

# Les champignons en milieu urbain

*Rencontres  
botaniques  
alpines  
2016*



# Estimations de la diversité fongique

**D. Hawksworth.** 1991. The fungal dimension of biodiversity: magnitude, significance and conservation. *Mycological Research*, 95, p. 641-655.



▶ **1,5 million d'espèces**

seulement 270 000 plantes (~ 400 000 aujourd'hui) ;  
insectes exclus de l'analyse ;  
diversités polaire et tropicale sous-estimées.

▶ **5 à 8 % connus**

▶ **Ratio : 6/1**

# Estimations de la diversité fongique

Et ceci en omettant :

les champignons endophytes : **418 espèces sur un palmier, dont 140 dans une seule feuille (75 % *nov.*) ;**

les champignons parasites : **au moins 10 par espèce de graminées (États-Unis) ;**

les décomposeurs : **200 ascomycètes visibles à l'œil nu sur un seul tronc d'*Elaeocarpus* (plusieurs douzaines de *sp. nov.*, 1 genre *nov.*)**

les levures : **200 espèces nouvelles dans l'intestin de coléoptères tropicaux (30 % des espèces décrites) ;**

**et de nombreux milieux totalement inexplorés...**

# Estimations de la diversité fongique

**M. Blackwell.** 2011. The Fungi: 1, 2, 3... 5.1 million species?  
*American Journal of Botany*, 98(3), p. 426-438.

Fondée sur des études d'ADN environnemental

Sur la richesse des niches inexplorées



▶ **5,1 millions d'espèces**

▶ **Ratio : 12,5/1**

▶ **4 200 ans**

# Estimations de la diversité fongique

Nombreuses études centrées sur des niches particulières



Auteurs	Plante	Nbre taxons
Hawksworth	<i>Urtica dioica</i>	92 (17 spéc.)
	<i>Lantana camara</i>	55 (28 spéc.)
Kohlmeyer	<i>Juncus roemerianus</i>	117 (68 nov.)
Hawksworth	<i>Pinus sylvestris</i>	892 (186 spéc.)
	<i>Eucalyptus globosus</i>	282 (150 spéc.)

