

Nomenclatural novelties : K. Liimatainen, J.F. Ammirati, T. Niskanen, A. Corrales, C. Ovrebo, B. Dima, R. Halling & D. Savage

Cortinarius calcofractus Liimat. & Niskanen, sp. nov.

IF 559907

Holotype K(M) 133726

Diagnosis: (all characteristics from a dried specimen): Pileus 2–3.5 cm diam. in exsiccatae, dark olivaceous greyish brown. Lamellae dark brown. Stipe 3–5.5 cm long, 0.5–0.8 cm thick at the apex, cylindrical to clavate. Context not recorded. Universal veil not recorded. Odour not recorded. Basidiospores 7.5–8.5 × 5.5–6.5 µm, subglobose to very broadly obovoid, strongly verrucose. Basidia 4-spored, hyaline with greyish granulose contents in 5% KOH. Lamellar trama hyphae hyaline, smooth. ITS sequence (GenBank OP339745, ex holotype) distinct from other members of *Cortinarius* subgen. *Infracti* sect. *Infracti* and with 98.5% similarity to the closest known species, *C. mariandrus*.

Ecology and distribution: With *Corylus* and *Quercus* on calcareous ground. So far known from Estonia, Germany, Norway, and United Kingdom (England).

Specimen examined: United Kingdom, England, Lancashire, Silverdale, Gait Barrows NNR, fairly open area with *Corylus* and *Quercus*, with grasses and herbs on moss covered limestone rock, 31 Aug. 1991, P.D. Livermore (IB isotype). GenBank OP339745. The specimen was sampled and sequenced twice with a direct PCR method, that uses as little tissue as possible, to rule out the possibility of contamination. The sequences obtained were identical and thus only one is deposited in the GenBank. The result was also confirmed based on the morphological study of the specimen.

Etymology: The name refers to *C. infractus*, the type species of the section to which this species belongs to, and the habitat on calcareous ground.

Notes: *Cortinarius calcofractus* is a typical member of the *Cortinarius* sect. *Infracti* having basidiomata with olivaceous colours and subglobose to broadly ellipsoid basidiospores. The closely related *C. mariandrus* occurs in Eastern North America with coniferous trees and has somewhat broader, more subglobose basidiospores (7.5–8.5 × 6–7 µm).

Cortinarius tugurium Liimat. & Niskanen, sp. nov.

IF 559908

Holotype K(M) 190682

Diagnosis (all characteristics from a dried specimen): Pileus 3 cm diam. in exsiccatae, dark olivaceous greyish brown. Lamellae dark brown. Stipe 5 cm long, 0.8 cm thick at the apex, cylindrical. Context not recorded. Universal veil not recorded. Odour not recorded. Basidiospores 6.5–8 × 5.5–6.5 µm, subglobose, rather strongly verrucose. Basidia 4-spored, hyaline, some with oil drops in 5% KOH. Lamellar trama hyphae hyaline, smooth, with some long and narrow crystals here and there. ITS sequence (GenBank OP339746, ex holotype) distinct from other members of *Cortinarius* subgen. *Infracti*, sect. *Infracti* and with 98% similarity to the closest known species, *C. persoonianus*.

Ecology and distribution: With *Corylus avellana* on calcareous ground. So far known from Estonia and United Kingdom (Wales).

Specimen examined: United Kingdom. Wales, Anglesey, Marian-glas, with *Corylus avellana*, on limestone, 7 Sept. 2011, C.E. Aron (IB isotype). GenBank OP339746. The specimen was sampled and sequenced twice with a direct PCR method, that uses as little tissue as possible, to rule out the

possibility of contamination. The sequences obtained were identical and thus only one is deposited in the GenBank. The result was also confirmed based on the morphological study of the specimen.

Etymology: This species was named after ancient huts, called tuguriums, of which the village, Marian-glas, from where the type specimen was collected, is famous for.

Notes: *Cortinarius tugurium* is a typical member of the *C. sect. Infracti* having basidiomata with olivaceous colours and subglobose basidiospores. The closely related *C. personianus* has larger basidiospores (7.5–9 × 6.5–7.5 μm). *Cortinarius calcofractus*, found in similar habitats to *C. tugurium*, has somewhat longer basidiospores (7.5–8.5 × 5.5–6.5 μm) but for reliable identification an ITS sequence will be needed.

