrent, medium spaced, white, then sordid; stem 60-150 x 3-15 mm, white to very pale greyish brown; taste nasty, petroleum-like or subfarinaceous. Sp 7.5-10 x 7-8.5 μm , 5-7-angled in side-view; cheilocystidia absent; pileipellis an ixocutis of 2-7 μm wide hyphae with pale, intracellular pigment; clamps abundant. In large groups in deciduous and mixed, rarely also in coniferous forests; summer to autumn; common in temp.-bore, occasional in suba.; DK (LC), FI (LC), IS, NO (LC), SE (LC). – FE 5:10-11, FE 5A:1180-1181, Phil 161d, R&H 378, Ves 245, ☉.
E. rhodopolium (Fr.) P. Kumm. var. *rhodopolium* (*E. nidorosum* (Fr.) Quél.)
- Smell farinaceous; cap very pale brown mixed with grey, strongly hygrophanous, fading to

almost white. Cap 30-90 mm, convex, then plane, umbonate, translucently striate at margin; gills adnate-emarginate, white, then pink; stem 40-120 x 4-15 mm, fibrillose, white; smell and taste farinaceous. Sp 9.5-11.5(-12) x 7-8 μ m, subisodiametrical, 6-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-9 μ m wide hyphae with intracellular, hardly visible pigment; clamps present. In damp deciduous forests; DE, NL. – BSMF 115:162, FE 5A:1183.

E. pseudoexcentricum (Romagn.) Kreisel

37. Gills white, then pink; stem white. Cap 35-100 mm, convex, umbonate, glabrous or minutely rugulose, hygrophanous, not translucently striate, dark yellowish brown or sepia; gills adnate-emarginate, medium spaced; stem 30-100 x 5-20 mm, clavate, fibrillose; smell and taste farinaceous. Sp 8-10(-11) x 8-9 μ m, subisodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis an ixocutis of 2-9 μ m wide hyphae with brown, intracellular pigment; clamps present. In groups in deciduous forests with *Quercus*, *Fagus*, rarely *Betula*, usually on heavy, base-rich or calcareous soils, frequently in open places, like old parks, at margin of forests or along paths where much light reaches the forest floor; autumn; occasional in temp.-arc. / alp.; DK (LC), FI (DD), NO (LC), SE (LC). – Cet 243, FE 5:12, FE 5A:1192, GBW 4:186, Ves 244, ☉.

E. lividoalbum (Kühner & Romagn.) Kubička

- Gills with grey-brown tinge; stem coloured 38
38. Flesh compact; cap grey brown with reddish or chocolate-brown tinges; gills not transversely veined. Cap 30-100 mm, convex to plane, unbonate, glabrous, hygrophanous, not translucently striate; gills adnate-emarginate, medium spaced, greyish, then grey pink to reddish grey; stem 30-100 x 8-15 mm, cylindrical-clavate, fibrillose-striate to subflocculose, pale to moderately dark grey or grey brown; smell and taste farinaceous-rancid. Sp 8.5-11 x 6.5-8.5 μ m, 5-7-angled in side-view; cheilocystidia absent; pileipellis an ixocutis of 3-9 μ m wide hyphae with brown, intracellular pigment; clamps abundant. In groups in deciduous forests (*Quercus*, *Carpinus*, *Fagus*) on calcareous soil; summer to autumn; very rare in hemib.-bore.; NO (NE, Akh: Oslo), SE (LC). – Cet 2319, FE 5:13; FE 5A:1192, Lud 94.44.

E. griseoluridum (Kühner) M.M. Moser

- Flesh relatively thin and brittle; cap lacking reddish or chocolate-brown tinges; gills often transversely veined. Cap 10-40 mm, convex to plane, slightly umbonate, glabrous, hygrophanous, translucently striate, dark brown; gills adnate-emarginate, medium spaced, grey pink; stem 20-50 x 2-7 mm, sordid white; smell and taste farinaceous-rancid. Sp 9-13 x 7-10 μ m, sub- to heterodiametrical, 6-10-angled in side-view; cheilocystidia absent; pileipellis a cutis of 6-15 μ m wide hyphae with brown, intracellular pigment; clamps abundant. In groups in grassy spots in and near deciduous forests, parks, etc., recorded under *Fagus*, *Quercus* and *Betula*; summer to autumn; very rare in temp.; DK (CR, Sj: Jægersborg Dyrehave). – FE 5A:1194.
- E. transvenosum* Noordel.
39. Cap pale brown, pale yellow brown or light brown, only with a slight grey tinge; flesh brittle 40
- Cap dark red brown, grey brown or blackish brown; flesh compact and firm 41
40. Cap yellow to yellow brown, without grey tinges; smell not or weakly farinaceous. Cap 30-90 mm, convex, then plane, umbonate, glabrous, hygrophanous, slightly translucently striate; gills adnate-emarginate, medium spaced to crowded, white, then pink; stem 60-130 x 5-14 mm, fibrillose-striate, pale brownish yellow. Sp 8-10.5 x 7-8 μ m, subisodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-7 μ m wide hyphae with minutely incrusting walls and intracellular pigment; clamps abundant. In groups in deciduous forests and parks; summer to autumn; very rare in temp.-bore.; DK (NA, EJyl: Vejle), NO (NE), SE (Ög). – FE 5:19, FE 5A:1186.

E. majaloides P.D. Orton

- Cap yellow brown mixed with grey, especially at centre; smell when fresh distinctly nitrous, soon farinaceous, especially when cut. Cap 20-100 mm, conical, then low convex, fibrillose, umbonate, hygrophanous, translucently striate at margin; gills adnate-emarginate, crowded to medium spaced, white, then pink; stem 30-120 x 3-12 mm, silvery fibrillose, white; taste farinaceous-rancid. Sp 9-12.5 x 7-8.5 μm , subisodiametrical to heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis an ixocutis of 3-7 μm wide hyphae with intracellular pigment; clamps abundant. In groups in damp deciduous forests, especially *Populus*, *Salix*, *Betula*, *Alnus*; summer to late autumn; common in temp.-suba.; DK (LC), FI (LC), NO (LC), SE (LC). – FE 5:18, FE 5A:1185-1186, Lud 94.49, Ves 245, ☉.
E. sericatum (Britzelm.) Sacc.
- 41. Cap 40-100 mm; stem > 5 mm thick in the middle 42
- Cap 10-30(-40) mm; stem up to 5 mm in the middle 43
- 42. Gills white to pale grey, then pink; sp (sub-)isodiametrical, $Q < 1.2$; in deciduous forests. Cap 30-90(-110) mm, conical, then convex or low convex, umbonate, glabrous, hygrophanous, not translucently striate, dark brown to blackish brown; gills adnate-emarginate, medium spaced; stem 40-110 x 4-12 mm, strongly fibrillose, pale brown; smell and taste farinaceous-rancid. Sp 8-11 x 7-8.5 μm , 5-6-angled in side-view; cheilocystidia absent; pileipellis an ixocutis of 2-12 μm wide hyphae with incrusting and intracellular pigment; clamps abundant. Autumn; rare in temp.-bore.; DK (DD), FI (LC), NO (NE), SE (LC). – FE 5:17, FE 5A:1189, Lud 94.45.
E. myrmecophilum (Romagn.) M.M. Moser
- Gills grey, then sordid grey pink; sp heterodiametrical, $Q > 1.3$; in coniferous forests. Cap (25-)35-120 mm, conical, expanding to plane, umbonate, glabrous or minutely rugulose, hygrophanous, not translucently striate, dark brown; gills adnate-emarginate, medium spaced; stem 35-110 x 3.5-15 mm, dark grey brown, white fibrillose; smell and taste strongly farinaceous-rancid. Sp 8-10.5 x 6.5-8 μm , 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis or ixocutis of 5-12 μm wide hyphae with coarsely incrusting and dark brown, intracellular pigment; clamps abundant. Late summer to autumn; DE. – B&K 4:92, FE 5A:1190, GBW 4:202, Lud 94.40.
E. venosum Gillet
- 43. Cap blackish brown, not distinctly hygrophanous; stem dark grey brown, fibrillose; gills dark brown pink from the start, often transversely veined; sp in majority heterodiametrical, $Q_{\text{av}} > 1.3$. Cap 10-35 mm, almost flat, not translucently striate; gills medium spaced, adnate-emarginate often with a decurrent tooth; stem 10-50 x 2-10 mm; smell and taste farinaceous. Sp (8.5-)9-12.5 x 7-9 μm , 5-7-angled in side-view; cystidia absent; pileipellis a cutis of 6-15 μm wide, cylindrical hyphae with coarse brown incrusting pigment, in lower layers of pileipellis also with intracellular pigment; clamps present. In groups in deciduous forests; late summer to autumn; very rare in temp.; DK (DD). – FE 5A:1191, Lud 94.28.
E. gerriae Noordel.
- Cap moderately dark to dark red brown or grey brown; gills white or pale grey brown at first, never transversely veined; stem distinctly paler, polished or with scattered fibrils only; sp subisodiametrical, $Q_{\text{av}} < 1.2$ 44
- 44. Cap grey brown, not or only slightly translucently striate; pigment predominantly incrusting, but in addition often intracellular. Cap 5-50 mm, convex, umbonate, glabrous, strongly hygrophanous; gills adnate-emarginate, medium spaced, white, then pink; stem 20-60 x 2-6 mm, glabrous, polished or subfibrillose, white to pale grey; smell and taste farinaceous. Sp 8-11.5 x 7-8.5 μm , subisodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-7 μm wide hyphae; clamps abundant. In mixed and deciduous forests, often on bare clayey soil, often with *Quercus*; summer to autumn; common in temp.-hemib.; DK (LC), FI (DD, A: Maarianhamina), FO, NO (LC), SE (LC). – FE 5:15a, FE

5A:1187, GBW 4:199, Ves 248, ☉.

