Index Fungorum no. 201

Effectively published 19/11/2014 21:05:41 (ISSN 2049-2375)

Nomenclatural novelties : Tuula Niskanen

Cortinarius angustisporus Kytov., Niskanen & Liimat., sp.nov.
IF550869
Type: Finland, Koillismaa, Kuusamo, Oulanka National Park, forests close to Kiutakongas, dry Pinus sylvestris heath forest with some Picea and Betula on sandy and calcareous soil, Grid 27 E 7365-6:3604, 18 Sept 2002, coll. I. Kytovuori, K. Liimatainen & T. Niskanen, T. Niskanen 02-792 (H, holotype; NY, isotype). GenBank no. KP165560. Diagnosis: Pileus 6-20 mm, at first hemispherical, soon broadly convex to almost plane with a small umbo, yellowish reddish brown, hygrophanous. Lamellae moderately spaced, yellowish reddish brown, adnexed to somewhat emarginated. Stipe 14-40 mm long, 2-3 mm thick at apex, cylindrical, pale yellowish brown. Universal veil yellow, rather sparse. Basal mycelium white. Context yellow brown. Odor of lamellae indistinct. Basidiospores 7.3-8.2-9.1 x 3.0-3.4-3.6 um, av.= 8.0-8.4 x 3.4 um, Q= 2.15-2.41-2.65, Qav. = 2.33-2.47 (120 spores, 3 specimens), narrowly cylindrical to very narrowly boletoid, sometimes with a very low suprahilar depression, almost smooth to very finely verrucose, sometimes somewhat more strongly at apex, somewhat dextrinoid. Lamellar trama hyphae olive brown to reddish in MLZ, distinctly densely scabrous. ITS sequence (GenBank KP165560, holotype) distinct from the other members of Cortinarius subgenus Telamonia. Deviating from the other species of the subgenus in the ITS region by at least 14 substitutions and indel positions. Ecology and distribution: In dry Pinus heathlands, on sandy soil. Producing basidiomata in autumn. Known from Northern Europe. Additional specimens: Finland, Kainuu, Puolanka, Vayryla, Paakko, between Iso Vuorijarvi and the road, fairly rich spruce forest with some Pinus, Betula, Populus tremula and Salix, Grid 27E 7185:3537, 15 Sept 1997, I. Kytovuori 97-1557 (H), GenBank No. KP165561. Finland, Sodankylan Lappi, Pelkosenniemi commune, Suvanto, N side of the river Kitinen, Kalkkivaaran lehto. Steeply S, to the river sloping dry grass-herb forest of Picea, Pinus and Juniperus with some Betula, Salix and Populus, dolomite rocks, Grid 27E: 7455:3503-4, 28 Aug 2008, I. Kytovuori 08-316, H6033451 (H). Sweden, Pajala, by the road on W side of the river Muonioalven, opposite to the church village of Kolari, dry pine heath forest on sandy ground, 15 Aug 2001, I. Kytovuori 01-056 (H), GenBank No. KP165562. Sweden, Jamtland, Ratan, N side of Handsjon, a small parking place on dry pine heath forest, 31 Aug 2003, T. Niskanen et al. 03-909 (H). Etymology: The name refers to the narrow basidiospores.
Holotype T. Niskanen 02-792 (H).

Cortinarius centrirufus Kytov., Niskanen & Liimat., sp.nov.
IF550874
Type: Finland, Uusimaa, Kirkkonummi, Lapptrask W, mesic mixed forest with Picea, Betula and Populus, Grid 27E 6673:3349, 24 Aug 2000, I. Kytovuori 00-037 (H, holotype; NY, isotype). GenBank No. KP165577. Diagnosis: Pileus 35-60 mm, hemispherical, then broadly convex to almost plane with a low umbo, reddish brown, innately fibrillose, hygrophanous. Lamellae moderately spaced, brown, adnexed to emarginated. Stipe 50-100 mm long, 5-12 mm thick at apex, clavate, at first white fibrillose, soon brown. Universal veil white, forming some incomplete girdles on the stipe. Basal mycelium white. Context in pileus and base of the stipe brown to dark reddish brown, in the apex of the stipe pale brown to brown. Odor in lamellae indistinct. Basidiospores 6.8-7.4-7.9 x 4.5-4.9-5.2 um, av.= 7.3-7.5 x 4.8-5.0 um, Q= 1.44-1.52-1.62, Qav. = 1.51-1.52, on lamellae somewhat larger and narrower than on the top of the stipe (100 spores, 2 specimens), ellipsoid to very weakly lacrymoid, fairly finely, evenly verrucose, moderately dextrinoid. Lamellar trama hyphae pale yellow in MLZ, smooth to very finely scabrous. ITS sequence (GenBank KP165577, holotype) distinct from the other members of Cortinarius section Subbalaustini. Deviating from the other species of the section in the ITS region by at least five substitutions and indel positions. Ecology and distribution: In Picea dominated forests, presumably associated with Betula or Populus. Producing basidiomata in late summer and autumn. Known from Europe. Additional specimens: Finland, Ahvenanmaa, Finstrom, Grelsby, NE side of the sandy road to Lillo, fairly rich spruce forest with scattered Betula and Corylus avellana, Grid 27E 6701:3110, J. Vauras 16764F (TUR-A), GenBank No. KP165578. Germany, TUB 011894 (TUB), GenBank No. AY669693. Etymology: The name refers to the color of the pileus.
Holotype I. Kytovuori 00-037 (H).

