

*Cortinarius wakullaensis* Niskanen & Liimat., sp. nov.

IF 558627

Holotype H 7068021

Diagnosis: Pileus 2–3.5 cm in diam., at first hemispherical, later plano-convex, dark brownish red, hygrophanous. Lamellae almost crowded, at first red to dark red, later red brown. Stipe 3–4 cm long, 0.3–0.6 cm thick at the apex, cylindrical, often tapering downwards, at least partly covered by red fibrils, greyish white underneath, later pale red to red. Context brownish red in the pileus, pale brownish red in the stipe, darker towards the base. Universal veil distinct, red, forming some narrow incomplete bands on the stipe. Odour in lamellae faint, raphanoid. Basidiospores 6.5–7.5 × 4–4.5 μm, av. 7.1 × 4.3 μm, Q= 1.50–1.75, Qav.= 1.63, ellipsoid to amygdaloid-ellipsoid, finely verrucose. Some lamellar trama hyphae with blue contents in 5% KOH.

Notes: ITS sequence (GenBank MZ568631, ex holotype) distinct from other members of *Cortinarius* subgen. *Dermocybe*. With a sister group relationship to *C. birkebakii* (GenBank FJ039592) and deviating from it by 19 substitutions and indels. Ecology and distribution: In mixed forests dominated by deciduous trees, with EcM host trees *Quercus* and *Pinus* present. So far known from North America, Florida. Specimens examined: USA. Florida, Wakulla Co., Crawfordville, 306 Wakulla Beach Road, mixed deciduous forest with *Pinus*, *Quercus virginiana*, and *Magnolia glandiflora*, sandy soil, on calcareous bedrock, 24 Dec. 2014, K. Liimatainen, A. Niskanen & T. Niskanen 14-056, 7068020 (H). GenBank MZ568632; loc. cit., K. Liimatainen A. Niskanen & T. Niskanen 14-058 (holotype H; isotype K(M)). GenBank MZ568631.

Etymology: The species was first found from Wakulla County, Florida.

*Cortinarius albobrunnescens* Liimat. & Niskanen, sp. nov.

IF 558628

Holotype H 7068024

Diagnosis: Pileus 2–5 cm in diam., at first hemispherical, soon low convex to almost plane, sometimes with a very low umbo, strongly innately fibrillose or tomentose, at first white, later white at centre, pale silver greyish brown in other parts, very pale greyish brown when wet, fibrillose white when dry, hygrophanous. Lamellae medium spaced to almost crowded, adnexed to emarginated, very pale brown when young, later strong brown. Stipe 3–6 cm long, 0.5–1.3 cm thick at the apex, bulbous, almost marginate, first white, later pale brown. Context greyish brown in the pileus, whitish to very pale brown in the stipe, darker brown at the base. Universal veil white, forming a sock-like sheath in the very lower part of stipe. Basal mycelium white. Odour in lamellae faintly radish or indistinct. Basidiospores: 8–9.5 × 4.7–5.5(–6) μm, av. 8.9 × 5.2 μm, Q= (1.45–)1.55–1.80(–1.95), Qav.= 1.71, amygdaloid, moderately to rather strongly verrucose. Some basidia with very pale greyish brown contents. Lamellar trama hyphae smooth to finely encrusted, hyaline or some very pale greyish brown, some with very small hyaline crystals.

Notes: ITS sequence (GenBank MZ568633, ex holotype) distinct from other members of *Cortinarius* sect. *Urbici*. With a sister group relationship to *C. diosmus* and deviating from it by 10 substitutions and indels. Ecology and distribution: In mixed deciduous forest with *Pinus*. So