E. sordidulum (Kühner & Romagn.) P.D. Orton

- Cap yellow brown to reddish brown, deeply translucently striate; pigment intracellular. Cap 10-30 mm, convex, umbonate or \pm depressed, hygrophanous; gills adnate-emarginate, medium spaced, white, then pink; stem 25-50 \times 1-4 mm, pale grey, \pm polished or weakly striate; smell and taste farinaceous. Sp 8-11(-12.5) \times 7-8(-8.5) μ m, subisodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2.5-7 μ m wide hyphae; clamps abundant. In mixed and deciduous forests, often on bare soil; summer to autumn; common in temp.-southern bore.; DK (LC), FI (DD), NO (NE, Busk: Hole), SE (NE). – B&K 4:87, FE 5:15b, FE 5A:1187, Lud 94.36.

E. subradiatum (Kühner & Romagn.) M.M. Moser

Key K: Frb mycenoid with relatively thin-fleshed, conical to convex, often umbonate cap, slender stem; without cheilocystidia (*Nolanea* without cystidia)

1. Basidia 2-spored 2
- Basidia in majority 4-spored 3
2. Stem strongly silvery fibrillose; smell indistinct or very weakly farinaceous; cap 20-40(-50) mm; stem 40-90 mm long. Cap conical to convex, umbonate or not, glabrous, hygrophanous, translucently striate, pale ochre, yellow brown or pale reddish brown; gills adnexed to free, medium spaced, yellow ochre, then tinged pink; stem 1-3 mm wide, concolorous with cap; taste indistinct. Sp 9.5-14 \times 7-9.5 μ m, heterodiametrical, 5-8-angled in side-view; cheilocystidia absent; pileipellis a cutis of 4-10 μ m wide, cylindrical hyphae with pale intracellular pigment; clamps absent. In groups in humus and forest litter of coniferous forests on poor, acid soil, also in peaty areas; summer to autumn; common in temp.-arc./alp.; DK (LC), FI (LC), FO, NO (LC), SE (LC). – FAD 78F, FE 5:34c, Phil 163i, R&H 384, Ves 252, ☉.

E. cetratum (Fr.: Fr.) M.M. Moser

- Stem glabrous, polished; smell farinaceous-rancid; cap 5-20 mm broad; stem 10-25 mm long. Cap bluntly conical-convex, then flattened, often slightly depressed, glabrous, hygrophanous, translucently striate, pale ochre, yellow brown or pale orange brown; gills narrowly adnate to almost free, medium spaced, yellow ochre, then tinged pink; stem 1-3 mm wide, yellow brown to pale orange brown; taste farinaceous. Sp 9.5-12.5 \times 7-9 μ m, heterodiametrical, 5-8-angled in side-view; cheilocystidia absent; pileipellis a cutis of 4-12 μ m wide, cylindrical hyphae with pale intracellular pigment; clamps absent; DE, NL. – B&K 4:33, FE 5:78d, Lud 94.85.

E. farinogustus Arnolds & Noordel.

3. Sp nodulose-angular, heterodiametrical (fig. 483A) 4
- Sp 5-7-angled in side-view, iso- to heterodiametrical 6
4. Clamps absent; pigment in pileipellis incrusting and intracellular in form of agglutinated, dark coloured granules. Cap 10-20 mm, convex to plane, with minute umbo or slightly depressed, glabrous, hygrophanous, deeply translucently striate, pale grey brown or brown; gills deeply emarginate to almost free, medium spaced, pale grey brown, then pink; stem 20-40 \times 1-3 mm, polished, pale grey brown; smell and taste strongly farinaceous. Sp 9-12 \times 6-8 μ m, heterodiametrical, nodulose-angular (fig. 483A); cheilocystidia absent; pileipellis a cutis of 4-15 μ m wide, cylindrical hyphae. In groups in grassland and heathland on poor, sandy or peaty soil; summer to late autumn; very rare in temp.; DK (DD). – FE 5A:1249, Lud 94.68.

E. cuniculorum Arnolds & Noordel.

Clamps present; pigment intracellular, but not in form of agglutinated granules 5

5. Sp 7.5-11(-12) \times 6-7(-8) μ m; cap often flattened to depressed. Cap 15-30 mm, glabrous, hygrophanous, not or slightly translucently striate, dark blackish brown; gills broadly adnate,

medium spaced, grey beige, then tinged pink; stem 10-25(-40) x 1.5-3.5 mm, polished or minutely fibrillose, grey brown; smell and taste farinaceous. Sp heterodiametrical, angular-nodulose; cheilocystidia absent; pileipellis a cutis to a trichoderm of 10-15 μm wide, cylindrical hyphae with intracellular pigment; clamps present. In groups on bare sandy or gravelly soil or among scanty vegetation of grasses and mosses. Autumn; very rare in bore.-suba.; NO (DD, M&R: Averøy, STr: Oppdal). – Bol Bres 39:57, FE 5A:1262.

E. undulatosporum Arnolds & Noordel.

- Sp 10-12.5 x 7-9 μm ; cap conical to convex. Cap 10-20 mm, fibrillose to rugulose, hygrophanous, not translucently striate, dark brown to blackish brown; gills almost free, distant, grey ochre, then brownish pink; stem 15-40 x 1-3 mm, polished, yellow brown to reddish brown with grey brown base; smell and taste indistinct. Sp heterodiametrical, 6-8-angled in side-view; cheilocystidia absent; pileipellis a cutis of 4-10 μm wide, cylindrical hyphae with brown intracellular pigment; clamps present. Single or in small groups in grassy spots and among mosses (*Sphagnum*) on acid, peaty or sandy soil; spring to autumn; very rare in temp.-bore.; DK (DD, EJyl: Løvenholm), NO (NE, Busk: Nedre Eiker). – FE 5:79b, FE 5A:1261.
- E. triste* (Velen.) Noordel.

- | | | |
|----|--|----|
| 6. | Sp subsodiametrical to isodiametrical, $Q = 1-1.2$ | 7 |
| - | Sp heterodiametrical, $Q > 1.2$ | 12 |

7. Pigment very pale, intracellular and/or parietal, not incrusting. Cap 20-50 mm, conical-convex, then plane, glabrous, umbonate or slightly depressed, hygrophanous, translucently striate, dark brown; gills adnate-emarginate, medium spaced to crowded, brownish pink; stem 30-100 x 2.5-9 mm, pale to dark grey brown, silvery fibrillose; smell and taste farinaceous. Sp 7.5-9.5 x 6.5-8.5 μm , subsodiametrical, 4-6-angled in side-view; cheilocystidia absent; pileipellis a cutis of 3-11 μm wide, cylindrical hyphae; clamps abundant. In groups in moist grassland; autumn; very rare in temp.; DK (DD, EJyl: Bredsgårde Sø), SE (NE, Sk). – B&K 4:57, FE 5:80b, FE 5A:1239, GBW 4:215.

E. occultpigmentatum Arnolds & Noordel.

- Pigment more intensely coloured, incrusting, sometimes in addition also intracellular 8
8. Sp weakly rounded-angular, isodiametrical, 6.5-8 x 5.5-7 μm ; clamps absent. Cap 10-25 mm, conical-convex, then low convex, weakly umbonate or depressed, glabrous, hygrophanous, translucently striate, sordid grey brown; gills adnate to almost free, medium spaced, brownish pink; stem 20-40 x 1-2 mm, dark grey brown, finely fibrillose-striate; smell and taste farinaceous-rancid. Cheilocystidia absent; pileipellis a cutis of cylindrical to slightly inflated, 5-15 μm wide hyphae with granulose-intracellular and incrusting pigment. In small groups in grassy and mossy places on acid, sandy or peaty soil; summer to late autumn; rare or overlooked in hemib.-bore.; NO (NE). – FE 5A:1248.

E. defibulatum Arnolds & Noordel.

- Sp more distinctly angled, 7-11 x 6-10 μm ; clamps present 9
9. Cap pale brown, strongly lustrous with aeriferous fibrils. Cap 10-40 mm, conical or bell-shaped, then convex, minutely umbonate, hygrophanous, not translucently striate; gills adnate to almost free, medium spaced, grey brown with pink tinge; stem 30-80 x 2-4 mm, polished, pale brown; smell and taste raphanoid to subfarinaceous. Sp 8-10 x 7.5-10 μm , isodiametrical, 5-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-11 μm wide, cylindrical hyphae with minutely incrustated walls. In groups in grassy-mossy spots; spring to autumn; rare or overlooked in temp.-bore.; DK (DD), NO (NE), SE (LC). – BCat 710, B&K 4:55, BSMF 120:340, 341, 122:opp. 114, FE 5:30c, 78c, FE 5A:1227.

E. nitens (Velen.) Noordel.

- Cap dark brown, red brown or grey brown to almost black, glabrous 10
10. Stem polished; in damp places, deciduous forests, rarely in grassland. Cap 10-40 mm, conical, then convex, minutely umbonate, glabrous, hygrophanous, translucently striate, dark

grey brown or red brown; gills adnate to almost free, medium spaced, sordid white, then brownish or greyish pink; stem 40-90 x 1-4 mm, dark grey brown or red brown; smell and taste weakly to distinctly farinaceous. Sp 8-10.5 x 7-9.5 μm , isodiametrical, 5-6-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-12 μm wide, cylindrical hyphae with minutely incrustated walls, sometimes with additional intracellular pigment; clamps present. Summer to autumn; common in temp.-bore, occasional in suba.-arc./alp.; DK (LC), FI (LC), IS, NO (LC, incl. Sv), SE (LC). – BCat 868, B&K 4:45, FE 5:29a, FE 5A:1227, Ves 251.