Cortinarius crassisporus Kytov., Niskanen & Liimat., sp.nov.
IF550867
Type: Sweden, Medelpad, Borgsjo, Lombacksheden, rich spruce forest with Pinus and some deciduous trees, 11 Sept 1995, I. Kytovuori 95-1085 (H, holotype; NY, isotype). GenBank No. KP165554. Diagnosis: Pileus 40-130 mm, hemispherical, then broad convex to almost plane, sometimes with a low and broad umbo, very finely fibrillose, dark reddish brown to reddish brown, hygrophanous. Lamellae moderately spaced to almost distant, at first pale brown, later strong brown, adnexed to emarginated. Stipe 70-115 mm long, 9-25 mm thick at apex, 20-40 mm at base, almost bulbose, whitish silky fibrillose. Universal veil at first white, soon becoming partially pale brown, forming a couple of broad, incomplete girdles on the stipe. Basal mycelium white. Context in pileus brown, in stipe at first pale brown, marbled hygrophanous, later brown at base. Odor of lamellae indistinct. Exsiccata: pileus brown with a weak pinkish tint and blackish brown centre. Basidiospores 10.7-12.2-13.6 x 7.5-8.3-9.1 um, av.= 11.4-13.0 x 8.1-8.7 um, Q= 1.36-1.47-1.58, Qav.= 1.47-1.55 (140 spores, 5 specimens), (ellipsoid to) broadly ovoid to almost subglobose, thick-walled, finely to fairly finely verrucose, somewhat more strongly at apex, very strongly dextrinoid. Lamellar trama hyphae pale yellow in MLZ, smooth. ITS sequence (GenBank KP165554, holotype) distinct from the other members of Cortinarius subgenus Telamonia. Deviating from the other species of the subgenus in the ITS region by more than 15 substitutions and indel positions. Ecology and distribution: In Picea dominated forests on calcareous soil, sometimes in less eutrophic forests (one on an ant hill and one in a burnt forest), in middle to northern boreal zone, rare, often scanty. Producing basidiomata in late summer and early autumn. Known from Northern Europe and U.S.A., Alaska. Additional specimens: Finland, Kainuu, Suomussalmi, Raate, in the three-year-old forest fire area on the hill between Jannevaara and Pyoriaisenvaara in the

frontier zone, Picea dominated burnt, intact old-growth forest, 5 Aug 1995, T. Laine & P. Rahko 699, F032227 (OULU), GenBank No. KP165555. Finland, Pera-Pohjanmaa, Kuusikkokivalo, ant hill, 9 Sept 2012 (H). Norway, Oppland, Lunner, Karusputten S, 3 Sept 2011, I. Kytovuori (H). Sweden, Lycksele Lappmark, Stensele parish, Langsjoby, W side of the village, 2 km W of the crossing to south, below the high rock face. S sloping, calcareous grass-herb spruce forest with few hardwood trees, UTM grid WN 78-82 21-22, 9 Sept 2009, P. & I. Kytovuori (H). Sweden, Lycksele Lappmark, Stensele parish, Storoman, Blaiken, N side of the main road E79, opposite to Kyrkberget, at the crossing of a small forest road. Calcareous grass-herb spruce forest with few pines and hardwood trees, UTM grid WN 8 4, 10 Sept 2009, P. & I. Kytovuori 09-1034 (H). U.S.A., Alaska, Fairbanks, University Campus NE, trails, fairly old mesic, mossy Picea dominated forest with some Alnus and Betula on calcareous soil, 21 Aug 2011, K. Liimatainen & T. Niskanen 11-175 (H), GenBank No. KP165556. U.S.A., Alaska, Fairbanks, Wedgewood, Picea dominated forest with some Betula on calcareous soil, 20 Aug 2011, K. Liimatainen & T. Niskanen TN11-161 (H). Etymology: The name refers to the large basidiospores.

Holotype I. Kytovuori 95-1085 (H).

Cortinarius duristipes Kytov., Niskanen & Liimat., sp.nov.