Cortinarius mariandrus Liimat. & Niskanen, sp. nov.

IF 559909

Holotype K(M) 1434177

Diagnosis: Pileus 4–6 cm diam., at first hemispherical then convex, brownish ochraceous, viscid. Lamellae medium spaced, adnexed, dark olivaceous brown. Stipe 4–5 cm long, 0.8–1.2 cm thick at the apex, cylindrical to somewhat clavate, white to ochraceous white. Context not recorded. Universal veil not recorded. Basal mycelium white. Odour not recorded. Basidiospores 7.5–8.5 × 6–7 μm, subglobose, moderately verrucose. Basidia 4-spored hyaline, some with very pale greyish granulose contents in 5% KOH. Lamellar trama hyphae smooth, with pale greyish granulose contents. ITS sequence (GenBank OP339747, ex holotype) distinct from other members of *Cortinarius* subgen. *Infracti* and with 98.5% similarity to the closest known species, *C. calcofractus*.

Ecology and distribution: In mixed coniferous forest, under *Picea* and *Abies*. So far known from Canada (Newfoundland and Quebec).

Specimen examined: Canada, Newfoundland and Labrador, Great Northern Peninsula, St Anthony Ski trail, mixed coniferous forest, under *Picea* and *Abies*, 8 Sept. 2010, R. Lebeuf SAI-064 (DAOM isotype). GenBank OP339747. The specimen was sampled and sequenced twice with a direct PCR method, that uses as little tissue as possible, to rule out the possibility of contamination. The sequences obtained were identical and thus only one is deposited in the GenBank. The result was also confirmed based on the morphological study of the specimen.

Etymology: *Mariandrus* (-a, -um) is an artificially composed adjective, deliberately formed from elements of the first names of Maria and Andrus Voitek, in recognition of their contribution to mycology in the Canadian province of Newfoundland and Labrador. The adjective is fashioned after the Botanical Latin adjective *tetrandrus*, recognizing that both Andrus and -andrus stem from the Greek root *andros* (man). An intentional neologism, patterned on an existing Latinized adjective with partly shared etymology and spelling, rather than directly derived from personal names, it should not be 'corrected' in accordance with Article 60.8 of the ICNafp.

Notes: *Cortinarius mariandrus* has brownish ochraceous pileus but the dark olivaceous brown lamellae, viscid pileus and subglobose basidiospores soon reveal it to belong to *Cortinarius sect. Infracti*. The closely related *C. calcofractus* occurs in Europe with *Corylus* and *Quercus* and has somewhat narrower, subglobose to broadly obovoid basidiospores (7.5–8.5 × 5.5–6.5 μm).

Cortinarius sutherlandensis Liimat., D. Savage & Niskanen, sp. nov.

IF 559910

Holotype K(M) 262937

Diagnosis: Pileus 1.5–2 cm diam., low conical, red brown. Lamellae rather distant, brown with pale margin. Stipe 3–4 cm long, 0.15–0.2 cm thick at the apex, cylindrical, silky-whitish fibrillose over a pale tawny ground colour. Context not recorded. Universal veil not recorded. Odour faint. Basal mycelium white. Basidiospores 7.5–8.5 × 4.5–5 μm, narrowly amygdaloid to narrowly ellipsoid, finely

verrucose. Basidia hyaline, some with granulose contents in 5% KOH. Lamellar trama hyphae strongly zebra to spot-like encrusted. Lamellar edge with clavate sterile cells. ITS sequence (GenBank OP339748, ex holotype) distinct from other members of *Cortinarius* subgen. *Iodolentes* and with 98.5% similarity to the closest known species.

Ecology and distribution: In spruce forests. So far known from Estonia and United Kingdom (Scotland).

Specimen examined: United Kingdom, Scotland, Sutherland, Woodcock hill plantation, under spruce, 21 Oct. 2018, D.J. Savage 487/18 (IB isotype). GenBank OP339748. The specimen was sampled and sequenced twice with a direct PCR method, that uses as little tissue as possible, to rule out the possibility of contamination. The sequences obtained were identical and thus only one is deposited in the GenBank. The result was also confirmed based on the morphological study of the specimen.

Etymology: This species was named after Sutherland, a county where the type specimen was collected.