E. juncinum (Kühner & Romagn.) Noordel.

- Stem fibrillose-striate; in grassland or lawns 11
- 11. Cap dark (red-)brown, distinctly translucently striate when moist. Cap 20-70 mm, conical-convex to plane, usually umbonate, rarely depressed, glabrous, hygrophanous, sepia or grey brown; gills medium spaced, brown pink; stem 20-80 x 2-7 mm, dark brown, silvery fibrillose; smell and taste farinaceous-rancid. Sp 7-10.5 x 6.5-9.5 μm , isodiametrical, 5-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-10 μm wide, cylindrical hyphae with incrustated walls; clamps present. In groups in grassland including meadows, lawns at roadsides; spring to late autumn; very common in temp.-suba., occasional in arc./alp.; DK (LC), FI (LC), FO, IS, NO (LC), SE (LC). – B&K 4:81, FAD 76G,G1, FE 5:31a, FE 5A:1230, Ves 251, ☉.
- E. sericeum* Qué. var. *sericeum*
- Cap dark grey brown, sometimes almost black, not or indistinctly translucently striate, often somewhat zonate-fibrillose. In other characters like the main variety. In groups in grassland, preferably on poor, sandy soil; summer to early winter; occasional in temp.; DK. – FE 5:31b, FE 5A:1231-1232.
- E. sericeum* Qué. var. *cinereo-opacum* Noordel.
- 12. Pigment intracellular 13
- Pigment incrusting, sometimes in addition intracellular 21
- 13. Cap with olivaceous or green tinges 14
- Cap without olivaceous or green tinges 15
- 14. Stem with olivaceous tinges; clamps absent; smell none. Cap 20-25 mm, convex, umbonate, glabrous, hygrophanous, translucently striate, ochre grey to grey brown, then with an olivaceous tinge; gills adnate-emarginate, medium spaced, pink; stem 35-50 x 2-3 mm, polished; taste slightly bitter. Sp 8-12.5 x 6.5-8 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 4-9 μm wide, cylindrical hyphae with intracellular pigment. In groups in coniferous forests; summer to autumn; very rare in hemib.; SE (Ög).
- E. olivaceostipitatum* E. Ludw. & Karlsson
- Stem reddish brown, grey brown or yellowish; clamps present; smell strong, aromatic or absent. Cap 10-35 mm, bell-shaped, convex or plane, umbonate, glabrous, hygrophanous, translucently striate, pale to dark yellow green to olivaceous yellow, at centre often with brown or red-brown tinges; gills adnate to almost free, medium spaced, white, then pink; stem 20-80 x 1-5 mm, polished or with scattered fibrils. Sp 8-11.5 x 6.5-8 μm , heterodiametrical, 5-6-angled in side-view; cheilocystidia absent; pileipellis a cutis of 4-15 μm wide, cylindrical hyphae with intracellular pigment. In groups in humus-rich places in deciduous and mixed forests, parks and lawns; summer to late autumn; occasional, but locally common in temp.-bore.; DK (LC), FI (LC), NO (LC), SE (LC). – FAD 78a, FE 5:37a, FE 5A:1246, GBW 4:217, Ves 253, ☉.
- E. pleopodium* (Bull.: Fr.) Noordel. (*E. icterinum* (Fr.: Fr.) M.M. Moser)
- 15. Sp 5-7.5 μm wide 16
- Sp 7-10 μm wide 17
- 16. Smell nitrous; stem yellow brown without grey tinges see *E. infula* var. *chlorinosum* 33

- Smell none; stem yellow brown, tinged grey in basal part. Cap 10-30 mm, conical to convex, umbonate, glabrous, hygrophanous, translucently striate, dark brown to yellow brown; gills almost free, medium spaced, white, then pink; stem 20-80 x 1-2 mm, polished, yellow brown at top, greyish brown below; smell and taste indistinct. Sp 7-10 x 5-7 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 3-9 μm wide, cylindrical hyphae with intracellular pigment; clamps present. In groups in grassland; summer to late autumn; rare in temp.; DK (EN). – FE 5:36c, FE 5A:1243, Lud 94.57, Svp 40:43, Ves 252.
E. solstitiale (Fr.) Noordel.
- 17. Stem polished see *E. triste* 5
- Stem fibrillose-striate 18
- 18. Sp 8.5-11.5 μm long, $Q_{av} = 1.25$; in relatively damp grassland. Cap 10-35 mm, conical, then convex, umbonate, glabrous, hygrophanous, translucently striate, reddish brown to grey brown; gills narrowly adnate to almost free, medium spaced to distant, grey, then grey pink; stem 15-50 x 2-4 mm, polished or finely striate, pale greyish or yellowish brown; smell and taste indistinct. Sp heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 4-9 μm wide, cylindrical hyphae with intracellular pigment; clamps present. Spring to autumn; very rare in suba.; FO. – FE 5:78a,b, FE 5A:1235-1236, Lud 94.80.
E. ventricosum Arnolds & Noordel. (*E. calthionis* Arnolds & Noordel.)
- Sp 10-14 μm long, $Q_{av} = 1.4$; in forests 19
- 19. Cap red brown with a contrasting, yellowish umbo when fresh; stem pruinose in upper part. Cap 20-60 mm, conical, then convex, glabrous, hygrophanous, translucently striate; gills adnate to almost free, medium spaced, ochre pink; stem 25-90 x 2-7 mm, yellow brown; smell and taste indistinct. Sp 10-13 x 7.5-9 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 3-9 μm wide, cylindrical hyphae with intracellular pigment; clamps present. In groups in coniferous or mixed forests; summer to autumn; NL. – FE 5:34a, FE 5A:1237, GBW 4:205.
E. cuneatum (Bres.) M.M. Moser
- Cap uniformly coloured; stem pruinose at top only or entirely 20
- 20. Frb pale brown; stem entirely pruinose to tomentose. Cap 20-60 mm, conical, then convex, glabrous, hygrophanous, translucently striate; gills adnate to almost free, medium spaced, ochre pink; stem 20-90 x 1-4 mm, fibrillose; smell and taste indistinct. Sp 9-13 x 7.5-10 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-8 μm wide, cylindrical hyphae with intracellular pigment; clamps present. In groups in coniferous forests; spring to autumn; rare in temp. and suba.; DK (DD), FO. – FE 5:34b, FE 5A:1238.
E. lanuginosipes Noordel.
- Cap dark yellow brown or red brown; stem pale to moderately dark brown, densely silvery striate; pruinose at top only. Cap 25-100 mm, conical to low convex, umbonate, glabrous, hygrophanous, translucently striate; gills adnate to almost free, medium spaced, dark brown to pinkish brown; stem 60-160 x 4-15 mm, smell and taste indistinct. Sp 10-13 x 7.5-9 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-10 μm wide, cylindrical hyphae with intracellular pigment; clamps present. In groups in coniferous forests, often on damp ground; especially in spring, but also in summer to autumn; common in bore., occasional in temp.-hemib. and suba.; DK (DD), FI (LC), FO, NO (LC), SE (LC). – FE 5:35c, FE 5A:1238, ☉.
- E. pallescens* (P. Karst.) Noordel.
- 21. Pileipellis rather strongly differentiated, of septate hyphae with incrustated walls and dark, often agglutinated granular pigment clots inside the hyphae; clamps absent 22
- Pileipellis a cutis of radially oriented hyphae with incrusting and/or intracellular pigment, but not in form of agglutinated clots; clamps present 25

22. Stem distinctly silvery striate 23
 - Stem glabrous, polished 24
23. Cap grey brown with yellow or reddish tinges, fading to grey brown; gills white, then pink; flesh brittle. Cap 10-15 mm, conical-convex, then plane, umbonate, glabrous, hygrophanous, translucently striate; gills adnate to almost free, medium spaced; stem 10-30 x 1-2 mm, pale greyish brown; smell and taste farinaceous. Sp 8.5-10 x 6.5-8 μ m, heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-7 μ m wide, cylindrical hyphae with minutely incrustated walls and granulated intracellular pigment; clamps absent. In groups in mossy-grassy vegetation and heathland on acid, sandy or peaty soil; summer to autumn; NL. – FRIC 12:91a.
E. acidophilum Arnolds & Noordel.
- Cap very dark grey brown, only slightly fading on drying; gills sordid pink; flesh tough. Cap 10-25 mm, conical-convex, then plane, umbonate, glabrous, hygrophanous, translucently striate; gills adnate to almost free, medium spaced; stem 10-35 x 2-4 mm, pale greyish brown; smell and taste rancid-farinaceous. Sp 7.5-10 x 6.5-7.5 μ m, heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 4-13 μ m wide, cylindrical hyphae with minutely incrustated walls and granulated intracellular pigment; clamps absent. In groups in mossy-grassy vegetation and heathland on dry, acid, sandy or peaty soil; summer to autumn; NL. – FE 5A:1249.
E. argenteostriatum Arnolds & Noordel.
24. Stem greyish brown. Cap 10-35 mm, conical-convex, then plane, umbonate, glabrous to fibrillose, hygrophanous, translucently striate; gills adnate to almost free, medium spaced, pale brown grey, then sordid pink; stem 10-50 x 1-3 mm, polished; smell and taste rancid-farinaceous. Sp 7.5-10 x 5.5-7.5 μ m, heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 4-20 μ m wide, cylindrical hyphae, at centre sometimes transitional to a trichoderm of slightly inflated, 10-20 μ m wide elements, with minutely incrustated walls and granulated intracellular pigment; clamps absent. In groups in mossy-grassy vegetation and heathland on dry, acid, sandy or peaty soil or in rocky habitats; late summer to autumn; common in temp.-arc. / alp.; DK (LC), FI (DD), NO (LC), SE (LC). – BSMF 122:opp. 114, opp. 116, FE 35b, 79b, FE 5A:1247-1248, Lud 94.70, Ves 253, ☉.
E. fernandae (Romagn.) Noordel. (*E. psilopus* Arnolds & Noordel.)
- Stem yellowish. Cap 10-40 mm, conical-convex, then plane, umbonate, glabrous, hygrophanous, translucently striate, pale to rather dark reddish brown; gills adnate to almost free, medium spaced, pale brown, then sordid pink; stem 10-60 x 1-3 mm, polished; smell and taste rancid-farinaceous. Sp 7-9 x 5.5-7.5 μ m, heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 4-12 μ m wide, cylindrical to inflated hyphae with minutely incrustated walls and granulated intracellular pigment; clamps absent. In groups in mossy-grassy vegetation and heathland on dry, acid, sandy or peaty soil; late summer to autumn; occasional in temp.; DK (NE). – B&K 4:95, FE 5:79c, GBW 4:223.
E. xanthocaulon Arnolds & Noordel.
25. Smell strong, aromatic-fruity, reminiscent of that of *Hebeloma sacchariolens*. Cap 10-55 mm, conical, then convex, umbonate, glabrous, hygrophanous, translucently striate, greyish ochre to pale grey brown; gills adnate-emarginate to almost free, medium spaced, pale grey, then pinkish grey; stem 30-90 x 2-8 mm, fibrillose-striate, pale ochre; taste rancid. Sp 9.5-11 x 7-8 μ m, heterodiametrical to subisodiametrical, 5-6-angled in side-view; cheilocystidia absent; pileipellis a cutis of 1.5-6 μ m wide, cylindrical hyphae with minutely incrustated walls; clamps present. In groups on calcareous soil in grassland and scrub; summer to autumn; occasional in hemib.-bore., rare in temp.; DK (EN), FI (DD), FO, NO (NT), SE (LC). – B&K 4:8, FE 5:32a, FE 5A:1232, Svp 29:36, Ves 250.
E. ameides (Berk. & Broome) Sacc.
- Smell indistinct or farinaceous 26