IF550868

Type: Finland, Koillismaa, Kuusamo, SW of Laajusvaara, Jussinlamminvaara, herb-rich Picea abies forest with Pinus, Populus and Betula, Grid 27E 7345-6:3619-20, 21 Sept 2002, coll. I. Kytovuori, K. Liimatainen & T. Niskanen, T. Niskanen 02-888 (H, holotype; NY, isotype). GenBank no. KP165557. Diagnosis: Pileus 30-60 mm, hemispherical, then almost plane with a small umbo, brown to dark brown, hygrophanous. Lamellae moderately spaced to almost distant, brown. Stipe 45-90 mm long, 3-6 mm thick at apex, cylindrical and firm, at first greyish white fibrillose, later brown. Universal veil white, forming some complete and incomplete girdles on the stipe. Basal mycelium white. Context dark brown in pileus and lower part of the stipe, brown in stipe apex. Odor of lamellae indistinct. Basidiospores 7.3-7.9-8.4 x 4.3-4.7-5.2 um, av.= 7.8-7.9 x 4.7-4.8 um, Q= 1.52-1.66-1.82, Qav. = 1.64-1.68 (80 spores, 2 specimens), narrowly lacrymoid, with a distinct suprahilar depression, fairly finely, sharply verrucose, echinate at apex, faintly dextrinoid. Lamellar trama hyphae pale olive yellowish in MLZ, smooth to very finely scabrous. ITS sequence (GenBank KP165557, holotype) distinct from the other members of Cortinarius subgenus Telamonia. Deviating from the other species of the subgenus in the ITS region by at least 20 substitutions and indel positions. Ecology and distribution: Under Populus in herb-rich spruce dominated forests on calcareous soil. Producing basidiomata in late summer and autumn. Known from Europe, Finland and North America, Alaska. Additional specimens: Finland, Kainuu, Suomussalmi commune, Kiannanniemi, Vasonniemi, Lautalahti E, a low depression parallel with the lake, behind a low bank, fairly rich grass-herb mixed forest of Picea, Betula and Populus tremula, with some Pinus, Alnus incana and Salix, Grid 27E: 7227:3598, 4 Sept 2008, I. Kytovuori (H). Finland, Pera-Pohjanmaa, Ylitornio, Kaitajarvi, Palorommas Nature Reserve, SE part, grass-herb spruce forest with eutrophic depressions, Populus tremula, Betula, Cypripedium, Grid 27E 7374:3401, 9 Sept 1997, I. Kytovuori 97-1065 (H), GenBank No. KP165558. U.S.A., Alaska, Fairbanks, Creamerâ€™s Field, Trail to bird ringing station, under Populus and Betula, 25 Aug 2011, K. Liimatainen & T. Niskanen 11-254 (H), GenBank No. KP165559. Etymology: The name refers to the firm stipe.

Holotype T. Niskanen 02-888 (H).

Cortinarius fuscescens Kytov., Niskanen & Liimat., sp.nov.

IF550864

Type: Finland, Uusimaa, Espoo. Luukki, dust road to the pond Hauklampi (W road), mesic to damp Picea abies dominated forest, Grid 27E: 66927:33723, 17 Aug 2008, coll. K. Liimatainen & T. Niskanen, T. Niskanen 08-008, H6001898 (H, holotype; NY, isotype), GenBank No. KP165546. Diagnosis: Pileus 30-60 mm, conical to hemispherical, then broadly conical to almost plane with an umbo, dark brown to chocolate brown, hygrophanous. Lamellae moderately spaced to distant, dark reddish brown. Stipe 60-130 mm long, 5-10 mm thick at apex, cylindrical to somewhat clavate, at first greyish white fibrillose, later brown. Universal veil sparse, white. Basal mycelium white. Context dark brown. Odor of lamellae indistinct. Basidiospores 7.0-7.6-8.4 x 4.5-4.8-5.0 um, av.= 7.4-7.9 x 4.6-4.9 um, Q= 1.46-1.59-1.76, Qav. = 1.53-1.63 (100 spores, 5 specimens), amygdaloid-fusoid to broadly amygdaloid, fairly finely to moderately verrucose, most strongly at apex, somewhat to moderately dextrinoid. Lamellar trama hyphae pale yellowish to brownish in MLZ, smooth. ITS sequence (GenBank KP165546, holotype) distinct from the other members of Cortinarius subgenus Telamonia. Deviating from the other species of the subgenus in the ITS region by more than 11 substitutions and indel positions. Ecology and distribution: In mesic forests with Picea often on rich to calcareous soil. Producing basidiomata in late summer and autumn. Known from Finland. Additional specimens: Finland, Varsinais-Suomi, Kisko commune, Viiari, Kivimaki, near the limestone mine, mesic, fairly old spruce forest (Picea abies) on rich to calcareous ground, Grid 27E: 6690:3303, 16 Aug 2000, T. Niskanen & I. Kytovuori, I. Kytovuori 00-034 (H), GenBank No. KP165547. Finland, Varsinais-Suomi, Vihti, Salmenkartano, Lammasniemi W, Picea forest with some deciduous trees, Grid 27E 6697:3362, 30 Aug 2004, I. Kytovuori 04-049 (2 ex. H), GenBank No. KP165548, 30 Aug 2005 (H). Finland, Uusimaa, Helsinki, Kivinokka, mesic spruce forest with some Pinus, Betula, Sorbus aucuparia and Salix, Grid 27E 6677:3390, 29 Aug 1998, I. Kytovuori 98-1499, H6032744 (H). Finland, Pohjois-Hame, Laukaa, Hitonhauta SE, Picea dominated forest by the brook, with Betula, Populus and Salix, Grid 27E 6931-2:3435-6, 10 Sept 2004, I. Kytovuori et al. 04-048 (H), GenBank No. KP165549. Finland, Pohjois-Hame, Virrat commune, Hauhuu, E side of the lake Hauhusselka, between the small road and Maununkydot, mesic spruce forest with some Pinus, Betula and Populus, Grid 27E: 6901:3341, 17 Aug 2008, I. Kytovuori 08-1968, H6033579 (H). Etymology: The name refers to the color of the pileus.