far known from North America, Florida and Minnesota. Specimens examined: USA. Florida, Gainesville, Alachua Co., River Rise State Park, Laurel oak, Live oak (*Quercus virginiana*), oaks sp., Pinus, some Magnolia, sweetgum, 13 Jan. 2015, K. Liimatainen, A. Niskanen & T. Niskanen 14-171 (H); Sweetwater, Eastern trail, Xeric oak forest with some pines, 15 Jan. 2015, K. Liimatainen, A. Niskanen & T. Niskanen 14-293, 7068023 (H). GenBank MZ568634; loc. cit., K. Liimatainen, A. Niskanen & T. Niskanen 14-296 (holotype H; isotype K(M)). GenBank MZ568633; loc. cit. K. Liimatainen, A. Niskanen & T. Niskanen 14-308 (H); Legoland, Winterhaven, under Live oak (*Quercus virginiana*), 20 Dec. 2014, K. Liimatainen, A. Niskanen & T. Niskanen 14-051, 7068030 (H). GenBank MZ568635; Wakulla Co., Crawfordville, 306 Wakulla Beach Road, mixed deciduous forest with Pinus, Live oak (*Quercus virginiana*), Magnolia glandiflora, sandy soil, on calcareous bedrock, 24 Dec. 2014, K. Liimatainen, A. Niskanen & T. Niskanen 14-061, 7068031 (H). GenBank MZ568636; Lake Talquin State Forest, Bear Creek, mostly evergreen oaks, 29 Dec. 2014, K. Liimatainen, A. Niskanen & T. Niskanen 14-103, 7068032 (H). GenBank MZ568637.

Etymology: The basidiomata are initially white but become brown with age.

*Cortinarius brunneoperonatus* Liimat. & Niskanen, sp. nov.

IF 558629

Holotype H 7068033

Diagnosis: Pileus 5–7 cm in diam., at first hemispherical, then low convex with a broad umbo, dark reddish brown, hygrophanous. Lamellae medium spaced, red brown. Stipe 5–7 cm long, 0.8–1.2 cm thick at the apex, clavate to slightly bulbous, white to greyish white, with age brown towards the base. Context brownish white, marbled hygrophanous. Universal veil brown to dark brown, forming complete and incomplete girdles on the stipe. Basal mycelium white. Odour in lamellae indistinct. Basidiospores:  $11\text{--}12.5 \times (7\text{--})7.5\text{--}8\text{--}(8.5) \mu\text{m}$ , av.  $11.8 \times 7.6 \mu\text{m}$ ,  $Q = 1.45\text{--}1.60$ ,  $Q_{av} = 1.54$ , obovoidly ellipsoid, moderately verrucose, distinctly more strongly at the apex.

Notes: ITS sequence (GenBank MZ568638, ex holotype) distinct from the other members of *Cortinarius* sect. *Fuscoperonati*. With a sister group relationship to *C. fuscoperonatus* and deviating from it by 10 substitutions and indels. Ecology and distribution: In mesic, mossy *Picea* dominated forest, on rich ground. So far known from North America, U.S.A., Alaska. Specimen examined: USA. Alaska, Fairbanks, University Campus NW, Trails starting from the end of Yukon road, mesic, mossy, partly needle and leaf covered *Picea* dominated forest with some *Populus*, *Betula*, *Alnus* and *Salix*, on rich ground, 22 Aug. 2011, K. Liimatainen & T. Niskanen 11-215 (holotype H; isotype K(M)). GenBank MZ568638.

Etymology: Sister species of *C. fuscoperonatus*. In addition, the colour of the basidiomata is similar to that of *C. brunneus*.

*Cortinarius typicus* Liimat., sp. nov.

IF 558630

Holotype H 7068019

Diagnosis: Pileus 4–10 cm in diam., at first hemispherical to convex, then expanded, yellow, towards centre orange-brown. Lamellae crowded, yellow. Stipe 4–8 cm long, 1–2 cm thick at the apex, with a marginated bulb, yellow. Context yellow in the pileus and in the stipe. Odour in lamellae strong, distinct of aniseed. Basidiospores  $11.5\text{--}14 \times 7\text{--}7.5\text{--}(8) \mu\text{m}$ , av.  $12.9 \times 7.4 \mu\text{m}$ ,  $Q = 1.65\text{--}1.85$ ,  $Q_{av} = 1.76$ , citriform, strongly and coarsely verrucose.

Notes: ITS sequence (GenBank MZ568630, ex holotype) distinct from the other members of clade *Laeticolores* and less than 92% similar to the closest known species. Ecology and distribution: In dry oak forest with some Pinus. So far known from North America, U.S.A., Florida. Specimen examined: USA. Florida, Gainesville, Sweetwater, Eastern Trail, dry oak forest with some Pinus,

15 Jan 2015, K. Liimatainen, A. Niskanen & T. Niskanen 14-281 (holotype H; isotype K(M)).  
GenBank MZ568630.

Etymology: A typical member of the clade.