26. Cap and stem pale brown, but cap often with a darker spot at centre; cap strongly translucently striate; smell indistinct 27
- Cap and stem moderately dark to dark brown, sepia or blackish brown; smell none or farinaceous 29
27. Caulocystidia at top of stem distinctly capitate. Cap 5-15 mm, conical, then convex, umbonate, glabrous, hygrophane, translucently striate, brown grey to beige grey; gills medium spaced, grey to brown, then with a pink tinge; stem 20-40 x 0.5-2 mm, polished, ochre brown to grey brown; smell and taste indistinct. Sp 8-12 x 7-10 μm , heterodiametrical, 5-8-angled in side-view; cheilocystidia absent; pileipellis a cutis of 3-14 μm wide, cylindrical hyphae with minutely incrustated walls; clamps present. In marshy forests, at roadsides, among mosses; summer to autumn; rare in temp.-arc./alp.; DK (LC), NO (LC), SE (LC). – FE 5:29c, FE 5A:1229.
E. favrei Noordel.
- Caulocystidia cylindrical to clavate 28
28. Cap 10-30 mm, blunt, often with a slight depression at centre; stem 40-70 x 0.5-2 mm; gills white, then pink; sp 8-11(-11.5) x 6.5-8.5 μm ; in thick humus and leaf-litter in damp forests. Cap glabrous, hygrophane, translucently striate, pale brown; gills adnate-emarginate to decurrent, medium spaced to distant; stem yellowish to brownish, hyaline, polished; smell and taste weakly farinaceous or indistinct. Sp isodiametrical, 5-6-angled in side-view; cheilocystidia absent; pileipellis a cutis of 1.5-10 μm wide, cylindrical hyphae with minutely incrustated walls; clamps present. Summer to autumn; rare or overlooked in temp.-bore.; DK (LC), FI (DD), NO (LC), SE (LC). – FAD 79H, FE 5:29b, FE 5A:1228, Lud 94.64.
E. minutum (P. Karst.) Noordel.
- Cap 5-10 mm, with a small, acute umbo; stem 10-20 x 0.5-1 mm; gills pale grey, then sordid pink; sp 7.5-9.5(-10.5) x 6-8(-8.5) μm ; in wet grassland and marshy places, often on naked soil. Cap bell-shaped to conical, glabrous, hygrophane, translucently striate, grey brown; gills adnate-emarginate, distant; stem polished, pale greyish yellow, hyaline; smell and taste indistinct. Sp subisodiametrical, 5-6-angled in side-view; cheilocystidia absent; pileipellis a cutis of 3-9(-15) μm wide, cylindrical hyphae with minutely incrustated walls; clamps present. Summer to autumn; only a few records from bore.; FI (DD). – FE 5:30c, FE 5A:1230, Lud 94.86, Win 93:24.
E. pygmaeopapillatum Arnolds & Winterh.
29. Sp short heterodiametrical to subisodiametrical, $Q_{av} = 1.2-1.3$ 30
- Sp heterodiametrical, $Q_{av} > 1.3$ 32
30. Sp weakly angular, almost rounded. Cap 10-40 mm, convex to plane, umbonate, glabrous, hygrophane, translucently striate, dark grey brown, paler towards margin; gills adnate-emarginate, medium spaced, brown grey, then tinged pink; stem 40-100 x 2-5 mm, grey brown, silvery striate; smell and taste farinaceous-rancid. Sp 7.5-8.5 x 5.5-7.5 μm , 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of cylindrical, 2-9 μm wide hyphae with incrusting and pale intracellular pigment; clamps present. In groups in grassland; late summer to autumn; rare in temp.; DK (EN), SE (LC). – FE 5:28a, FE 5A:1224, Lud 94.66.
E. ortonii Arnolds & Noordel.
- Sp pronouncedly angled 31
31. Smell raphanoid; caulocystidia capitate; in small groups among *Sphagnum* in moist grassland and peat bogs. Cap 15-40 mm, conical to convex, umbonate, glabrous, hygrophane, translucently striate, grey brown or sepia; gills almost free, medium spaced, grey, then grey pink; stem 40-90 x 2-5 mm, fibrillose-striate, yellow brown; taste raphanoid. Sp 10-13 x 9.5-11 μm , subisodiametrical, 4-6-angled in side-view; gill edge heterogeneous; cheilocystidia scattered, 40-60 x 12-18 μm , lecythiform or lageniform; pileipellis a cutis of 2.5-10 μm wide, cylindrical hyphae with incrusting and intracellular pigment; clamps present. Summer to

late autumn; very rare in temp.-bore.; DK (VU), NO (NE), SE (LC). – BSMF 120:337, 338, FE 5:35a, FE 5A:1225, GBW 4:209, Lud 94.74.

E. cuspidiferum (Kühner & Romagn.) Noordel.

- Smell farinaceous-rancid; caulocystidia, if present, not capitate; in grassland and in open, grassy spots in deciduous forests. Cap 10-50 mm, conical, then convex, umbonate or blunt, glabrous, hygrophane, translucently striate, brown, brown grey or sepia; gills adnate-emarginate to almost free, medium spaced, pinkish grey to brown-pink; stem 30-80 x 1-5 mm, brown, grey brown or yellowish brown, silvery fibrillose; taste farinaceous-rancid. Sp 8-10.5 x 6.5-9 μ m, short heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-7 μ m wide, cylindrical hyphae with incrusting pigment; clamps present. Summer to autumn; very rare in temp.; DK (DD, EJyl). – Bol Bres 39:38, FE 5:27c, FE 5A:1222, Lud 94.76, Phil 164c.

E. lucidum (P.D. Orton) M.M. Moser

32. Gills thick, distant, very dark brown, already when young. Cap 5-30 mm, conical, then convex, umbonate, glabrous, hygrophane, slightly translucently striate, blackish brown with a reddish tinge or grey brown; gills adnate-emarginate to free; stem 15-50 x 1-3 mm, polished, dark reddish brown; smell and taste indistinct. Sp 8-10(-11) x 5.5-7.5 μ m, heterodiametrical, 6-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-11 μ m wide, cylindrical hyphae with incrusting and sometimes also intracellular pigment; clamps present. In groups in humus of deciduous forests, unfertilized grassland and dune grassland; summer to autumn; rare in temp.-bore.; DK (VU), NO (NE), SE (LC). – FAD 78c, FE 5:27b, FE 5A:1221, Lud 94.60.

E. clandestinum (Fr.: Fr.) Noordel.

- Gills of normal thickness, medium spaced to crowded; white or pale brown when young 33
33. Sp < 10.5 μ m long; cap medium yellow brown. Cap 10-35 mm, conical to convex, umbonate, glabrous, hygrophane, translucently striate; gills almost free, medium spaced, white, then pink; stem 20-60 x 1-4 mm, polished, yellow brown; smell and taste indistinct to farinaceous. Sp 7-10 x 5-7 μ m, heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-9 μ m wide, cylindrical hyphae with incrusting and intracellular pigment; clamps present. In groups in unfertilized grassland, in FI also in deciduous forests and parks; summer to late autumn; common in hemib.-suba., but only occasional in FI, rare in temp.; DK (NT), FI (LC), NO (LC), SE (LC). – BSMF 119:286, FE 5:36a, FE 5A:1242.

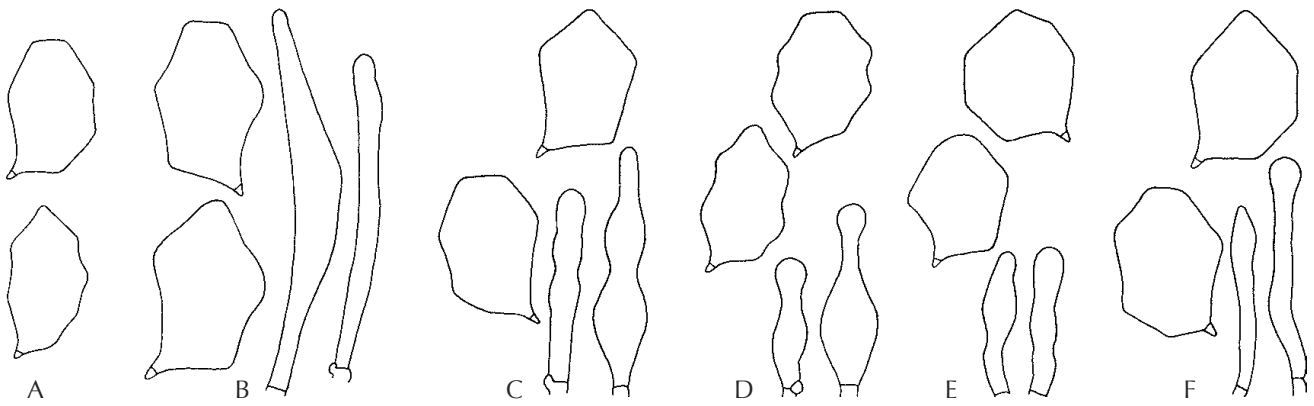
E. infula (Fr.: Fr.) Noordel. var. *infula*

var. *chlorinosum* (Arnolds & Noordel.) Noordel. differs in having a nitrous smell. In groups in unfertilized, dry grassland; summer to late autumn; occasional in temp.-arc./alp.; NO, SE (LC). – FE 5:36c, FE 5A:1242, GBW 4:213.