Holotype T. Niskanen 08-008, H6001898 (H).

Cortinarius fuscovelatus Kytov., Niskanen & Liimat., sp.nov.

IF550873

Type: Sweden, Dalarna, Alvdalen, Karmorasen, mossy, old, Picea abies dominated forest with some Populus tremula, Betula and Pinus sylvestris, 5 Sept 2000, coll. T. Niskanen & I. Kytovuori, I. Kytovuori 00-036 (H, holotype; NY, isotype). GenBank no. KP165576. Diagnosis: Pileus 35-65 mm, hemispherical, then broadly convex with a small umbo, dark brown, blackish brown in the centre, hygrophanous. Lamellae moderately spaced, brown. Stipe 50-90 mm long, 6-10 mm thick at apex, clavate, at first

greyish white fibrillose, later brown. Universal veil brown, forming complete and incomplete girdles on stipe. Basal mycelium white. Basidiospores 8.2-8.6-9.1 x 5.4-5.7-5.9 um, Q= 1.42-1.51-1.61 (60 spores, 1 specimen), ellipsoid (to somewhat obovoid), finely verrucose, moderately at apex, somewhat dextrinoid. Lamellar trama hyphae pale olive yellow in MLZ, finely scabrous and with some larger olive spots. ITS sequence (GenBank KP165576, holotype) distinct from other species of Cortinarius section Boulderenses. With a sister relationship to C. pseudobovinus (GenBank DQ499465) and deviating from it in the ITS regions by 7 substitutions and indel positions. Ecology and distribution: In herb-rich, mesic to damp, forests with Picea on calcareous soil. Producing basidiomata in late summer and autumn. Known from Sweden. Etymology: The name refers to the color of the universal veil.

Holotype I. Kytovuori 00-036 (H).

Cortinarius murinascens Kytov., Niskanen & Liimat., sp.nov.