*Cortinarius vagabundus* Liimat. & Niskanen, sp. nov.

IF 558631

Holotype H 7068034

Diagnosis: Pileus 3–4.5 cm in diam., at first hemispherical, later low convex to plane, surface with whitish fibrils, very pale (greyish) brown, later pale yellowish brown, hygrophanous. Lamellae medium spaced, at first pale brown with a purplish tint, later brown. Stipe 3–4 cm long, 0.4–0.7 cm thick at the apex, 0.6–1 cm at the base, cylindrical, usually with a clavate base, silky whitish fibrillose. Context brown in the pileus, pinkish grey with a purplish tint at the top of the stipe, very pale brown at the base. Universal veil cream-coloured, forming some complete and incomplete girdles on the stipe. Basal mycelium white. Odour in lamellae raphanoid, slightly sweetish. Basidiospores  $5.5\text{--}6.5 \times 4.5\text{--}5(-5.5) \mu\text{m}$ , av.  $5.9 \times 4.9 \mu\text{m}$ ,  $Q= 1.15\text{--}1.30$ ,  $Q_{av.}= 1.22$ , subglobose to very broadly ellipsoid, moderately verrucose. Some basidia with yellow contents in 5% KOH. Lamellar trama hyphae hyaline, majority smooth but some with big yellow spot-like encrustations; some containing small, colourless elongated crystals.

Notes: ITS sequence (GenBank MZ568639, ex holotype) distinct from other species of *Cortinarius*. Most similar to *C. sp* from Florida (GenBank MF153021) but deviating from it by 20 substitutions and indels. Ecology and distribution: In conifer dominated forest. So far known from North America, Quebec. Specimen examined: CANADA. Quebec, NW of Quebec, Riviere-a-Pierre, S entrance of the Reserve faunique de Portneuf, conifer dominated forest (*Tsuga*, *Abies* and some *Picea*) with some *Betula* and few *Populus*, 28 Aug. 2010, T. Niskanen et al. 10-046 (holotype H; isotype K(M)). GenBank MZ568639.

Etymology: The fungus has a pale greyish brown pileus and is inconspicuous in the field, thus the name *vagabond* was given for the species.

*Cortinarius alaskaensis* Niskanen & Liimat., sp. nov.

IF 558632

Holotype H 7068035

Diagnosis: Pileus 3–5 cm in diam., at first somewhat conical, later low conical to almost plane with an umbo, silky fibrillose, dark reddish brown, hygrophanous. Lamellae medium spaced, brown. Stipe 5–7 cm long, 0.5–0.7 cm thick at the apex, cylindrical, clavate at the base, covered by greyish white fibrils when young, later pale reddish brown. Context reddish brown in the pileus, striated hygrophanous white/pale reddish brown from the apex of the stipe to the middle of the stipe, reddish brown and darker towards the base. Universal veil white, sparse, forming an incomplete sock on the lower part of stipe. Basal mycelium white. Odour in lamellae indistinct. Basidiospores:  $7.5\text{--}8.5(-9) \times 5\text{--}5.5 \mu\text{m}$ , av.  $8.2 \times 5.2 \mu\text{m}$ ,  $Q= 1.50\text{--}1.65$ ,  $Q_{av.}= 1.57$ , amygdaloid, moderately verrucose, more strongly at the apex. Some basidia with pale olivaceous brown contents in 5% KOH. Lamellar trama hyphae very pale olivaceous brown, smooth in 5% KOH, up to  $17 \mu\text{m}$  wide (wider than in the genus *Cortinarius* in general).

Notes: ITS sequence (GenBank MZ568640, ex holotype) distinct from the other members of *Cortinarius* subgen. *Telamonia*. With a sister group relationship to *C. conterminus* and deviating from it by 10 substitutions and indels. Ecology and distribution: In mesic *Picea* dominated forest with some *Betula* and *Populus*. So far known from North America, U.S.A., Alaska. Specimen examined: USA. Alaska, Fairbanks, Wedgewood Resort Trails, starting from the auto museum, mesic *Picea* dominated forest with some *Betula* and *Populus*, 16 Aug. 2011, coll. K. Liimatainen,

T. Niskanen 11-095 (holotype H; isotype K(M)). GenBank MZ568640.

Etymology: The species was first found from Alaska.