Notes: *Cortinarius sutherlandensis* is a small species, reminiscent of *C. acutus* that belongs to the same subgenus. *Cortinarius acutus*, however, has somewhat larger ovoid to broadly amygdaloid basidiospores $8-9 (-9.5) \times 4.5-5.5 \mu\text{m}$.

Cortinarius pseudohesleri Ammirati, Liimat. & Halling, sp. nov.

IF 559934

Holotype NY Halling 7037

Diagnosis: Pileus 20–70 mm broad, broadly conic umbonate when young, becoming convex to subumbonate, eventually subumbonate with uplifted margin, surface dry, slightly to finely fibrillose, \pm hygrophanous, reddish brown to brownish red, disc sometimes dark orange-brown and the margin cinnabar orange in age or faded. Context to 12 mm thick, grayish orange to ochraceous buff, unchanging, stipe fibrous becoming hollow. Odor and taste mild. Lamellae adnexed to adnate or arcuate, close, reddish orange, reddish brown or brownish orange with age, edges even to fimbriate or eroded, slightly paler or near deep orange. Stipe 50–140 mm long, 3–10 mm thick, \pm equal or broader below, strict to curved, grayish orange to orange-yellow fibrillose, dry, fibrillose striate, with concolourous veil, soon collapsing, leaving cinnabar orange remains on the stipe surface, basal mycelium light orange to peachy orange. Basidiospores $8.5-11 (-12) \times (4.5-) 5-6.5 \mu\text{m}$, ellipsoid to \pm amygdaliform, sometimes with apiculus, \pm coarsely verrucose. Basidia 4-spored. Lamella edges fertile, but with groups or small clusters of elements, sometimes segmented, variable in shape, occasional with a short branch or rounded mucronate apex, at times somewhat strangulated, $18-52 \times 6-9 \mu\text{m}$. Pileipellis duplex epicutis of radially arranged, interwoven hyphae, cylindrical to broadly cylindrical, mostly 3–10.5 μm wide, colourless or with yellow-brown pigment, often encrusted, often spirally so hypocutis moderately developed, hyphae more or less radially arranged, cylindrical to enlarged or inflated hyphae, but not typically forming a distinct cellular layer, mostly colourless. Clamp connections present.

Habit and Habitat: Scattered to gregarious on soil, *Quercus costaricensis* and *Quercus* sp. ITS sequence (GenBank OP265179, ex holotype) distinct from other members of *Cortinarius* sect. *Urcei* and with 97% similarity to the closest known species, *C. hesleri*.

Collections Examined: Costa Rica, Cartago, Prusia, Parque Prusia, W slope of Volcan Irazu, elev. 2960 m, 20 Jul. 1993, R. Halling, G. Mueller and E. Pine (NY, Halling 7037), GenBank OP265179. San José, Jardín de Dota, 3.5 km W of Interamerican Highway at Empalme, 2220 m, 13 Jul. 1993, R. Halling, G. Mueller, E. Pine and J. Carranza (NY, Halling 7018), GenBank OP265180.

Etymology: Named for its similarity to *C. hesleri*.

Notes: This species can be confused in the field with *C. hesleri*, a species that occurs in broadleaf forest in eastern North America.

Cortinarius pseudoputorius Ammirati, Dima & Liimat., sp. nov.

IF 559935

Holotype WTU Ammirati 11713

Diagnosis: Pileus (14–) 21–34 mm diam, hemispheric to obtuse or broadly campanulate, broadly umbonate expanded, margin incurved to decurved or slightly recurved, opaque, moist to dry, with a light buff to whitish veil coating overall, ground color grayish vinaceous purple to watery violaceous, sometimes with an admixture of brown, often with some watery purple blotches and streaks on margin. Context of pileus watery brownish or whitish, of stipe hollow in apex, at first violet above, sometimes extending to near base, cortex sometimes white mottled, pith and lower stipe whitish, watery gray brown or watery gray, lilac color almost completely lost in age. Odor pungent, somewhat like *C. putorius*. Taste mild, agaricoid. Lamellae adnexed to sinuate, \pm subdistant, ventricose, strongly violaceous at first, becoming grayish violaceous to pale brownish cinnamon buff with lavender tint, edges even, pale to whitish. Stipe up to 80 mm long, apex 6–7 mm, clavate-tapered to narrowly clavate, surface silky white above with watery violet to pale lavender colors beneath, violaceous colors extend to base at first, lower stipe becoming watery grayish to brownish, basal mycelium white, at first lower stipe thinly to heavily coated with pale warm buff veil extending up to white cortina, mature or older lower stipe surface whitish with watery streaks, buff veil zones obscure. Basidiospores 6–6.5 (–7.5) \times 4.5–5.5 μ m, subglobose, moderately to \pm coarsely verrucose. Basidia 4-spored. Pileipellis duplex: epicutis hyphae loosely interwoven to compacted, slightly gelatinized in places, radially oriented, cylindrical to broadly cylindrical, 4–13 μ m wide, colorless to yellowish, some containing yellow pigment or with thickened yellow walls, smooth to encrusted; hypocutis well developed, in places subcellular. Clamp connections present.