IF550871

Type: Finland, Kainuu, Suomussalmi commune, Kiannanniemi, Vasonniemi, Lautalahti E, a low depression parallel with the lake, behind a low bank, fairly rich grass-herb mixed forest of Picea, Betula and Populus tremula, with some Pinus, Alnus incana and Salix, Grid 27E 7227:3598, 4 Sept 2008, I. Kytovuori 08-958 (H, holotype; NY, isotype). GenBank No. KP165570. Diagnosis: Pileus 35-80 mm, hemispherical, then broadly convex to almost plane, sometimes with a low umbo, greyish white silky fibrillose, clay grey to pale brown, hygrophanous. Lamellae moderately spaced, at first pale brown, later brown. Stipe 45-90 mm long, 7-14 mm thick at apex, clavate to almost bulbose, at first white fibrillose, later pale brown. Universal veil sparse, white, at first forming a silky sock-like sheath on the stipe but often soon vanishing. Basal mycelium white. Context marbled brown. Odor of lamellae indistinct or slightly raphanoid. Exsiccata: pileus fairly dark grey brown. Basidiospores 7.5-8.1-8.6 x 4.5-4.8-5.2 um, av.= 7.6-8.3 x 4.6-5.0 um, Q= 1.58-1.68-1.82, Qav. = 1.64-1.71 (200 spores, 10 specimens), narrowly ellipsoid to fusoid (somewhat ovoidly ty obovoidly), fairly finely to moderately, evenly, sharply verrucose, slightly more strongly at apex or not, somewhat to moderately dextrinoid. Lamellar trama hyphae pale olive yellow to olive brown in MLZ, smooth to very finely scabrous. ITS sequence (GenBank KP165570, holotype) distinct from the other members of Cortinarius section Urbici. Deviating from the other species of the section in the ITS region by at least 10 substitutions and indel positions. Ecology and distribution: In herb-rich, mesic to damp, conifer-dominated forests presumably with Betula and Populus on calcareous soil, more seldom in less eutrophic habitats. Possibly also associated with Quercus. Producing basidiomata in late summer and autumn. Known from Europe and North America. Additional specimens: Canada, British Columbia, Interior, Cedar Hemlock forest, mycorrhizal root tip of Betula papyrifera, isolate no. UBCOCS717F, GenBank no. EF218750. Canada, mycorrhizal root tip of poplar, GenBank no. EU554742. Finland, Uusimaa, Helsinki, Vuosaari N, at the beginning of the hiking road, mesic mixed forest, at the road bank, Grid 27E 6680:3397, 4 Oct 2001, I. Kytovuori 01-058 (H), GenBank No. KP165571. Finland, Kainuu, Paltamo, Melalahti, 10 Aug 2008, I. Kytovuori 08-1430 (H). Finland, Kainuu, Puolanka, Vayryla, Paakko, between Iso Vuorijarvi and the road, fairly rich grass-herb-spruce forest with some Pinus, Betula, Populus tremula and Salix, by a track, Grid 27E 7185:3537, 15 Sept 1997, I. Kytovuori 97-1550 (H), GenBank No. KP165572. Finland, Oulun Pohjanmaa, Keminmaa, Alapaakkola, 20 Aug 2007, I. Kytovuori (H). Finland, Pera-Pohjanmaa, Ylitornio, Kuusikkorompaat Nature Reserve, 9 Sept 1997, I. Kytovuori 97-1114 (H); Palorommas Nature Reserve, 9 Sept 1997, I. Kytovuori 97-1046-1049 (H). Finland, Koillismaa, Kuusamo commune, Oulanka National Park, Ampumavaara, rich grass-herb spruce forest with some Pinus, Betula and Populus tremula, on calcareous ground, Grid 27E 7366:3603, 27 Aug 2007, I. Kytovuori, K. Liimatainen & T. Niskanen 02-814 (H), GenBank No. KP165573, 18 Sept 2002, T. Niskanen et al. 02-884 (H), 22 Sept 2002, T. Niskanen 02-1032 (H), 23 Sept 2002, T. Niskanen et al. 02-1093 (H), 1 Sept 2007, M. Toivonen & I. Kytovuori 07-1085 (H). Finland, Koillismaa, Taivalkoski, Rintela, 1 Sept 2008, I. Kytovuori 08-668 (H). Finland, Pelkosenniemi, Suvanto, Kalkkivaara, 28 Aug 2008, I. Kytovuori 08-307&308 (H). GenBank No. FJ865568, Quercus rubra. Etymology: The name refers to the color change of the pileus in drying.

Holotype I. Kytovuori 08-958 (H).

Cortinarius privignipallens Kytov., Niskanen & Liimat., sp.nov.