*Cortinarius pseudoacutus* Liimat., Niskanen & Ammirati, sp. nov.

IF 558633

Holotype H 7001082

Diagnosis: Basidiomata Galerina-like. Pileus 1–2 cm in diam., distinctly conical, with an acute umbo, up to 3/4 pellucid-striate, yellow brown to pale red brown, hygrophanous. Lamellae medium spaced, yellowish brown. Stipe 3–5 cm long, 0.15–0.3 cm thick at the apex, cylindrical or tapering downwards, at first whitish fibrillose, soon yellowish brown. Context yellow brown to red brown in the pileus, pale yellow brown in the stipe. Universal veil white. Basal mycelium white. Odour at the base of the stipe and in lamellae iodoform-like, best observed when slightly dried. Basidiospores:  $7.5\text{--}9 \times 4.5\text{--}5 \mu\text{m}$ , av.  $8.5 \times 4.8 \mu\text{m}$ ,  $Q= 1.70\text{--}1.80$ ,  $Q_{av.}= 1.76$ , ellipsoid to somewhat amygdaloid, finely verrucose. Some basidia with pale brown contents. Lamellar trama hyphae very pale brown, distinctly encrusted in 5% KOH.

Notes: ITS sequence (GenBank MZ568641, ex holotype) distinct from other species of *Cortinarius* and differs from them by over 20 substitutions and indels. Ecology and distribution: In coniferous forests, *Tsuga*, *Pinus* and *Piceas*. Widely distributed, known from Asia (Japan), Europe (Italy) and North America (USA, WA). Specimen examined: USA. Washington, SE of Seattle, SE of Fairwood centre, SE of Lake Youngs, Shadow Lake, damp coniferous forest (*Tsuga heterophylla*, *Picea sitchensis*), 10 Oct. 2007, K. Liimatainen, T. Niskanen 07-444 (holotype H; isotype K(M)). GenBank MZ568641.

Etymology: The species is reminiscent of *C. acutus*.

*Cortinarius ochroglutinosus* Liimat. & Niskanen, sp. nov.

IF 558635

Holotype H 7000818

Diagnosis: Pileus 2.5–4.5 cm in diam., at first hemispherical, then low convex, ochraceous yellow, later pale yellow to greyish yellow, glutinous. Lamellae almost crowded, at first greyish purple, later brown. Stipe 4–8 cm long, 0.4–0.8 cm thick at the apex, cylindrical, often tapering downwards. Context very pale ochraceous white in the pileus, white in the stipe. Universal veil yellow, forming some complete or incomplete girdles on the stipe. Basal mycelium white. Odour in lamellae indistinct. Basidiospores  $8\text{--}9 \times 7\text{--}7.5\text{--}(8) \mu\text{m}$ , av.  $8.4 \times 7.3 \mu\text{m}$ ,  $Q= 1.10\text{--}1.20$ ,  $Q_{av.}= 1.16$ , subglobose, finely to moderately, spinely verrucose. Basidia hyaline. Lamellar trama hyphae hyaline, smooth in 5% KOH.

Notes: ITS sequence (GenBank MZ568642, ex holotype) distinct from other members of *Cortinarius* sect. *Delibuti*. Most similar to *C. delibutus* s. lato but deviating from it by 20 substitutions and indels. Ecology and distribution: In mixed forests (*Quercus* and conifers). So far known from North America, Minnesota and Ontario. Specimens examined: CANADA. Ontario, Simcoe County, Severn Township, Matchedash District, mixed forest of coniferous and deciduous trees, 11 Sept. 2007, K. Liimatainen & T. Niskanen 07-156a (holotype H; isotype K(M)). GenBank MZ568642.

Etymology: The name refers to the ochraceous yellow, glutinous pileus.

*Cortinarius magispilomeus* Liimat. & Niskanen, sp. nov.