- Sp on av > 10.5 μ m long; cap dark brown, sepia or greyish brown 34
34. Stem fibrillose-striate; cap dark brown to almost black; smell none; in spring; in coniferous forests among grass and moss, but also in deciduous forests, grassland, gardens and along roads. Cap 10-60 mm, conical, then convex, umbonate, glabrous, hygrophane, translucently striate; gills almost free, medium spaced, grey brown, then brown pink; stem 30-90(-110) x 2-12 mm, dark brown like cap; taste mild. Sp 9-12 x 7-9 μ m, heterodiametrical, 5-7-angled in side-view; cheilocystidia absent; pileipellis a cutis of 4-11 μ m wide, cylindrical hyphae with coarsely incrusting and intracellular pigment; clamps present. Common in hemib.-bore., occasional in temp. and suba.; DK (LC), FI (LC), NO (LC), SE (LC). – B&K 4:93 (slender form), FE 5:33, FE 5A:1234, R&H 377, Lud 94.78, ☉.

E. vernum S. Lundell

- Stem polished or almost so; cap reddish brown; smell farinaceous; in summer and autumn; in grassland, road verges and alpine heathland. Cap 5-40 mm, conical to convex, umbonate, glabrous, hygrophane, translucently striate; gills almost free, medium spaced, grey



Spores and cheilocystidia: A: *Entoloma cuniculorum*, B: *E. velenovskyi*, C: *E. langei*, D: *E. inutile*, E: *E. cryptocystidium*, F: *E. testaceum*.

brown, then brown pink; stem 20-70 x 1-3 mm, dark red brown like cap; taste farinaceous-rancid. Sp 9-13 x 6.5-8.5 μm , heterodiametrical, 5-8-angled in side-view; cheilocystidia absent; pileipellis a cutis of 2-12 μm wide, cylindrical hyphae with coarsely incrusting pigment; clamps present. Summer to autumn; common in temp.-arc./alp.; DK (LC), FI (LC), FO, NO (LC, incl. Sv), SE (LC). – FE 5:27a, FE 5A:1220-1221; FRIC12 91d, FAD 78D, .

E. papillatum (Bres.) Dennis

Key L: Frb mycenoid with relatively thin-fleshed, conical to convex, often umbonate cap and relatively slender stem; cheilocystidia present (*Nolanea* with cystidia)

1. Stem glabrous, polished 2
 - Stem fibrillose-striate 5
2. Pigment minutely incrusting; clamps absent. Cap 5-20 mm, convex, umbonate, glabrous, hygrophanous, translucently striate, grey brown with a reddish tinge; gills deeply emarginate to almost free, medium spaced, white, then brownish pink; stem 20-40 x 1-2 mm, polished, pale yellowish brown; smell and taste indistinct. Sp 8.5-11 x 6-8 μm , heterodiametrical, 6-8-angled in side-view; cheilocystidia 15-40 x 5-12 μm , subcylindrical to lageniform; pileipellis a cutis of 2-9 μm wide, minutely incrusting hyphae. In groups in humus of deciduous forests; summer to autumn; rare or overlooked in temp.-suba.; DK (LC), NO (LC), SE (LC). – FE 5A:1229, Lud 94.62.
E. tenellum (J. Favre) Noordel.
 - Pigment intracellular; clamps present 3
3. Sp 10-14(-16) x 7-11 μm (fig. 483B). Cap 10-30 mm, conical, then convex, umbonate, glabrous, hygrophanous, translucently striate, moderately dark grey brown; gills deeply emarginate to almost free, medium spaced, white, then pink; stem 15-70 x 1-3 mm, polished, pale grey brown; smell and taste indistinct. Sp heterodiametrical, 5-9-angled in side-view; cheilocystidia 50-150 x 6-20 x 2-5 μm , lageniform to fusiform; pileipellis a cutis of 6-12 μm wide, cylindrical hyphae with intracellular pigment; clamps present. Single or in small groups in grassland on moist, humus-rich soil; summer to autumn; very rare in temp.-suba.; DK (NA, EJyl: Skærsø), NO (NT), SE (LC). – FE 5:30a, FE 5A:1243.
E. velenovskyi Noordel.
 - Sp 8-11 μm long 4
4. Sp 4-6-angled in side-view. Cap 4-15 mm, conical, then convex, umbonate, glabrous, hygrophanous, translucently striate, dark red brown; gills deeply emarginate to almost free, distant, white, then pink; stem 20-40 x 1-2 mm, polished, pale brown; smell and taste

indistinct or farinaceous. Sp 8-11 x 6-9 μm , heterodiametrical; cheilocystidia 45-70 x 8-22 x 3-6 μm , lageniform to tibiiform; pileipellis a cutis of 6-16 μm wide, cylindrical hyphae with intracellular pigment; clamps present. Single or in small groups in grassland and heathland; summer to autumn; occasional in hemib.-arc./alp., very rare in temp.; DK (NA, EJyl: Bygholm Å), FO, NO (NT), SE (NE, Mpd). – FE 5A:1244.

E. pratulense Noordel.

- Sp 5-7-angled in side-view (fig. 483C). Cap 7-30 mm, conical, then convex, umbonate, glabrous, hygrophanous, translucently striate, moderately dark brown; gills adnate-emarginate, medium spaced, white, then pink; stem 20-60 x 1-4 mm, polished, brown; smell and taste indistinct. Sp 8-11 x 7-9 μm , heterodiametrical; cheilocystidia 30-80 x 4-11 μm , lageniform to lecythiform with a mucronate capitulum; pileipellis a cutis of 2-9 μm wide, cylindrical hyphae with intracellular pigment; clamps present. Single or in small groups in moist places, often among dwarf *Salix*, in tundras, heathland and grassland; summer to autumn; common in suba.-arc./alp.; FO, NO (LC), SE (Hjd). – FE 5A:1245.

E. langei Noordel. & T. Borgen

- 5. Gills dark brown with pink tinge; cheilocystidia tibiiform with a distinct capitate apex 6
- Gills white, then pink; cheilocystidia clavate, cylindrical or lageniform 7
- 6. Cap very dark brown to almost black. Cap 5-30 mm, convex, then plane, umbonate or not, radially fibrillose-villose to almost glabrous, hygrophanous, short translucently striate; gills adnate-emarginate to almost free, medium spaced, dark grey brown with pink tinge; stem 10-40 x 1-4 mm, pale to dark brown, silvery striate; smell and taste indistinct. Sp 9-11.5 x 7-8 μm , heterodiametrical, irregularly nodulose-angled (fig. 483D); cheilocystidia 25-80 x 6-20 x 2-7 μm , lecythiform; pileipellis a cutis of 3-19 μm wide, cylindrical to inflated hyphae with intracellular pigment; clamps present. In small groups in heathland and grasslands on poor, acid, sandy or peaty soil; summer to autumn; very rare in temp.-bore.; NO (NE). – Däh 438, FE 5:80a, FE 5A:1262.

E. inutile (Britzelm.) Noordel.

- Cap ochraceous see *E. conocybecystis* key N 1
- 7. Pigment intracellular in pileipellis 8
- Pigment incrusting in pileipellis, sometimes also with intracellular pigment 9
- 8. Cap and stem pale grey brown; cap 10-25 mm; stem 1-3 mm wide. Cap conical-convex to convex, glabrous, hygrophanous, translucently striate; gills adnate-emarginate to almost free, medium spaced, pale greyish white, then pink; stem 40-60 mm long, pale brown, silvery striate; smell and taste indistinct. Sp 9-10 x 7.5-8.5 μm , heterodiametrical, 5-6-angled in side-view (fig. 483E); cheilocystidia 15-40 x 4-8 μm , subcylindrical, flexuous, mixed with basidia; pileipellis a cutis of 2-7 μm wide, cylindrical hyphae with intracellular pigment; clamps present. In groups in poorly manured grassland; late summer to autumn; very rare in temp.; DK (NA, EJyl: Laven). – FE 5A:1245.

E. cryptocystidiatum Arnolds & Noordel.

- Cap and stem yellow brown or red brown; cap 20-70 mm; stem 3-7(-11) mm wide. Cap conical, then convex, umbonate, glabrous, hygrophanous, translucently striate, red brown; gills adnate-emarginate to almost free, medium spaced, brown, then brown pink; stem 60-110 mm long, fibrillose-striate, brown to yellow brown; smell and taste farinaceous-rancid. Sp 9-12 x 7-8.5 μm , heterodiametrical, 5-7-angled in side-view (fig. 483F); cheilocystidia 25-60 x 5-11 μm , cylindrical to clavate, mixed with basidia; pileipellis a cutis of 3-9 μm wide, cylindrical hyphae with intracellular pigment; clamps present. In groups in coniferous or mixed forests; summer to autumn; occasional in temp.-bore.; DK (NA), NO (NE, Tel: Bondal, Hedm: Tynset). – Däh 396, FE 5:82b, FE 5A:1240, Ves 252.