IF550870

Type: Finland, Uusimaa, Espoo, Nuuksio National Park, Hogbacka N, mesic spruce forest with some Pinus and Betula, Grid 27E 6692:3363, 21 Sept 2004, I. Kytovuori 04-050 (H, holotype; NY, isotype). GenBank No. KP165563. Diagnosis: Pileus 30-55 mm, conical to somewhat hemispherical when young, later low conical to almost plane with a fairly small umbo, greyish white fibrillose, pale brown, hygrophanous. Lamellae moderately spaced to almost crowded, at first strong brown, later dark brown. Stipe 60-110 mm long, 4-8 mm thick at apex, 6-22 mm at base, clavate, at first white fibrillose, later pale brown, often with a bluish tint at the apex. Universal veil sparse, white, forming a sock-like sheath on the stipe. Basal mycelium white. Context in pileus and at the base of the stipe brown, in the apex of the stipe pale brown. Odor of lamellae indistinct. Exsiccata not blackened. Basidiospores 7.5-8.3-9.1 x 5.7-6.2-6.3 um, av.= 7.8-8.8 x 5.9-6.3 um, Q= 1.25-1.35-1.46, Qav.= 1.30-1.39 (340 spores, 17 specimens), broadly ellipsoid to obovoidly subglobose, somewhat thick-walled, moderately to strongly verrucose, fairly strongly dextrinoid. Lamellar trama hyphae pale olive yellow in MLZ, smooth to finely scabrous. ITS sequence (GenBank KP165563, holotype) distinct from the other members of Cortinarius subgenus Telamonia. With a sister group relationship to C. privignatus and deviating from it in the ITS region by 15 substitutions and indel positions. Ecology and distribution: In mesic to damp forests with Picea on rich to calcareous soil, but also on less eutrophic ground. Producing basidiomata in autumn. Known from Northern Europe. Additional specimens: Finland, Varsinais-Suomi, Vihti, Lintumaki, mesic spruce forest, Grid 27E 670:335, 7 Oct 2001, H. Tuovila & I. Kytovuori 01-057 (H), GenBank No. KP165564. Finland, Uusimaa, Sipoo, Hindsby, Sipoonkorpi National Park, mesic spruce forest, 7 Oct 2005, I. Kytovuori (H). Finland, Etela-Karjala, Anjalankoski, Kaipiainen, mesic spruce forest with pines and few birches and hardwood bushes, Grid 27E 6755:3506, 15 Sept 1994, I. Kytovuori 94-571 (H), GenBank No. KP165565. Finland, Etela-Hame, Virrat, Monoskyla, mesic spruce forest, Grid 27E 6900:3343, 12 Oct 1997, I. Kytovuori 97-2310b (H). Finland, Pohjois-Hame, Laukaa, Aijala, Heinaaho, mesic spruce forest, 10 Sept 2004, J. Ruotsalainen (H). Finland, Pohjois-Hame, Saarijarvi, Mahlu, Jylhanpuro, damp spruce forest, Grid 27E 6950:3398, 16 Sept 2008, I. Kytovuori 08-1922 (H); Pyha-Hakki National Park, Mastomaki, mesic to dryish, old spruce forest, Grid 27E 6971-2:3422, 16 Sept 2008, I. Kytovuori 08-1870 (H). Finland, Kainuu, Kajaani, Hietalahti, Lehmivaara grass-herb spruce forest, 7137:3544, 13 Sept 2008 I. Kytovuori 08-1669 (H).

Finland, Kainuu, Paltamo, Kontiomaki, Tololanmaki Kylmanpuro, mesic spruce forest, 7138-9:3550, 14 Sept 2008 I. Kytovuori 08-1761 (H); Oikarilankyla, Kivesvaara, top plateau, old, mesic spruce forest, 751-2:3526, 11 Sept 2008, I. Kytovuori 08-1541 (H), 08-1642 (H). Finland, Kainuu, Puolanka, Paljakka, old, mossy, mesic spruce forest (Picea abies) with damp depressions, Grid 27E 71727-36:35514-9, 15 Sept 2005, K. Liimatainen & T. Niskanen 05-090, H6029910 (H), GenBank No. KP165566. Finland, Kainuu, Ristijarvi, Kivikyla, Lehtipuro, mesic spruce forest, Grid 27E 7150:3557, 8 Sept 2008 (H). Norway, Oppland, Nordre Land, Dokka, by the road 250, Ã˜stsinnibygda N, rich spruce forest, 12 Sept 2000, P. & I. Kytovuori 00-035 (H), GenBank No. KP165567. Sweden, Dalarna, Solleron parish, Gesunda, SE of Gesundaberget, Nedre Borrberga (B), at the end of the carriage road, mesic spruce forest with Betula, Populus tremula, Salix and Pinus, with swampy depressions, UTM grid: VH 7 4, 11 Sept 2007, M. Toivonen & I. Kytovuori 07-1261 (H), GenBank No. KP165568. Sweden, Jamtland, Froso, Fillsta, Fillstabacken, damp to submesic coniferous forest (Picea, Pinus) on calcareous ground, 2 Sept 2003, I. Kytovuori, K. Liimatainen & T. Niskanen 03-107, H7018125 (H), GenBank No. KP165569. Etymology: The name refers to the pale colors of the pileus and affinity with C. privignatus.

Holotype I. Kytovuori 04-050 (H).

Cortinarius subbrunneoideus Kytov., Liimat. & Niskanen, sp.nov.