IF 558636

Holotype H 7000817

Diagnosis: Pileus 1.5–3 cm in diam., at first hemispherical, later low convex with an incurved

margin, sometimes with a low and broad umbo, pale grey, covered with red scales. Lamellae medium spaced, at first purple, later greyish brown. Stipe 2.5–3.5 cm long, 0.4–0.6 cm thick at the apex, cylindrical, with a somewhat clavate base, greyish white. Context in the pileus and the upper part of the stipe purple, in the lower part of the stipe very pale purple, almost white. Universal veil distinct, red, forming girdles or scales on the stipe and on the pileus. Basal mycelium white. Odour in lamellae faint. Basidiospores 6–7 × 5–5.5 μm, av. 6.4 × 5.2 μm, Q= 1.15–1.30, Qav.= 1.22, subglobose, moderately verrucose. Some basidia with pale yellow contents. Lamellar trama hyphae hyaline, smooth with a few colourless crystals in 5% KOH.

Notes: ITS sequence (GenBank MZ568643, ex holotype) distinct from other members of *Cortinarius* sect. *Spilomei*. Most similar to *C. spilomeus* but deviating from it by over 30 substitutions and indels. Ecology and distribution: In mixed forest. So far known from North America, Ontario. Specimen examined: CANADA. Ontario, Simcoe County, Severn Township, Matchedash District, mixed forest of coniferous and deciduous trees, 11 Sept. 2007, K. Liimatainen & T. Niskanen 07-155 (holotype H; isotype K(M)). GenBank MZ568643.

Etymology: *Magis* (latin) = more, in higher degree. The species has more distinct red colours than *C. spilomeus*.

*Cortinarius americanospilomeus* Liimat. & Niskanen, sp. nov.

IF 558637

Holotype H 7068036

Diagnosis: Pileus 2–5 cm in diam., at first hemispherical, later low convex to almost plane, at first pale grey, later browner, rusty red scales more or less abundant. Lamellae crowded, pale brown when young, later brown. Stipe 2–6 cm long, 0.4–0.8 cm thick at the apex, clavate, slender, whitish-silky fibrillose, becoming yellow at the base when handled. Context greyish brown in the pileus, purple at the top of stipe, brownish yellow at the lower part of the stipe. Universal veil distinct, yellow, forming some incomplete and complete girdles on the stipe. Basal mycelium white. Odour in lamellae faint, indistinct. Basidiospores 6.5–7.5 × 5.5–6.5 μm, av. 7.1 × 6.1 μm, Q= 1.10–1.20 (1.30), Qav.= 1.17, subglobose, finely to moderately verrucose. Basidia hyaline to pale brownish yellow in 5% KOH. Lamellar trama hyphae very pale brown in 5% KOH, with a few, very small crystals.

Notes: ITS sequence (GenBank MZ568644, ex holotype) distinct from other members of *Cortinarius* sect. *Spilomei*. Most similar to *C. ferrusinus* but deviating from it by over 30 substitutions and indels. Ecology and distribution: In mixed forests, with *Tsuga*, *Abies*, *Betula*, *Fagus* and *Picea*. So far known from North America, Quebec. Specimens examined: CANADA. Quebec, Quebec region, Quebec city, Charlesbourg near at the NE end of de Chateau-Bigot, mixed forest of *Tsuga*, *Abies* and *Betula* with some *Fagus* and *Picea*, 30 Aug. 2010, K. Liimatainen & T. Niskanen 10-056 (holotype H; isotype K(M)). GenBank MZ568644.

Etymology: A species similar to the European *C. spilomeus* but found from North America.

*Cortinarius albomalus* Liimat. & Niskanen, sp. nov.