Ecology and distribution: Mixed conifers, coastal Oregon. ITS sequence (GenBank OP265181, ex holotype) distinct from other members of *Cortinarius* and with 95% similarity to the closest known species, *C. vagabundus*.

Specimens examined: USA. Oregon. Lincoln County. Lincoln Beach, Fogarty Creek Campground, mixed conifer forest, *Picea*, *Tsuga*, *Pseudotsuga*, 9 Nov. 1995, J. Ammirati (WTU, Ammirati 11713), GenBank no. OP265181.

Etymology: Named for the similar odor to *C. putorius*.

Notes: This species features a grayish vinaceous purple pileus with watery streaks, general violaceous coloration of the lamellae and stipe, pale buff veil and pungent odor.

Cortinarius parvulosquamulosus Corrales, Ovrebo, Ammirati, Dima, & Liimat., sp. nov.

IF 559936

Holotype UCH AC371

Diagnosis: Pileus 19 mm diam., convex surface squamulose with tiny light brown scales, ground colour light violet, disc lighter coloured, hygrophanous, margin incurved, with brown remnants of the universal veil, still attached to brown annular membranous zone covered with spores. Context in pileus light violet, 0.3 cm thick, in stipe white, violet at the apex soon hollow. Odor mild. Lamellae adnexed to free, close to subdistant, violet. Stipe 45 mm long, 4 mm thick, clavate, curved, surface with brown scales over a light violet ground colour, fibrillose, basal mycelium light violet, cottony. Basidiospores 7.5–9 \times (5.5–) 6–6.5 (–7) μ m, variable in size and shape, subglobose, broadly ellipsoid or more ellipsoid, apiculus sometimes extended and curve, moderately to \pm coarsely verrucose. Basidia 4-spored. Pileipellis duplex epicutis well developed, hyphae interwoven to entangled, \pm radially arranged, cylindrical to broadly cylindrical, 3–10 μ m wide, colourless to yellowish, walls

refractive, yellow to colourless, smooth to slightly encrusted hypocutis ±well developed, hyphae cylindrical to enlarged, often with blue-lilac pigment. Clamp connections present.

Ecology: Tropical montane forest, monodominant forest of *Oreomunnea mexicana*. ITS sequence (GenBank OP339753, ex holotype) distinct from other members of *Cortinarius* sect. *Anomali* and with 93% similarity to the closest known species, *C. anomalovelatus*.

Specimen examined: Panama, Chiriquí, Fortuna Forest Reserve, Honda watershed, 11 Sept. 2013, AC371 (UCH), GenBank OP339753.

Etymology: Named for the small brownish fibrillose scales on the pileus and stipe.

Notes: This species features overall light violaceous colours, brown veil and tiny brownish scales on the pileus and stipe.

Cortinarius violaceobrunneus Corrales, Ovrebo, Ammirati, Dima & Liimat., sp. nov.