IF550865

Type: Finland, Koillismaa, Kuusamo commune, Oulanka National Park, W end of Ampumavaara, N of the Biological station, rich grass-herb spruce forest with some Pinus, Betula and Populus tremula, on calcareous soil, with damp depressions, Grid 27E 7366:3603, 27 Aug 2007, I. Kytovuori 07-852, H6001085 (H, holotype; NY, isotype) GenBank No. KP165550. Diagnosis: Pileus 40-70 mm, hemispherical, then low convex to almost plane, sometimes with a low and broad umbo, brown when young, later dark brown, hygrophanous. Lamellae moderately spaced to almost distant, at first pale brown, later dark brown. Stipe 50-90 mm long, 6-13 mm thick at apex, cylindrical, with a clavate base, greyish white fibrillose, soon brown. Universal veil white, forming a girdle on the stipe. Basal mycelium white. Context brown to dark brown. Exsiccata almost uniformly blackish brown, universal veil white. Odor of lamellae indistinct. Basidiospores 8.4-9.0-9.7 x 5.7-6.0-6.3 um, av.= 9.0 x 5.9-6.0 um, Q= 1.42-1.51-1.63, Qav.= 1.50-1.52 (80 spores, 2 specimens), ovoid, sometimes with a low suprahilar depression, somewhat thick-walled, fairly strongly, separately, sharply verrucose, dark-coloured, somewhat to moderately dextrinoid. Lamellar trama hyphae olive yellow to reddish brown in MLZ, smooth to somewhat encrusted. ITS sequence (GenBank KP165550, holotype) distinct from the other species of Cortinarius section Bovini. With a sister relationship to C. aleuriodor (GenBank JX407327) and deviating from it in the ITS regions by more than 8 substitutions and indel positions. Ecology and distribution: In herb-rich, mesic to damp Picea dominated forests on calcareous soil. Producing basidiomata in late summer and autumn. Known from Northern Europe. Additional specimen: Norway, Oppland, Lunner, Karussputten S, E part of the forest, round a small dam pond, very rich, gently sloping spruce grass-herb forest with some Pinus, Corylus Betula and Populus, on calcareous soil, UTM:NM 85.85, I. Kytovuori 11-016 (H), GenBank No. KP165551. Etymology: The name refers to the affinity with C. subbrunneus (current name C. aleuriodor).

Holotype I. Kytovuori 07-852, H6001085 (H).

Cortinarius subexitiosus Liimat., Niskanen, Kytov. & Ammirati, sp.nov.

IF550872

Type: U.S.A. Washington, Kittitas County, Lost Lake Road, below Lake Keechelus Dam, conifer (Tsuga, Pseudotsuga, Abies, Pinus) dominated forest with some Populus, Alnus and Salix on sandy soil, 21 Oct 2009, coll. J.F. Ammirati & T. Niskanen, T. Niskanen 09-116 (H, holotype; NY, isotype). GenBank no. KP165574. Diagnosis: Pileus 15-50 mm, conical, then broadly conical to almost plano-umbonate, brown, whitish fibrillose on the margin, hygrophanous. Lamellae moderately spaced, at first pale brown, later yellowish brown to brown. Stipe 35-60 mm long, 3-7 mm thick at apex, cylindrical, at first greyish white fibrillose, later pale brown. Universal veil white, forming girdles on the stipe. Basal mycelium white. Context in the pileus brown, in the apex of the stipe pale brown, and at the base of the stipe brown. Odor of lamellae not distinctive. Basidiospores 7.7-8.6-9.3 x 5.4-5.7-6.1 um, av.= 8.4-8.7 x 5.7 um, Q= 1.38-1.50-1.62, Qav. = 1.47-1.52 (100 spores, 2 specimens), lacrymoid, with a suprahilar depression, moderately, coarsely sharply verrucose, strongly at apex (almost echinate), moderately to fairly strongly dextrinoid. Lamellar trama hyphae olive yellow in MLZ, smooth to very finely, densely scabrous. Some blackish blue (amyloid) crystal plates present on some of the outer hyphae of the stipe of the Finnish specimen. ITS sequence (GenBank KP165574, holotype) distinct from the other species of Cortinarius subgenus Telamonia. With a sister relationship to C. exitiosus and deviating from it in the ITS regions by 11 substitutions and indel positions. Ecology and distribution: In conifer dominated, mixed forests (Tsuga, Picea, Pseudotsuga, Abies, Populus, Salix). Producing basidiomata in autumn. Known from Europe, Finland and U.S.A., Washington. Additional specimen: Finland, Pera-Pohjanmaa, Tornio, Kalkkimaa, Tuppivaara, nature reserve area (west), fairly young, submesic mixed forest on calcareous soil (Picea abies, Betula, Populus tremula and some Pinus sylvestris), Grid 27E 7314-5:3383-4, 30 Aug 2004, K. Liimatainen & T. Niskanen 04-547, H6029589 (H), GenBank No. KP165575. Etymology: The name refers to the affinity with C. exitiosus.

Holotype T. Niskanen 09-116 (H).

Cortinarius subserratissimus Kytov., Liimat. & Niskanen, sp.nov.