IF 558638

Holotype H 7000816

Diagnosis: Pileus 2.5–5 cm in diam., at first hemispherical, later low convex, surface matt, dry, blue to bluish purple, usually yellow at the centre when young, later almost white, non to very slightly hygrophanous. Lamellae crowded, at first purple, later greyish brown. Stipe 4–7 cm long, 0.6–0.9 cm thick at the apex, more or less clavate, sometimes tapering at the base, silky whitish fibrillose, with a purplish tint when young. Context purple in the pileus and in the upper part of the stipe, yellowish brown in the lower part of the stipe. Universal veil yellowish ochraceous,

forming some incomplete and complete girdles on the stipe. Basal mycelium white. Odour in lamellae strong distinct, perfumatic. Basidiospores  $6.5 - 7.5 \times 5.5 - 6 \mu\text{m}$ , av.  $7.2 \times 5.7 \mu\text{m}$ ,  $Q = 1.25 - 1.30$  ( $-1.35$ ),  $Q_{av} = 1.27$ , very broadly ellipsoid to almost subglobose, moderately verrucose. Basidia hyaline to pale yellow in 5% KOH. Lamellar trama hyphae, smooth in 5% KOH. Notes: ITS sequence (GenBank MZ568645, ex holotype) distinct from other members of *Cortinarius* sect. *Anomali* and deviating from them by more than 20 substitutions and indels. Ecology and distribution: In mixed forests of coniferous and deciduous trees. So far known from North America (New Jersey, Ontario and Quebec). Specimen examined: CANADA. Ontario, Simcoe, Severn Township, Matchedash District, mixed forest of coniferous and deciduous trees, 11 Sept. 2007, K. Liimatainen & T. Niskanen 07-154 (holotype H; isotype K(M)). GenBank MZ568645. Etymology: The name is derived from the white colour of the basidiomata and the species name *C. anomalus*.

*Cortinarius anocorium* Liimat. & Niskanen, sp. nov.

IF 558639

Holotype H 7068022

Diagnosis: Pileus 2–6 cm in diam., at first hemispherical to somewhat conical, later plano-convex to plane, with a low umbo; surface dry, greyish ochraceous to greyish brown, at margin often pale; hygrophanous. Lamellae crowded, at first purple, later greyish brown. Stipe 3–7 cm long, 0.6–1.2 cm thick at the apex, cylindrical to somewhat clavate, silky-whitish fibrillose, with a purplish tint at the apex of the stipe. Context greyish brown in the pileus, pale brown in the stipe. Universal veil yellow, forming some incomplete or complete girdles on the stipe. Basal mycelium white. Odour in lamellae often distinct, raphanoid. Basidiospores  $7 - 8 \times 5.5 - 6 \mu\text{m}$ , av.  $7.3 \times 5.8 \mu\text{m}$ ,  $Q = 1.20 - 1.30$  ( $1.35$ ),  $Q_{av} = 1.26$ , subglobose to very broadly obovoidly-ellipsoid, moderately to strongly verrucose. Basidia hyaline to pale yellow in 5% KOH. Lamellar trama hyphae hyaline, with some colourless, needle-shaped crystals.

Notes: ITS sequence (GenBank MZ568646, ex holotype) distinct from other members of *Cortinarius* sect. *Anomali*. Most similar to *C. albocyaneus* but deviating from it by 26 substitutions and indels. Ecology and distribution: mixed deciduous forest with *Pinus*, Live oak (*Quercus virginiana*), *Magnolia glandiflora*, sandy soil, on calcareous bedrock. So far known from North America, Florida. Specimen examined: USA. Florida, Wakulla Co., Crawfordville, 306 Wakulla Beach Road, mixed deciduous forest with *Pinus*, Live oak (*Quercus virginiana*), *Magnolia glandiflora*, sandy soil, on calcareous bedrock, 30 Dec. 2014, K. Liimatainen, A. & T. Niskanen 14-111 (holotype H; isotype K(M)). GenBank MZ568646.

Etymology: The name is derived from the species name *C. anomalus* and the leather-coloured pileus, *corium* (Latin)=leather.

*Cortinarius americanomussivus* Liimat. & Niskanen, sp. nov.

IF 558640

Holotype H 7000898

Diagnosis: Pileus 5–9 cm in diam., at first hemispherical, then low convex, yellow, at margin greenish to olivaceous yellow, becoming red brown at the centre, with brownish black scales in the centre. Lamellae crowded, greenish yellow. Stipe 5–8 cm long, 0.8–1.5 cm thick at the apex, cylindrical to somewhat clavate, greenish yellow. Context greenish yellow. Universal veil brownish gray, forming girdles on the stipe. Odour in lamellae very strong, earthy. Basidiospores  $11.5 - 13.5 \times 6.5 - 7.5 \mu\text{m}$ , av.  $12.5 \times 7.1 \mu\text{m}$ ,  $Q = 1.65 - 1.85$ ,  $Q_{av} = 1.76$ , amygdaloid, finely verrucose. Most basidia hyaline, full of colourless, small to large droplets, some basidia pale

rose brown with pinkish purple, small “gravel” inside in 5% KOH. Lamellar trama hyphae hyaline, smooth with some colourless crystals in 5% KOH.