E. testaceum (Bres.) Noordel.

- 9. Smell strong, fruity-aromatical, reminiscent of *Hebeloma sacchariolens*. Cap 20-50 mm, coni-

cal, then convex, umbonate, glabrous, hygrophanous, translucently striate, grey brown to greyish ochraceous; gills adnate-emarginate to almost free, medium spaced, brown, then pinkish brown; stem 20-75 x 2-5 mm, grey brown, silvery fibrillose; taste unpleasant. Sp 9.5-11 x 7-8 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia 25-45 x 3-8(-12) μm , subcylindrical to lageniform, mixed with basidia; pileipellis a cutis of 2-7 μm wide, cylindrical hyphae with minutely incrusting pigment; clamps present. In groups in grassland and in *Juniperus* heathland, preferably on calcareous soil; summer to autumn; rare in hemib.-bore.; NO (vU). – Bol Bres 39:92, FE 5:32b, FE 5A:1233.

E. sacchariolens (Romagn.) Noordel.

- Smell none or farinaceous 10
- 10. Pileipellis a cutis with transitions to a trichoderm, with septate hyphae, frequently with clavate terminal elements; pigment incrusting and in form of dark coloured granules inside the hyphae; clamps absent. Cap 10-20 mm, conical, then convex, umbonate, glabrous, hygrophanous, translucently striate, brown grey; gills free, medium spaced, grey with pink tinge; stem 20-40 x 0.5-1 mm, fibrillose-striate, grey; smell and taste weakly perfume-like. Sp 9-11.5 x 6-7 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia 20-35 x 5-9 μm , cylindrical to clavate. Terrestrial in swamp forests with *Salix* and *Alnus*; late summer; very rare in hemib.; NO (Østf: Borge, DD).
E. kristiansenii Noordel.
- Pileipellis a cutis of narrow hyphae; pigment incrusting, and, if intracellular pigment is present, then evenly distributed, not in form of granules; clamps present 11
- 11. Gills edge heterogeneous; cheilocystidia mixed with basidia. Cap 10-20 mm, convex to low convex, umbonate, glabrous or radially fibrillose, hygrophanous, short translucently striate, pale to moderately dark grey brown; gills almost free, distant, grey pink; stem 20-45 x 1-2 mm, grey brown, silvery striate; smell and taste farinaceous. Sp 7.5-11 x 6.5-9 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia 15-60 x 3-10 μm , tibiiform to lageniform or subcylindrical; pileipellis a cutis of 2.5-9 μm wide, minutely incrusting hyphae; clamps present. In pastures and hayfields, often on rather moist places; autumn; very rare or overlooked in temp.; DK (DD, EJyl). – B&K 4:88, FE 5:28c, FE 5A:1235, Lud 94.59.
E. tibiicystidiatum Arnolds & Noordel.
- Gill edge sterile, consisting of cystidia only 12
- 12. Sp 8-12 x 5.5-8 μm . Cap 5-45 mm, conical to convex, umbonate, glabrous, hygrophanous, translucently striate, yellow brown to reddish brown, sepia or greyish brown; gills medium spaced, white, then pink; stem 20-120 x 1-5 mm, brown, silvery fibrillose; smell and taste farinaceous-rancid. Sp heterodiametrical, 5-8-angled in side-view; cheilocystidia 25-60 x 4-12 μm , cylindrical to lageniform, often weakly capitate; pileipellis a cutis of 2-9 μm wide, cylindrical hyphae with incrusting and intracellular pigment; clamps present. In humus, often in nitrogen-rich places in deciduous forests and scrub; summer to autumn; occasional, but locally common in temp.-hemib.; DK (LC), FO, NO (LC), SE (LC). – BSMF 119:286, B&K 4:37, FE 5:26a, FE 5A:1218, Phil 163h.
E. hebes (Romagn.) Trimbach
- Sp 8-10 μm wide 13
- 13. Frb robust with stem much longer than diam. of cap; spring to early summer, rarely also in late autumn; in coniferous, less often deciduous forests. Cap 30-100 mm, conical, then convex, umbonate, glabrous, hygrophanous, translucently striate, grey brown or red brown; gills medium spaced, white, then brownish pink; stem 70-160 x 3-10 mm, yellow brown or sepia, silvery fibrillose; smell and taste farinaceous-rancid. Sp 10-14(-15) x 8-10 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia 35-70 x 6-15 μm , cylindrical to lageniform, often weakly capitate; pileipellis a cutis of 4-11 μm wide cylindrical hyphae with incrusting and intracellular pigment; clamps present. Occasional in temp.-bore.; DK (LC),

FO, NO (LC), SE (LC). – Cet 100, Däh 432-433, FAD 78G, FE 5:25, FE 5A:1217.

E. hirtipes (Schumach.: Fr.) M.M. Moser

- Frb with stem almost equal in length as diam. of cap; summer to autumn; in grassland. Cap 14-50 mm, conical to convex, umbonate, glabrous, hygrophanous, translucently striate, grey brown or dark red brown; gills adnate-emarginate to almost free, medium spaced, grey, then grey pink; stem 25-50 x 1.5-4 mm, grey brown, silvery striate; smell and taste strongly farinaceous-rancid. Sp 10-14 x 7-9 μ m, heterodiametrical, 5-7-angled in side-view; cheilocystidia 35-90 x 3-15 μ m, cylindrical to lageniform often weakly capitate; pileipellis a cutis of 4-15 μ m wide, cylindrical hyphae with incrusting and intracellular pigment; clamps present. Very rare in suba.; FO, SE (LC). – FE 5A:1216, BSMF 112:309.

E. kuehnerianum Noordel.

Key M: Habit mycenoid with a conical to convex, fibrillose, often somewhat lustrous cap, usually with an umbo; gills adnexed, free or rarely adnate with a decurrent tooth; stem slender, often rigid; cheilocystidia present

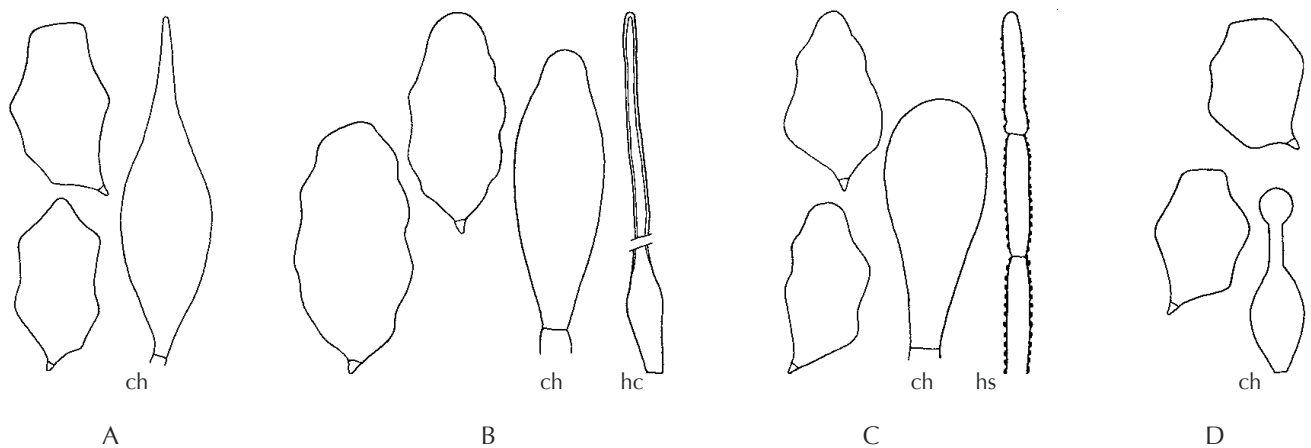
1. Cheilocystidia fusiform to lageniform with long, tapering neck (fig. 487A); pigment incrusting and intracellular 2
 - Cheilocystidia clavate, broadly clavate, cylindrical or vesiculose; pigment exclusively incrusting 3
2. Cap and stem with olivaceous green to olivaceous yellow tinges. Cap 15-45 mm, conical to bell-shaped, only slightly expanding, densely radially fibrillose; gills narrowly adnate to almost free, distant, grey then grey brown with slightly pink tinge; stem 25-70 x 2-5 mm, strongly fibrillose to almost scaly all over, with \pm pronounced red or grey strigose hairs at base; smell and taste indistinct to slightly spermatic. Sp (9-)9.5-11.5(-12.5) x 7-8(-9) μ m, heterodiametrical, 5-8-angled in side-view; cheilocystidia (40-)60-110 x 10-25 μ m; pileipellis a cutis to a trichoderm of inflated, up to 20 μ m wide hyphae with intracellular and incrusting pigment; clamps absent. In small groups in raw humus and on soil in deciduous forests, parks and ruderal areas, rarely on burnt ground; autumn; rare in hemib.-bore., very rare in temp. and suba.; DK (NA), FI (LC), FO (Tórshavn), NO (DD), SE (NT). – FE 5:40b, FE 5A:1253, Nit 271, R&H 385, ☉.

E. versatile (Fr.) M.M. Moser

- Cap and stem grey. Cap 5-30 mm, conical to conico-convex or convex, densely radially fibrillose to appressed finely scaly, shiny; gills narrowly adnate to almost free, distant, grey then grey brown with a slight pink tinge; stem 25-70 x 1-5 mm, silvery fibrillose with \pm pronounced red or grey strigose hairs at base; smell and taste faint to subfarinaceous or spermatic. Sp 9.5-)10-14(-15) x 7-8(-9) μ m, heterodiametrical, 6-8-angled in side-view (fig. 487A); cheilocystidia 45-75(-100) x 10-30 μ m, fusiform to lageniform with a long, tapering neck; pileipellis a cutis to a trichoderm of 15-30 μ m wide, inflated elements with intracellular and incrusting pigment; clamps absent. Terrestrial, solitary or in small groups in humus of deciduous forests of rich, loamy or clayey soil, also in parks and gardens; late summer to autumn; occasional in temp.-southern bore.; DK (LC), FI (LC), NO (LC), SE (LC). – B&K 4:10, FE 5:40a, FE 5A:1253, 1254, GBW 4:226, Ves 253, ☉.