IF550866

Type: Sweden, Gotland, Tjaukle, woodland pasture with Picea, Pinus, Corylus, Quercus and Populus, 30 Sept 2011, I. Kytovuori 11-017 (H, holotype; NY, isotype). GenBank No. KP165552. Diagnosis. Pileus 35-60 mm, conical to hemispherical, later low convex with a wide umbo, dark brown with an umbra brown centre, hygrophanous. Lamellae moderately spaced to distant, dark reddish brown. Stipe 40-70 mm long, 7-13 mm thick at apex, cylindrical with fairly strongly clavate base, whitish silky-fibrillose, later brownish. Universal veil white, fairly sparse. Basal mycelium white. Context greyish white, distinctly bluish at stem top. Exsiccata: pileus dark sordid brown with almost blackish centre. Basidiospores 9.3-10.4-11.6 x 5.7-6.1-6.6 um, av.= 10.0-10.9 x 6.0-6.2 um, Q= 1.58-1.71-1.85, Qav.= 1.67-1.75 (40 spores, 2 specimens), oblong to narrowly amygdaloid to narrowly somewhat obovoid, thick-walled, fairly finely verrucose, moderately to fairly strongly at apex, strongly dextrinoid. Lamellar trama hyphae yellow in MLZ, smooth. ITS sequence (GenBank KP165552, holotype) distinct from the other species of section Sciophylli. With a

sister group relationship to C. serratissimus and deviating from it in the ITS region by 12 substitutions and indel positions. Ecology and distribution. With Quercus, Tilia, Fagus and Corylus on mull soil, also Pinus and Picea present in both locations where the species was found. Producing basidiomata in autumn. Known from Sweden, Gotland. Additional specimen: Sweden, Gotland, Brucebo, dryish, rocky, calcareous Pinus forest, with Quercus, Corylus and Picea, 29 Sept 2011, I. Kytovuori 11-018 (H), GenBank No. KP165553. Etymology: The name refers to the affinity with C. serratissimus.

Holotype I. Kytovuori 11-017 (H).

Cortinarius uraceisporus Niskanen, Kytov. & Liimat., sp.nov.

IF550863

Type: Finland, Varsinais-Suomi, Kisko commune, Leila, S side of the dust road to Orjanpera, dryish to submesic spruce forest (Picea abies) on rich ground with Corylus thickets and some Populus tremula and Betula, Grid 27E 66821-4:33128-9, 1 Aug 2007, coll. K. Liimatainen & T. Niskanen, T. Niskanen 07-050a, H6001791 (H, holotype; NY, isotype), GenBank No. KP165543. Diagnosis: Pileus 30-55 mm, hemispherical, then broadly convex with an umbo, dark chocolate brown, hygrophanous. Lamellae moderately spaced, dark chocolate brown. Stipe 40-80 mm long, 5-10 mm thick at apex, up to 15 mm at base, cylindrical, clavate at base, at first white fibrillose, later brown. Universal veil white, forming a thin, sock-like sheath or some girdles on the stipe. Basal mycelium white. Context brown. Odor of lamellae slightly raphanoid. Basidiospores 8.2-8.7-9.5 x 5.0-5.2-5.4 um, av.= 8.4-8.9 x 5.1-5.3 um, Q= 1.58-1.68-1.80, Qav. = 1.64-1.71 (100 spores, 5 specimens), narrowly amygdaloid to amygdaloid-fusoid, often with a somewhat acute apex, somewhat thick-walled, very finely to fairly finely verrucose, ornamentation hardly stronger at apex, moderately dextrinoid, sometimes dark-coloured. Lamellar trama hyphae pale olive yellowish to olive brownish in MLZ, smooth to very finely scabrous. ITS sequence (GenBank KP165543, holotype) distinct from the other members of Cortinarius subgenus Telamonia. Deviating from the other species of the subgenus in the ITS region by more than 12 substitutions and indel positions. Ecology and distribution: In herb-rich, mesic to damp Picea dominated forests, often under Corylus, on rich to calcareous soil, but also on less eutrophic habitats. Producing basidiomata in late summer and early autumn. Known from Finland. Additional specimens: Finland, Uusimaa, Vantaa, Askisto, Friimetsa, gently W sloping, grass-herb forest with some Pinus, Betula and Populus tremula, Grid 27 E 6688:3378, I. Kytovuori 09-080, H6033563 (H), 09-081 (H), 09-082 (H). Finland, Etela-Hame, Hattula, Nihattula, Ilveskallio, fairly rich spruce forest with few Corylus, Grid 27E 6770:3355-6, 23 Aug 2004, I. Kytovuori 04-047 (H), GenBank No. KP165544. Finland, Varsinais-Suomi, Kisko commune, Leila, S side of the dust road to Orjanpera, dry (to mesic) spruce forest (Picea abies) on rich soil with Corylus thickets and some Populus tremula and Betula, Grid 27E: 66821-4:31280-95, 3 Aug 2000, T. Niskanen 00-270 (H), GenBank No. KP165545. Etymology: The name refers to the spores which are somewhat similar to the spores of the species of section Uracei.

Holotype T. Niskanen 07-050a, H6001791 (H).