Notes: ITS sequence (GenBank MZ568647, ex holotype) distinct from other members of *Cortinarius* sect. *Percomes*. With a sister group relationship to *C. superbus* and deviating from it by 11 substitutions and indels. Ecology and distribution: In mesic to moist mixed coniferous forests (*Abies balsamea*, *Picea*) with some *Betula*, on calcareous ground. So far known from North America, Canada: New Foundland and Quebec. Specimens examined: CANADA. New Foundland, West coast, Gros Morne National Park, S side of Bonne Bay East Arm, Lomond River hiking trail, mesic to damp coniferous forest (*Abies balsamea*, *Picea*) with some *Betula*, on calcareous ground, 19 Sept. 2007, K. Liimatainen & T. Niskanen 07-238 (holotype H; isotype K(M)). GenBank MZ568647.

Etymology: A species similar to the European *C. musivus* but found from North America.

*Cortinarius hinnuleocanadensis* Liimat. & Niskanen, sp. nov.

IF 558641

Holotype H 7068025

Diagnosis: Pileus 2–5 cm in diam., at first conical, later low conical to convex with an umbo, dark brown, margin whitish fibrillose, brownish yellow when dry, hygrophanous. Lamellae distant, dark brown, darker when old. Stipe 5–7 cm long, 0.5–0.8 cm thick at the apex, cylindrical, often tapering downwards, at least partly covered by white fibrils when young, yellowish brown. Context pale brown, with age darker towards the base of the stipe. Universal veil distinct, white, forming a ring at the middle of the stipe. Basal mycelium white. Odour in lamellae raphanoid. Basidiospores: 9–10 × 5.5–6 μm, av. 9.5 × 5.6 μm, Q= 1.60–1.75, Qav.= 1.69, narrowly amygdaloid to narrowly obovoidly-ellipsoid, strongly verrucose. Basidia hyaline to dirty yellow in 5% KOH. Lamellar trama hyphae hyaline to very pale brownish yellow, smooth in 5% KOH.

Notes: ITS sequence (GenBank MZ568648, ex holotype) distinct from other members of *C. sect. Hinnulei*. Most similar to *C. hinnuleoarmillatus* but deviating from it by 9 substitutions and indels. Ecology and distribution: In conifer dominated forests with some *Betula* and *Populus*. So far known from North America, Canada, Quebec. Specimen examined CANADA. Quebec, NW of Quebec, Riviere-a-Pierre, S entrance of the Reserve faunique de Portneuf, conifer dominated forest (*Tsuga*, *Abies* and some *Picea*) with some *Betula* and few *Populus*, 31 Aug. 2010, coll. K. Liimatainen, T. Niskanen 10-059 (holotype H; isotype K(M)). GenBank MZ568648.

Etymology: A species belonging to the *C.* section *Hinnulei* and found from Canada.

*Agaricus vibratilis* Fr.

IF 558642

Neotype H 6031329 (hic designatus)

Specimen details: Finland, Pera-Pohjola, Rovaniemi, Louevaara, Tuohilaki nature reserve area (east), eutrophic, submesic to mesic spruce forest (*Picea abies*) with some *Betula*, *Populus tremula* and *Pinus sylvestris*, 28 Aug. 2004, coll. K. Liimatainen & T. Niskanen, GenBank No. MZ568649 (ITS).

*Agaricus acutus* Pers.

IF 558626

Neotype H 6031510 (hic designatus)

Specimen details: Finland, Uusimaa, Sipoo, Hindsby, Bisapottsberget, mesic spruce forest (*Picea abies*) with some *Betula* and *Pinus sylvestris*, 24 Aug. 2005, coll. K. Liimatainen & T. Niskanen, GenBank No. MZ568650 (ITS).