

*Entoloma coracis*



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***Entoloma coracis*** Brandrud, Dima, Noordel., G.M. Jansen & Vila, *sp. nov.*

**Etymology.** The epithet refers to the dark blackish to violaceous black colour of the basidiomata, like plumage of a raven (*Corvus corax*).

**Classification** — *Entolomataceae*, *Agaricales*, *Agaricomycetes*.

**Basidiomata** medium-sized, collybioid. **Pileus** 10–35 mm, hemispherical to convex expanding plano-convex with involute then deflexed margin, with depressed, rarely umbilicate centre, not hygrophanous, not translucently striate, initially very dark blackish to violaceous black, with age the bluish tinges fade away, leaving the pileus very dark brownish black, violaceous black or porphyry brown, uniformly coloured, not or slightly pallescent on maturing, entirely tomentose and staying so during development or breaking up in small squamules. **Lamellae**, L = 20–30, l = 1–3, moderately distant, adnate-emarginate or with decurrent tooth, segmentiform to subventricose, white, then with pale pink tinge, with irregular, usually with concolorous edge; rarely spotted black from the start, or becoming spotted blackish with age. **Stipe** 20–80 × 3–7 mm, relatively long and stout, initially violaceous grey, fading to pale bluish grey, sometimes developing a lilac-pink tinge, much paler than the pileus, not polished, but covered with blue to violaceous longitudinal fibrils, sometimes scaly-flocculose at apex, especially in rainy conditions, fibrils with same colour or contrastingly darker than background, with abundant white basal mycelium. **Context** white. **Smell** insignificant, **taste** not recorded. **Spores** 8.5–12.5 × 5.5–7.5 µm, av. 9.5–11 × 6–6.5 µm, Q = 1.3–1.7, Q<sub>av</sub> = 1.3–1.4, heterodiametrical, with 5–7 rather pronounced and sharp angles. **Basidia** 4-spored, claviform, 28.5–41 × 8–13.5 µm, clampless. **Lamella edge** sterile, consisting of a strand of hyphae with clustered cheilocystidia (serrulatum-type) with rather pronounced often somewhat tapering cheilocystidia, 5–15 µm wide, usually not pigmented, but occasionally becoming bluish black with age. **Hymenophoral trama** regular, made up of cylindrical to inflated hyphae, 11–25 µm wide. **Pileipellis** a cutis with transitions to a trichoderm, of clavate, septate, terminal elements, 50–110 × 8–19 µm. **Pigment** intracellular, brown. **Brilliant granules** sparse to abundant. **Clamp connections** absent.

**Habitat & Distribution** — Saprotrophic, calciphilous or acidophilous. In Norway mainly in open, calcareous *Pinus* and *Tilia* forests, but also in naturally open, steppe-like, thermophilous grassland/shrubland on shallow-soil limestone rocks, and once also recorded in grassland and shrub vegetation on limestone. In South Europe in Mediterranean thermophilous areas, under *Quercus ilex*, *Cistus monspeliensis* or *Pinus halepensis*, also known in the Canary Islands, on woods with *Laurus novocariensis*, *Pinus radiata* and *Cistus symphytifolius*. Known from Norway, France, Spain and Austria, but certainly more widespread in Europe.

**Colour illustrations.** Norway, Telemark, Porsgrunn, Frierflogene NR, calcareous dry grassland/margin of calcareous pine forest (type locality). Spores, cheilocystidia, pileipellis, stipitipellis (all from holotype); basidiomata *in situ* (holotype). Scale bars = 1 cm (basidiomata), 10 µm (spores and microstructures).

**Typus.** NORWAY, Telemark, Porsgrunn, Frierflogene NR, near bridge, calcareous, dry grassland/margin of calcareous pine forest, 14 Sept. 2019, T.E. Brandrud, B. Dima & R. Solvang, TEB 381-19 (holotype O-F-256850, ITS and LSU sequences GenBank MW934571 and MW934251, MycoBank MB 839222).

**Additional materials examined.** AUSTRIA, Tirol, Ehrwald, 28 Aug. 2018, Rainer Wald (L0608002, ITS sequence GenBank MW934578). – FRANCE, Dordogne, Sanilhac, route de Lafaye, on soil with *Mycenella bryophila*, 241 m a.s.l., 6 Nov. 2019, G. Eyssartier (GE 19027, ITS sequence GenBank MW934581). – NORWAY, Nordland, Alstahaug, Altra, 10 m a.s.l., calcareous pasture, 18 Sept. 2004, D. Pettersen, A.B. Stærnes, J.B. Jordal, A. Knutsen & P. Fadnes (O-F-67255, ITS sequence GenBank MW934572); Trøndelag, Snåsa, Bergsåsen Nature Reserve, calcareous pine forest, 2 Sept. 2009, E. Bendiksen & K. Bendiksen KB&EB51/09 (O-F-252053, ITS sequence GenBank MW934574); Steinkjer, Kvam, Aunvolltangen, 60 m a.s.l., old calcareous *Picea* forest, 3 Sept. 2010, H. Holien & T.E. Brandrud, U.-B. Bøe, A. Molia HH 57/10 (O-F-293335, ITS sequence GenBank MW934575); Telemark, Bamble, Baneåsen Nature Reserve, calcareous *Tilia* forest, 7 Sept. 2015, B. Dima & T.E. Brandrud TEB 244-15 (O-F-251952, ITS sequence GenBank MW934573); Bamble, Røsskleiva Nature Reserve SE, in calcareous *Fraxinus-Corylus* forest, 8 Sept. 2015, T.E. Brandrud & B. Dima TEB 279-15 (O-F-254580, ITS sequence GenBank MW934576); Porsgrunn, Blekebakken Nature Reserve, calcareous *Pinus* forest, 25 Sept. 2015, T.E. Brandrud & B. Dima TEB 557-15 (O-F-254614, ITS sequence GenBank MW934577); Vestfold, Larvik, Løvållåsen, calcareous grassland, 9 Oct. 2013, T. Læssøe & A. Molia AM-245ø-2013 (O-F-21892, ITS sequence GenBank MW934579). – SPAIN, Girona, Can Cofi, 1 June 2013, P. Carbo 20130601 (L0608020, ITS sequence GenBank MW934580).

**Notes** — *Entoloma coracis* is one of the *E. corvinum* look-alikes, with its very dark, opaque, tomentose pileus, white lamellae, and fibrous stipe. *Entoloma aranense* is a sister species of *E. coracis*, less robust, paler, with a lilac-bluish tinged pileus when young, later brown and fibrillose, and a typical subalpine-alpine habitat. Microscopically the differences are minimal. *Entoloma porphyrogriseum* is also closely related, but differs, e.g., in smaller spores, and not so persistently dark pileus. Phylogenetically (see the phylogenetic tree for *E. ammophilum* in Supplementary material FP1240), these three species are rather distant from *E. corvinum* s.str., as we now interpret it, and they differ from *E. coracis*, morphologically by the narrower, more sharply angled spores, the serrulatum-type lamella edge, and the habitat. *Entoloma corvinum* is an alpine species, like the similar *E. erhardii*, which differs by having smaller spores, and a polished stipe.

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