

Agaricus bivelus Fr., *Observ. mycol.* (Havniae) 2: 58 (1818).

IF551506

Neotype Sweden, Angermanland, Haggdager, Hogsnas, in dry spruce forest on rich ground (Picea, Betula), 21 Aug 1990, coll. H. Lindstrom et al. CFP919, F44841 (S), GenBank No. KP86615 (ITS), hic designatus.

Agaricus urbicus Fr., *Syst. mycol.* (Lundae) 1: 216 (1821).

IF551504

Neotype Sweden, Uppland, Uppsala, Botanical garden, under Betula, 11 Sept 1986, coll. H. Lindstrom et al. CFP486, F44893 (S), GenBank No. KP866158 (ITS), hic designatus.

Cortinarius illuminus Fr., *Epicr. syst. mycol.* (Upsaliae): 305 (1838) ['1836-1838'].

IF551126

Neotype Lindstrom et al. CFP655, F44877 (S), GenBank No. KP866156, hic designatus.

Cortinarius sect. Athabasci Liimat., Niskanen & Kytöv., sect.nov.

IF551505

Basidiomata medium-sized. Pileus more or less brown, in some species with a bluish tint, subhygrophanous to hygrophanous. Stipe clavate to almost cylindrical, at first whitish fibrillose, later pale brown, in some species with a bluish tint at the apex. Universal veil white. Spores amygdaloid to ellipsoid. In deciduous and coniferous forests.

Holotype: *Agaricus bivelus* Fr. 1818.

Cortinarius sect. Badiolaeves Liimat., Niskanen & Kytöv., sect.nov.

IF551507

Basidiomata medium-sized. Pileus dark brown to brown, hygrophanous. Stipe cylindrical or slightly clavate, whitish silky-fibrillose when young, later pale brown to brown. Universal veil white, sparse. Exsiccata with blackish brown to blackish pileus. Spores amygdaloid to ellipsoid, < 9 µm long. In mixed and coniferous forests on calcareous ground.

Holotype: *Cortinarius badiolaevis* Niskanen, Liimat., Mahiques, Ballarà & Kytöv. 2011.

Cortinarius sect. Brunneifolii Niskanen, Liimat. & Kytöv., sect.nov.

IF551510

Basidiomata medium-sized. Pileus brown, hygrophanous. Stipe cylindrical or slightly clavate, sometimes tapering downwards, whitish silky-fibrillose when young, later pale brown to brown. Universal veil white. Odor in lamellae faintly raphanoid. Spores ellipsoid, < 10 µm long. Epicutis hyphae with hyaline, refracting granules. In mixed and coniferous forests.

Holotype: *Cortinarius brunneifolius* Kytöv., Niskanen & Liimat. 2008.

Cortinarius sect. Brunneocalcarii Niskanen, Liimat. & Kytöv., sect.nov.

IF551508

Basidiomata medium-sized. Pileus brown to dark brown, hygrophanous. Stipe clavate to almost bulbous, whitish. Universal veil white, sparse. Odor in lamellae raphanoid. Spores amygdaloid to ellipsoid, < 10 µm long. In mixed and coniferous forests on calcareous ground.

Holotype: *Cortinarius brunneocalcarius* Niskanen, Liimat. & Kytöv. 2012.

Cortinarius sect. Fuscoperonati Liimat. & Niskanen, sect.nov.

IF551475

Basidiomata medium to large-sized. Pileus brown. Stipe clavate to slightly bulbous, white to greyish white. Universal veil greyish brown to blackish brown. Spores ellipsoid, moderately to strongly verrucose, > 10 µm long. In coniferous forests on calcareous ground.

Holotype: *Cortinarius fuscoperonatus* Kühner 1953.

Cortinarius sect. Humicolae Liimat. & Niskanen, sect.nov.

IF550916

Basidiomata medium-sized, yellow to yellow brown. Pileus and stipe scaly. Universal veil yellow to yellow brown. Spores broadly ovoid to amygdaloid, < 10 µm long.

Holotype: *Dryophila squarrosa* var. *humicola* Quél. 1892.

Cortinarius sect. Niveoglobosi Kytöv., Liimat. & Niskanen, sect.nov.

IF551476

Basidiomata medium to large-sized, fleshy, at first white, becoming pale brown. Pileus not hygrophanous. Stipe clavate. Universal veil white. Spores amygdaloid, rather small, < 9 µm long. In mixed and coniferous forests.

Holotype: *Cortinarius niveoglobosus* H. Lindstr. 1992.