IF 559937

Holotype UCH AC41

Diagnosis: Pileus up to 19 mm diam., campanulate, dark violet, disc brown-purple, margin translucent striate, surface viscid moist. Context brownish purple, 0.2 cm thick, odor of anise, cartilaginous. Lamellae brownish violet, adnate, subdistant, edges undulate, 3 tiers of lamellulae. Stipe up to 65 mm long, cylindrical, apex dark purple, white to lilac towards base, surface white fibrillose patches (scales), with a white apical annular zone, interior narrowly fistulose, basal mycelium white. Basidiospores 7.5–9 × (6–) 6.5–7 μm, subglobose, moderately to ±coarsely, distinctly verrucose, with some ovoid to elongate smooth spores. Basidia 4-spored (rarely 2-spored, aborted). Pileipellis duplex epicutis moderately to thinly developed, hyphae interwoven, ±radially arranged, mostly 5–12 μm wide, cylindrical to broadly cylindrical, colourless, yellowish or with yellow pigment, walls ±refractive, colourless to yellowish, smooth encrusted hypocutis well developed, hyphae broadly cylindrical to enlarged, often cellular in appearance, colourless, pale brownish or slightly bluish. Clamp connections present.

Ecology: Tropical montane forest, monodominant forest of *Oreomunnea mexicana*. ITS sequence (GenBank OP265182, ex holotype) distinct from other members of *Cortinarius* sect. *Anomali* and with 96% similarity to the closest known species, *C. anomalovelatus*.

Specimen examined: Panama, Chiriquí, Fortuna Forest Reserve, Honda watershed, Montane Forest, 5 Mar. 2011, A. Corrales and C. Velasquez, AC41 (UCH), GenBank OP265182.

Etymology: Named for its overall colouration.

Notes: This is an elegant species with a slender stipe, strong purple to brown-purple colouration, and a veil that leaves a white apical annulus and white fibrillose patches on the stipe. The anise odor is unusual for this group.

Cortinarius tenneovelatus Corrales, Ovrebo, Ammirati, Dima & Liimat., sp. nov.

IF 559938

Holotype UCH AC415

Diagnosis: Pileus 18 mm diam., convex to plane-convex, surface fibrillose-scaly, hygrophanous, light purple with light brown cottony scales, disc light brown, margin entire, decurved with reddish brown universal veil attached (basidiospores). Context in pileus light purple, 1.5 mm thick, stipe interior hollow, white at the base, purple at the apex. Odor mild. Lamellae, adnate to subdecurrent, subdistant, brownish purple, edges even. Stipe 40 mm long, 2.5 mm thick, equal to subbulbous, strict, curved at the base, surface fibrillose with fibrils orange brown (basidiospores) over a shiny light purple background, interior hollow, white at the base and purple at the apex, annular zone fibrillose, brownish orange (basidiospores), basal mycelium white, very dense at the base. Basidiospores 7–8.5 (–9) × 6–6.5 (–7.5) μm, variable in size, subglobose to broadly ellipsoid, rarely

more ellipsoid, \pm coarsely verrucose. Basidia 4-spored (2–3 spored). Pileipellis duplex: epicutis \pm well developed, hyphae interwoven, \pm radially arranged, cylindrical to broadly cylindrical, 3–11 μ m wide, colourless, yellowish rarely blue-lilac, walls \pm refractive, colourless to yellowish, smooth to slightly encrusted hypocutis well developed, hyphae cylindrical to enlarged, \pm cellular in places. Clamp connections present.

Ecology: Tropical montane forest, monodominant forest of *Oreomunnea mexicana*. ITS sequence (GenBank OP265183, ex holotype) distinct from other members of *C. sect. Anomali* and with 94% similarity to the several closest known species.

Specimen examined: Panama, Chiriquí, Fortuna Forest Reserve, Honda watershed, 8 Oct. 2013, A. Corrales and C. Velasquez AC415 (UCH), GenBank OP265183.

Etymology: Of the colour tenne, orange-brown veil.

Notes: The basidiomata of this small species are characterized by a mixture of purple and brown colouration and conspicuous pale orange-brown veil elements on the pileus edge and stipe surface.

Cortinarius adrianae Ovrebo, Ammirati, Dima & Liimat., sp. nov.