E. araneosum (Quél.) M.M. Moser

3. Cap with long, non-septate, setiform hairs (fig. 487B). Cap 5-30 mm, conical to convex, dark red brown to grey brown, densely radially fibrillose; gills narrowly adnate to almost free, distant, grey then grey brown with a slight pink tinge; stem 20-70 x 1-4 mm, concolorous with cap; smell and taste indistinct. Sp (12.5-)14-19(-22) x 7-11 μ m, nodulose-angular; cheilocystidia (25-)40-80 x 12-22 μ m, clavate to lageniform; pileipellis a trichoderm of inflated elements, 17-30 μ m wide, intermixed with thick-walled setae, 200-1000 x 10-12 μ m, tapering towards apex; pigment incrusting; clamps absent. In grassy places and in deciduous forests and scrub, preferably on calcareous soil; summer-autumn; very rare in temp.-bore.; DK (EN),



Spores, cheilocystidium and hairs from cap and stem: A: *Entoloma araneosum*, B: *E. strigosissimum*, C: *E. dysthaloides*, D: *E. conocybecystis*.

FI (CR), NO (DD), SE (DD, Sk). – FE 5:49b, FE 5A:1250, Lud 94.173, RdM 33:172.

E. strigosissimum (Rea) Noordel.

- Cap with long, septate, non-setiform hairs 4
- 4. Sp on av > 15 μm long. Cap 5-20 mm, conical, then convex or plane, dark sepia to grey-brown, densely radially fibrillose-hairy; gills almost free, distant, grey, then grey pink; stem 10-50 x 0.5-2 mm, dark grey, silvery fibrillose-hairy all over; smell and taste indistinct. Sp 13.5-19.5(-21.5) x (7.5-)8-10.5(-11) μm , heterodiametrical, nodulose-angular; cheilocystidia 15-90 x 8-25 μm , broadly clavate; pileipellis a cutis to a trichoderm of septate, slightly inflated, strongly incrustated hyphae, 10-17 μm wide; clamps absent. In groups in damp places in deciduous forests (*Alnus*, *Fraxinus*); summer to autumn; occasional in temp.-bore.; DK (NT), FI (DD), FO, NO (NE, Busk: Hurum, Nordl: Rana), SE (LC). – Bol Bres 39:30, FE 5A:1251, GBW 4:224, Lud 94.175, Win 93:45.

E. dysthales (Peck) Sacc.

- Sp < 15 μm long 5
- 5. Cap and stem dark grey brown; stem with septate, often coarsely incrustated hairs (fig. 487C); in damp, marshy places. Cap 3-20 mm, conical to bell-shaped, then convex, strongly radially fibrillose-hairy; gills free to narrowly adnexed, medium spaced to distant, dark grey, then with a pink tinge; stem 15-60 x 0.5-2 mm, silvery-fibrillose to hairy; smell and taste indistinct. Sp 10.5-13.5(-15) x 7-8(-8.5) μm , nodulose-angular; cheilocystidia 25-60 x 15-30 μm , clavate; pileipellis a cutis to a trichoderm of septate, slightly inflated, strongly incrustated hyphae, 10-20 μm wide; clamps absent. Summer to autumn; rare in temp.-southern bore.; DK (LC), FI (DD), NO (DD, Vestf: Sande), SE (LC). – B&K 4:27, BSMF 121:177, FE 5:39a, FE 5A:1251, Lud 94.176, ☉.

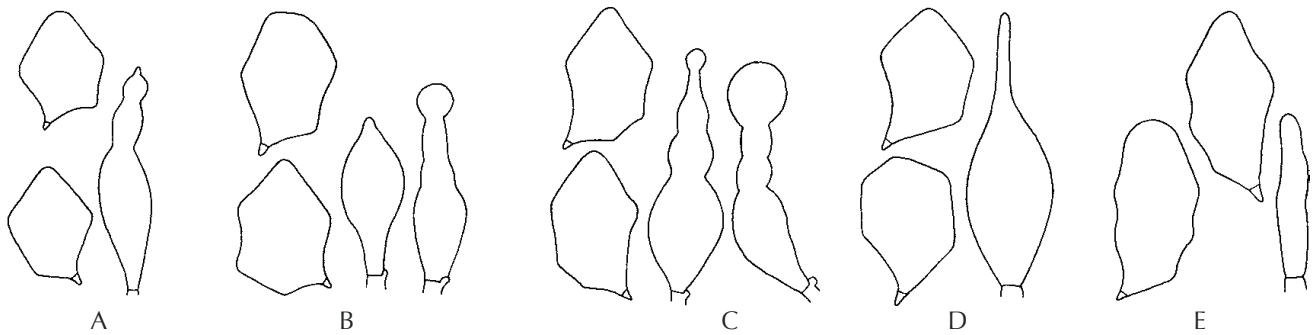
E. dysthaloides Noordel.

- Cap and stem mouse grey; stem with non- or one-septate, poorly or non-incrustated hairs; in scrubs in xerophytic grassland. Cap 5-20 mm, conical, expanding with age, densely radially fibrillose-aeriferous, shiny; gills free to narrowly adnexed, grey then grey-pink; stem 30-70 x 1-3 mm, fibrillose; smell none; taste mild to bitter. Sp (10-)10.5-15(-15.5) x 7-8(-9) μm , nodulose-angular; cheilocystidia 20-75 x 15-35 μm , clavate; pileipellis a cutis to a trichoderm of septate, slightly inflated, strongly incrustated hyphae, 10-18 μm wide; clamps absent. Summer to early autumn; very rare or overlooked in temp.-hemib.; DK (CR, Lol: Jydelejet, Høvblege), SE (NE, Sk, ÖI). – BSMF 121:177, B&K 4:40, Bol Bres 37:166, GBW 4:225.

E. hirtum (Velen.) Noordel.

Key N: Habit tricholomatoid or mycenoid; cap fibrillose to finely scaly; cheilocystidia capitate

1. Cap ochre; cheilocystidia regularly tibiiform to lecythiform (fig. 487D); clamps absent. Cap 20-45 mm, convex to plane, not hygrophanous, not translucently striate, radially fibrillose; gills free, medium spaced, brown with pink tinge; stem 60-95 x 3-5 mm, densely fibrillose-striate; smell and taste indistinct. Sp 8-10.5 x 6-8.5 μm , heterodiametrical, 6-7-angled in side-view; cheilocystidia 35-55 x 8-12 μm with a 4-8 μm wide capitulum; pileipellis trichoderm of inflated elements, 10-25 μm wide with intracellular pigment; clamps present. In dry grasslands and *Juniperus* heathland; autumn; EE, UK. – FE 5:38b.
E. conocybecystis Noordel. & Liiv
- Cap brown, grey brown, blackish brown, reddish brown or porphyry brown; cheilocystidia not so regularly tibiiform as in *Conocybe*; clamps present or absent 2
2. Cap coarsely radially fibrillose, often radially split, showing the paler flesh between the fibrillose covering; cheilocystidia lecythiform to tibiiform, often with a mucronate capitulum (fig. 489A); clamps absent. Cap 15-80 mm, conical, soon convex to plane, with a weak umbo, not hygrophanous, not translucently striate, dark red-brown to blackish brown fibrillose-finely scaly on an almost white background; gills emarginate, medium spaced, white, then pink; stem 20-80 x 2-15 mm, fibrillose striate, pallid; smell and taste indistinct. Sp 7-8(-9) x 5.5-7 μm , heterodiametrical, 5-7-angled in side-view; cheilocystidia 25-90 x 5-20 μm ; pileipellis a trichoderm of inflated elements, 20-30 μm wide, with intracellular pigment. In nitrogen-rich places in deciduous forests and parks; late summer to autumn; rare in temp.; DK (DD), SE (DD). – B&K 4:75, FE 5:45, FE 5A:1271, GBW 4:169, ☉.
E. scabiosum (Fr.) Quél.
- Cap regularly radially fibrillose, not splitting; capitulum of cheilocystidia not mucronate; clamps present 3
3. Cap 5-30 mm, very dark brown, almost black see *E. inutile* key L 6
- Cap 20-70 mm, brown, grey brown, red brown or porphyry brown 4
4. Cap slightly but distinctly hygrophanous, finely radially fibrillose, often with a micaceous sheen; cheilocystidia in majority clavate with rounded apex, but always mixed with distinctly capitate ones (fig. 489B); smell farinaceous. Cap 25-70 mm, conical-convex to plane with an umbo, grey brown or red brown; gills adnate or emarginate, medium spaced, white then pink finally reddish brown; stem 20-80 x 3-8 mm, pale brown, silvery striate; taste farinaceous to rancid. Sp (8-)9-11.5(-12.5) x (6-)7-9(-9.5) μm , heterodiametrical, 5-8-angled in side-view; cheilocystidia 25-70 x 7-20 μm ; pileipellis a cutis to a trichoderm of inflated elements, 10-20 μm wide, with intracellular pigment; clamps present. In groups in dead and living *Sphagnum* of peat-bogs and boggy areas; late summer to autumn; rare in temp.-bore.; DK (EN), NO (LC), SE (LC). – FE 5:43b, FE 5A:1269, FRIC 12:94c, GBW 4:184.
E. elodes (Fr.: Fr.) P. Kumm.
- Cap not hygrophanous, radially fibrillose, tomentose to finely scaly; cheilocystidia in majority capitate; smell usually indistinct 5
5. Cap and stem porphyry red to porphyry brown; gills white, then pink; cheilocystidia often with a moliniform neck and rounded capitulum (fig. 489C). Cap 35-150 mm, conical to convex with a low umbo, not hygrophanous, innately radially fibrillose; gills free to deeply emarginate, medium spaced; stem 40-75 x 4-20 mm; smell and taste indistinct. Sp 8-12 x (5.5-)6-8 μm heterodiametrical, many-angled to almost nodulose; cheilocystidia 20-60 x 7-20 μm with 3-15 μm wide capitulum; pileipellis a trichoderm of inflated elements, 5-25 μm wide with intracellular pigment; clamps present. In groups in poorly manured grassland, preferably on calcareous soil; late summer to autumn; rare in temp.-suba.; DK (VU), FI (DD), FO, IS, NO (NT), SE (NT). – FAD 73D, FE 5:44, FE 5A:1270, Phil 162c, Ves 242, ☉.
E. porphyrophaeum (Fr.) P. Karst.