Cortinarius sect. Safranopedes (Bidaud, Moëgne-Loec. & Reumaux) Liimat., Kytöv. & Niskanen, comb.nov.

IF551511

Basionym: *Cortinarius ser. Safranopedes* Bidaud, Moëgne-Locc. & Reumaux, in Bidaud, Moëgne-Loccoz, Reumaux & Henry, *Atlas des Cortinaires* Hors-Serie 1: 144 (1997)

Cortinarius sect. Sciophylli (Moenne-Locc. & Reumaux) Liimat. & Niskanen, comb.nov.

IF551514

Basionym: *Cortinarius subsect. Sciophylli* Moenne-Locc. & Reumaux, *Atlas des Cortinaires* Pars 1 (Annecy): 19 (1990)

Cortinarius sect. Subbalaustini Liimat., Niskanen & Kytöv., sect.nov.

IF551477

Basidiomata medium (to large)-sized. Pileus vivid red brown to brown to dark brown, hygrophanous. Stipe clavate, white, in some species with a bluish tint at the apex. Universal veil white. Odor indistinct. Basidiospores more or less ellipsoid. In deciduous and coniferous forests.

Holotype: *Cortinarius centrirufus* Kytöv., Niskanen & Liimat. 2014.

Cortinarius sect. Testaceofolii Liimat., Niskanen & Kytöv., sect.nov.

IF551509

Basidiomata medium-sized. Pileus brown, hygrophanous. Stipe cylindrical or slightly clavate, often tapering downwards, whitish silky-fibrillose when young, later pale brown to brown. Universal veil white. Odor in lamellae indistinct. Spores amygdaloid to ellipsoid, < 10 µm long. Lamellar trama hyphae incrustated. In mixed and coniferous forests.

Holotype: *Cortinarius testaceofolius* H. Lindstr. & Soop 1995.

Cortinarius sect. Urbici Liimat., Niskanen & Kytöv., sect.nov.

IF551503

Basidiomata medium to large-sized, white to pale brownish grey, often becoming pale brown to brown with age. Pileus smooth or somewhat innately fibrillose, hygrophanous or with hygrophanous streaks. Stipe clavate or cylindrical. Universal veil white. Spores < 10 µm long. In deciduous and coniferous forests, many species on rich or calcareous ground.

Holotype: *Agaricus urbicus* Fr. 1821.

Cortinarius subgen. Callistei Liimat., Niskanen & Ammirati, subgen.nov.

IF551473

Basidiomata medium to large-sized, yellow, orange yellow, brownish yellow to orange brown. Stipe cylindrical, clavate or bulbous. Universal veil yellow to orange yellow, in some species later more brownish. Odor like raw potatoes, old cellar, like a just extinguished candle, hot iron, ozone, or apples. Spores subglobose to somewhat elongated, < 9 µm long. In deciduous and coniferous forests.

Holotype: *Agaricus callisteus* Fr. 1818.

Cortinarius subgen. Camphorati Liimat., Niskanen & Ammirati, subgen.nov.

IF551459

Basidiomata medium to large-sized, blue to purple to almost white when young, later pale yellowish brown to very pale purple. Stipe cylindrical or clavate. Universal veil white or pale blue, later yellow or white. Context at first purple, later pale to strong yellowish brown. Odor in many species strong, penetrating, and unpleasant. Spores amygdaloid to somewhat ellipsoid, cheilocystidia distinct, variable in form, clavate to subfusoid. In deciduous and coniferous forests in northern and southern hemisphere.

Holotype: *Agaricus camphoratus* Fr. 1821.

Cortinarius subgen. Illumini Liimat., Niskanen & Kytöv., subgen.nov.

IF551474

Basidiomata medium-sized. Pileus vivid red brown to dark red brown to brown, hygrophanous. Stipe cylindrical or slightly clavate, whitish silky-fibrillose when young, later pale brown to brown. Universal veil white, yellow or pink. Spores subglobose, < 8.5µm long. In deciduous and coniferous forests.

Holotype: *Cortinarius illuminus* Fr. 1838.

Dryophila squarrosa var. humicola Quél., *Compt. Rend. Assoc. Franç. Avancem. Sci.* 20(2): 466 (1892) ['1891'].

IF551472

Neotype France, Ain, Ordonnax, Penant, in broad-leaved deciduous forest on calcareous ground (Fagus), 4 Oct 1991, H. Lindstrom et al. CFP1082, F44876 (S), GenBank No. KP866157 (ITS), hic designatus.