IF 559939

Holotype UCH CO5272

Diagnosis: Pileus 18–38 mm diam., broadly convex to plane with a low umbo, glabrous, dry to slightly moist but with slight sheen sublenta, rugulose in places sublenta, light purple-medium purple, some tan to brown over center. Context in pileus 2–3 mm thick, buff, purplish beneath cuticle, in stipe hollow, purple in upper half, buff below. Odor and taste nondescript. Lamellae 1.5–4 mm wide, adnate to broadly sinuate, close, dark purple when young, becoming dark brown mature, edges entire. Stipe 40–65 mm long, 3–5 mm thick, tapering slightly to apex with sub-bulbous base, surface with coating of shaggy, loosely entangled brownish fibrils, silky beneath this layer, weak fibrillar-annular zone present, light purple overall, basal mycelium purplish. Basidiospores 7.5–8.5 \times 6–7 (–7.5) μ m, somewhat variable in size and shape, subglobose to broadly ellipsoid, \pm coarsely verrucose. Basidia 4-spored. Pileipellis duplex: epicutis \pm moderately developed, hyphae \pm radially arranged, \pm interwoven, \pm cylindrical, 3–11 μ m wide, colourless to yellowish, wall \pm refractive, colourless to yellowish, smooth hypocutis well developed, hyphae cylindrical to enlarged, often \pm cellular, walls \pm refractive, colourless to yellowish. Clamp connections present.

Ecology: Tropical montane forest, co-dominant forest of *Oreomunnea mexicana* and *Quercus* sp. ITS sequence (GenBank OP265184, ex holotype) distinct from other members of *C. sect. Anomali* and with 97% similarity to the several closest known species.

Specimens examined: Panama, Chiriquí, Fortuna Forest Reserve, trail to Cerro Hornito, from Bocas del Toro Road, 7 Jul. 2014, CO5272 (UCH), GenBank OP265184.

Etymology: Named for Adriana Corrales.

Notes: This species has comparatively small basidiomata with dominate purple colouration except for brownish disc and loose shaggy brown veil fibrils that coat the stipe surface.

Cortinarius anomalobrunneus Corrales, Ovrebo, Ammirati, Dima & Liimat., sp. nov.

IF 559940

Holotype UCH AC653

Diagnosis: Pileus 20 mm diam., convex to umbonate, surface light brown to caramel brown, \pm radially striate on margin and a bit rugulose, dry, margin revolute, entire. Lamellae adnexed to free, light brown, close to subdistant, edges even. Stipe 40 mm long, 2 mm thick, strict, equal to subbulbous, surface fibrillose, veil forming a white to brown membranous ring. Basidiospores 7.5–8.5 \times 6–6.5 μ m, subglobose to broadly ellipsoid, \pm coarsely verrucose. Basidia 4-spored. Pileipellis duplex: difficult to revive epicutis \pm well developed, compacted and gelatinized in place, hyphae

±interwoven, ± radially arranged, cylindrical to broadly cylindrical, mostly 3–10 µm wide, colourless to yellowish, walls ± refractive, colourless to yellowish, smooth or slightly encrusted hypocutis well developed, hyphae cylindrical to inflated, ±cellular in places, walls refractive yellowish to colourless. Hyphae in general with more yellowish walls (more pigmented than blue species). Clamp connections present.

Ecology: Tropical montane forest, monodominant forest of *Oreomunnea mexicana*. ITS sequence (GenBank OP265185, ex holotype) distinct from other members of *Cortinarius* sect. *Anomali* and with 95% similarity to the several closest known species.

Specimens examined: Panama, Chiriquí, Fortuna Forest Reserve, Honda watershed, 13 Jan. 2014, AC653 (UCH), GenBank OP265185.

Etymology: Named for the overall brownish colouration.

Notes: The basidiomata of this species are dominated by brown colouration, including the brownish veil fibrils and annulus on the stipe. The contextual hyphae of this species are more highly pigmented compared to other species seen from Panama.

Cortinarius emollitus Fr., *Epicr. syst. mycol. (Upsaliae)*: 269 (1838) [1836-1838]

IF 559906

Neotype K(M) 227405 (here designated)

Specimens examined: United Kingdom, England, South Hampshire, New Forest, Eyeworth Wood, near *Quercus* sp. and *Fagus sylvatica*, 1 Oct. 2016, L. Goodwin. GenBank OP339749

Thaxterogaster emollitus (Fr.) Niskanen & Liimat., comb. nov.

IF 559905

Basionym *Cortinarius emollitus* Fr. *Epicr. syst. mycol. (Upsaliae)*: 269 (1838) [1836-1838]

Thaxterogaster lilaceolamellatus (Lebeuf, A. Paul, J. Landry & Y. Lamoureux) Niskanen & Liimat., comb. nov.