Spores and cheilocystidia: A: *Entoloma scabiosum*, B: *E. elodes*, C: *E. porphyrophaeum*, D: *E. canosericeum*, E: *E. plebejum*.

- Cap and stem brown to grey brown; neck of cheilocystidia rarely moliniform 6
- 6. Cap tomentose, rarely distinctly scaly; gills dark grey brown, then with a pink tinge with concolorous or slightly paler edge; stem densely covered with brown fibrils on pale background. Cap 15-60 mm, conical, then convex to plane, weakly umbonate, dark red brown; gills adnate-emarginate, medium spaced; stem 30-90 x 2-8 mm; smell and taste indistinct to slightly acrid. Sp 7-10(-11) x 5.5-7.5(-8) μ m, heterodiametrical, 6-9-angled in side-view; cheilocystidia 20-70 x 5-15 μ m with a 2-10 μ m wide capitulum, rarely lageniform, utriform or clavate; pileipellis a cutis to a trichoderm of cylindrical to inflated, 5-20 μ m wide hyphae with intracellular pigment; clamps present. In groups in seminatural grasslands, in mixed and rich *Picea* forests and along paths, on calcareous and acid soils; late summer to autumn; occasional in hemib.-bore., rare in temp. and suba.-arc./alp.; DK (VU), FI (LC), NO (NT), SE (NT). – BSMF 119:287, FAD 72E, FE 5:43, FE 5A:1269, FRIC 12:95b.
E. jubatum (Fr.: Fr.) P. Karst.
- Cap minutely to recurved scaly, with fine, pointed scales; gills white or pale grey, then sordid grey pink with white, fimbriate edge; stem silvery striate. Cap 10-40 mm, conical, then convex with an umbo, dark brown; gills adnate-emarginate, medium spaced; stem 30-90 x 1-5 mm; smell and taste indistinct to farinaceous-rancid. Sp 8-10(-11) x 6-8 μ m, heterodiametrical, 6-8-angled in side-view; cheilocystidia 20-50 x 8-20 x 2-7 μ m, lageniform to lecythiform; pileipellis a cutis to a trichoderm of inflated elements, 4-20 μ m wide, with intracellular pigment; clamps present. In groups in grassland, at roadsides, in heathland and *Salix repens* copses on peaty or sandy, acid soil; late summer to autumn; occasional in bore.-suba., but common in FO, rare in arc./alp.; FO, IS, NO (NT, incl. SvB), SE (NE). – FE 5A:1269.
E. fuscotomentosum F.H. Møller

Key O: Habit tricholomatoid or mycenoid; cap pruinose, rimulose, rugulose, venose, fibrillose, finely scaly or tomentose; cheilocystidia present or absent, not capitate

1. Frb reminiscent of a *Dermoloma* species; cap minutely rugulose all over; pileipellis a calliderm of rounded cells; basidia 2-spored, clampless. Cap 30-60 mm, conical then low convex, not hygrophanous, not translucently striate, grey brown; gills adnate-emarginate, distant, white, then pale pink; stem 20-70 x 2-7 mm, white, fibrillose; smell and taste indistinct. Sp (9-)9.5-12 x 7.5-11 μ m, subisodiametrical, 4-7-angled in side-view; cheilocystidia absent; pileipellis elements 10-20 μ m broad, with intracellular pigment. In poorly manured grassland; late summer to autumn; UK. – B&K 4:38.
E. henrici E. Horak & Aeberhardt
- Frb mycenoid or tricholomatoid; pileipellis a cutis with transitions to a trichoderm, or a trichoderm, basidia 4-spored, clamped

2. Cheilocystidia prominent, lageniform, protruding (fig. 489D). Cap 10-25 mm, conical then convex with an umbo, not hygrophanous, translucently striate at margin only, dark grey brown, radially fibrillose; gills adnate to almost free, medium spaced, dark brown pink; stem 20-70 x 1-3 mm, grey brown, strongly silvery striate; smell and taste indistinct. Sp 9-11(-12) x 6.5-8(-9) μ m, heterodiametrical, 5-7-angled in side-view; cheilocystidia 35-80 x 10.5-19 x 2-7 μ m; pileipellis a cutis of cylindrical, 4-10 μ m wide hyphae, with incrusting pigment. In groups in grassy places on calcareous soil; late summer to autumn; very rare in temp.; DK (DD). – FE 5:38a.

E. canosericeum (J.E. Lange) Noordel.

- Cheilocystidia absent or inconspicuous, resembling basidioles 3
- 3. Sp regularly 5-7-angled in side-view, not nodulose 4
- Sp many-angled, nodulose 5
- 4. Cap 20-80 mm; stem 20-70 x 3-10 mm; sp 8-12 x 7-9 μ m. Cap conical, then convex with an umbo, tomentose then minutely scaly all over, not hygrophanous, not translucently striate, dark grey brown; gills adnate-emarginate, medium spaced, white, then pink; stem pale to dark brown, fibrillose; smell and taste indistinct. Sp 8-12 x 7-9 μ m, heterodiametrical, 5-7-angled in side-view; cystidia absent; pileipellis a cutis to a trichoderm of cylindrical to inflated, 6-25 μ m wide hyphae with brown, intracellular pigment; clamps present. In groups in grassland and damp places in deciduous forests; late summer to autumn; very rare in suba.; NO (NE, Troms: Storfjord). – FE 5:42b, FE 5A:1260.

E. plebejoides (Schulzer) Noordel.

- Cap 10-30 mm; stem 15-35 x 3-6 mm; sp 8-11 x 6-8 μ m. Cap conical, then convex, not hygrophanous, minutely scaly all over, not translucently striate, dark grey brown; gills narrowly adnate-emarginate, distant, grey brown with a pink tinge; stem grey brown, polished; smell and taste farinaceous. Sp 8-11 x 6-8 μ m, heterodiametrical, 6-7-angled in side-view; cystidia absent; pileipellis a cutis to a trichoderm of inflated, 10-20 μ m wide hyphae with intracellular pigment; clamps present. In groups in grassland on sandy soil; late summer to autumn; very rare in temp.; DK (DD, Fyn: Højby Ås). – BSMF 121:136, 122:opp. 122, FE 5A:1260.

E. resutum (Fr.) Quél.

5. Frb tricholomatoid; spring and early summer, rarely also in autumn. Cap 10-40 mm, conical, bell-shaped, then expanding with a low umbo, not hygrophanous, not translucently striate, dark grey brown, fibrillose-tomentose with micaceous patches; gills free to narrowly adnexed, grey, then grey pink; stem 30-100 x 3-9 mm, grey to grey brown, silvery striate; smell and taste weakly to distinctly farinaceous. Sp (9-)10.5-14.5(-17) x 7-11 μ m, heterodiametrical, irregularly nodulose-angled; cheilocystidia 35-100 x 5-20 x 2-9 μ m, fusiform to slenderly lageniform (fig. 489E), often sparse and scattered among basidia; pileipellis a cutis to a trichoderm of cylindrical to inflated, 10-20 μ m wide hyphae with intracellular pigment; clamps present. Solitary or in groups in humus-rich soils, in deciduous or coniferous forests, and also in open sand dunes, parks and gardens; very rare in temp.-bore.; DK (EN), NO (DD), SE (NE). – B&K 4:60, FE 5:42a, FE 5A:1259, GBW 4:228, RdM 47:362.

E. plebejum (Kalchbr.) Noordel. (*E. erophilum* (Fr.) P. Karst.)

- Frb mycenoid; late summer and autumn 6
- 6. Pigment minutely incrusting and intracellular; cap pale to moderately dark brown; stem yellow brown, paler than cap, densely fibrillose-striate. Cap 5-20 mm, conical then convex, umbonate, not hygrophanous, not translucently striate, densely scaly; gills free to narrowly adnexed, medium spaced, white then pink; stem 10-60 x 1-3 mm, sometimes with reddish hairs at base; smell and taste indistinct. Sp 9.5-13(-14) x 6.5-8 μ m, heterodiametrical, many-angled, nodulose-angular; cheilocystidia absent; pileipellis a trichoderm of inflated, septate, 10-35 μ m wide hyphae; clamps present. In groups in grassy vegetation and in deciduous

forests, on various types of soil (sand, clay, peat); late summer to autumn; rare in temp. and suba.; DK (EN), NO (NE, Troms: Storfjord). – FE 5:81a,b, FE 5A:1265, 1266, Svp 21:20.

E. hispidulum (M. Lange) Noordel.

- Pigment intracellular; cap and stem with about the same dark brown to brown-grey colour; stem innately fibrillose or ± polished 7
- 7. Cap convex, umbilicate, glabrous or minutely tomentose (lens), hygrophanous, slightly translucently striate; in grassy and mossy places on nutrient poor, sandy or gravelly soil see *E. undulatosporum* and *E. triste* key K5
- Cap bell-shaped to convex with an umbo, not hygrophanous, not translucently striate, minutely scaly, particularly at centre; in arctic tundra with *Dryas* and *Salix polaris* among *Racomitrium*. Cap 10-25 mm, dark grey brown; gills adnate-emarginate, medium spaced, pale grey to brown grey; stem 10-30 x 1.5-3 mm, dark grey brown, innately fibrillose; smell and taste indistinct. Sp 9-12(-13) x 6.5-8(-9) µm, heterodiametrical, nodulose-angular; cystidia absent; pileipellis a cutis to a trichoderm of inflated elements, 10-15 µm wide, with intracellular pigment; clamps present. Late summer; occasional in arc. / alp.; NO (LC, Svb). *E. milleri* Noordel.