IF 559946

Basionym *Cortinarius lilaceolamellatus* Lebeuf, A. Paul, J. Landry & Y. Lamoureux, *Sydowia* 74: 213 (2021)

Calonarius olivaceolamellatus (Lebeuf, A. Paul & J. Landry) Niskanen & Liimat., comb. nov.

IF 559947

Basionym *Cortinarius olivaceolamellatus* Lebeuf, A. Paul & J. Landry, *Sydowia* 74: 211 (2021)

Calonarius viridicarneus (Lebeuf, A. Paul & J. Landry) Niskanen & Liimat., comb. nov.

IF 559948

Basionym *Cortinarius viridicarneus* Lebeuf, A. Paul & J. Landry, *Sydowia* 74: 209 (2021)

Calonarius caryae (Lebeuf, A. Paul, J. Landry & Y. Lamoureux) Niskanen & Liimat., comb. nov.

IF 559949

Basionym *Cortinarius caryae* Lebeuf, A. Paul, J. Landry & Y. Lamoureux, *Sydowia* 74: 206 (2021)

Phlegmacium flavolilacinum (Lebeuf, A. Paul & J. Landry) Niskanen & Liimat., comb. nov.

IF 559950

Basionym *Cortinarius flavolilacinus* Lebeuf, A. Paul & J. Landry, *Sydowia* 74: 215 (2021)

Phlegmacium violaceoflavescens (Lebeuf, A. Paul, J. Landry & Y. Lamoureux) Niskanen & Liimat., comb. nov.
IF 559951
Basionym *Cortinarius violaceoflavescens* Lebeuf, A. Paul, J. Landry & Y. Lamoureux, *Sydowia* 74: 217 (2021)

Phlegmacium pseudoarculatorum (Rob. Henry) Niskanen & Liimat., comb. nov.
IF 559952
Basionym *Cortinarius pseudoarculatorum* Rob. Henry, *Docums Mycol.* 63–64 80 1986

Phlegmacium viridocaelestinum (Armada & Bellanger) Niskanen & Liimat., comb. nov.
IF 559953
Basionym *Cortinarius viridocaelestinus* Armada & Bellanger, *Mycol. Progr.* 21(6, no. 55): 18 (2022)

Phlegmacium malavali (Bellanger & Ballarà) Niskanen & Liimat., comb. nov.
IF 559954
Basionym *Cortinarius malavali* Bellanger & Ballarà *Mycol. Progr.* 21(6, no. 55): 16 (2022)

Phlegmacium marklundii (Brandrud, Dima, Saar, Schmidt-Stohn & Ballarà) Niskanen & Liimat., comb. nov.
IF 559955
Basionym *Cortinarius marklundii* Brandrud, Dima, Saar, Schmidt-Stohn & Ballarà, *Mycol. Progr.* 21(6, no. 55): 14 (2022)

Phlegmacium violaceoserrulatum (L. Albert, Dima, Schmidt-Stohn, C. Rossi & Ballarà) Niskanen & Liimat., comb. nov.
IF 559956
Basionym *Cortinarius violaceoserrulatus* L. Albert, Dima, Schmidt-Stohn, C. Rossi & Ballarà *Mycol. Progr.* 21(6, no. 55): 13 (2022)

Phlegmacium gratum (Reumaux) Niskanen & Liimat., comb. nov.
IF 559957
Basionym *Cortinarius gratus* Reumaux, *Atlas des Cortinaires (Meyzieu)* 17(2): 1237 (2008)

Phlegmacium basorapul (Danks, T. Lebel & Vernes) Niskanen & Liimat., comb. nov.
IF 559958
Basionym *Cortinarius basorapulus* Danks, T. Lebel & Vernes *Persoonia* 24: 115 (2010)

Phlegmacium subspadiceum (Reumaux) Niskanen & Liimat., comb. nov.
IF 559959
Basionym *Cortinarius subspadiceus* Reumaux, *Atlas des Cortinaires (Meyzieu)* 8: 298 1996

Phlegmacium subcrassoides (Moënné-Locc. & Remaux) Niskanen & Liimat., comb. nov.
IF 559960
Basionym *Cortinarius subcrassoides* Moënné-Locc. & Remaux, *Docums Mycol.* 25(no. 97): 68 (1995)

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