# Estimations de la diversité fongique

**Entre 1943 et 2008 (par année) :**

**73 genres  
950 espèces**

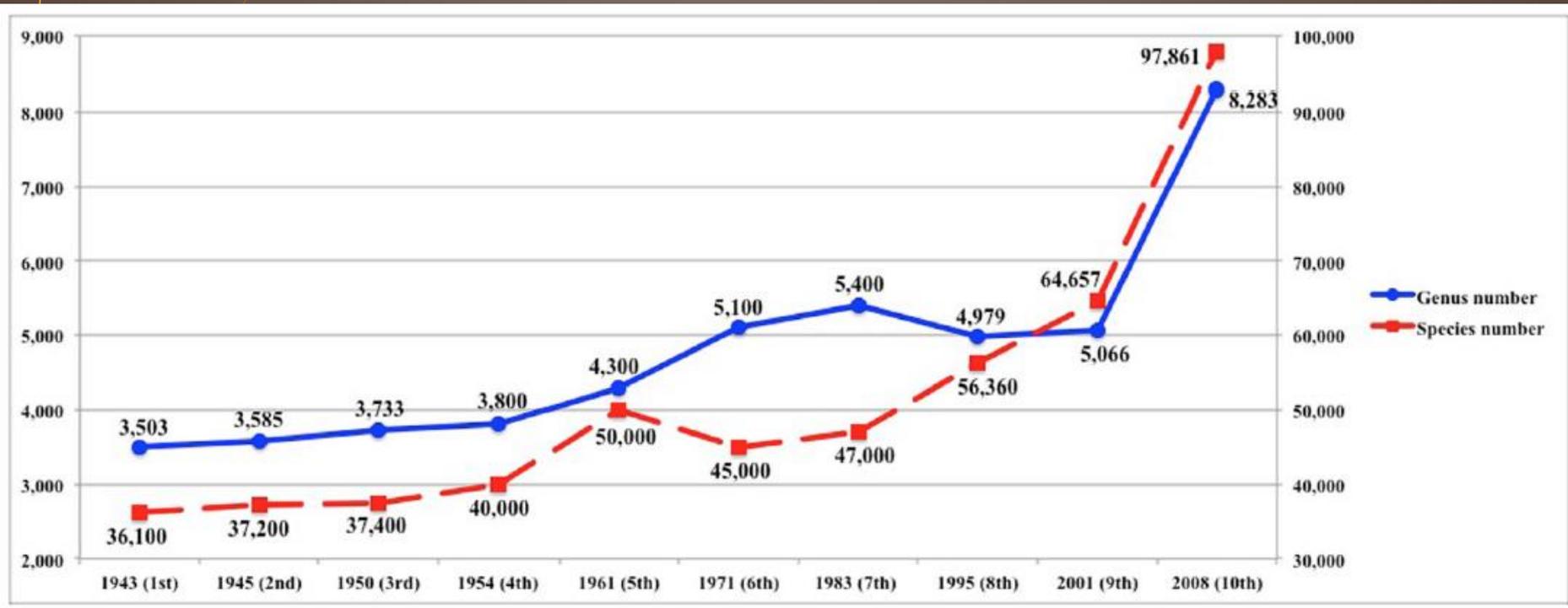
**Entre 2008 et 2012 (par année) :**

**110 genres  
1 430 espèces**

**Entre 2001 et 2012 (au total) :**

**1 203 genres  
16 912 espèces**

# Estimations de la diversité fongique



Nombre d'espèces et de genres enregistrées dans les différentes éditions du *Dictionary of the Fungi*

**Cortinarius angustisporus** Kytövä, Niskanen & Liimat., sp.nov.**IF56089**

Type: Finland, Koillismaa, Kuusamo, Oulanka National Park, forests close to Kutakongas, dry Pinus sylvestris health forest with some Picea and Betula on sandy and calcareous soil, Grid Z7 E 7365-6-3604, 18 Sept 2002, coll. I. Kytövuori, 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 µm, av. = 8.0-8.4 x 3.4 µm, Q = 2.15-2.41-2.65, Qav. = 2.33-2.47 (120 spores, 3 specimens), narrowly cylindrical to very narrowly boatoid, 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

frontier zone, Picea dominated burnt, intact old-growth forest, 5 Aug 1995, T. Laine & P. Raho 699, F032227 (OULU), GenBank No. KP165555. Finland, Pera-Pohjanmaa, Kuusikkokivola, ant hill, 9 Sept 2012 (H). Norway, Oppland, Lunner, Karuspuften S, 3 Sept 2011, I. Kytövuori (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. Kytövuori (H). Sweden, Lycksele Lappmark, Stensele parish, Storoman, Blaiken, N side of the main road E79, opposite to Kyrkerberget, at the crossing of a small forest road. Calcareous grass-herb spruce forest with few pines and hardwood trees, UTM grid WN 84, 10 Sept 2009, P. & I. Kytövuori 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. Kytövuori 95-1085 (H).

**Cortinarius duristipes** Kytövä, Niskanen & Liimat., sp.nov.**IF56088**

Type: Finland, Koillismaa, Kuusamo, SW of Laajasuaara, Jussinjälminvaara, herb-rich Picea abies forest with Pinus, Populus and Betula, Grid Z7E 7345-6-3619-20, 21 Sept 2002, coll. I. Kytövuori, 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 µm, av. = 7.8-7.9 x 4.7-4.8 µm, 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, Vasoniemi, 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 Z7E: 7227-3598, 4 Sept 2008, I. Kytövuori (H). Finland, Pera-Pohjanmaa, Ylitornio, Kaitajärvi, Palorommas Nature Reserve, SE part, grass-herb spruce forest with eutrophic depressions, Populus tremula, Betula, Cypripedium, Grid Z7E 7374:3401, 9 Sept 1997, I. Kytövuori 97-1065 (H), GenBank No. KP165558. U.S.A., Alaska, Fairbanks, Creameræms 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** Kytövä, Niskanen & Liimat., sp.nov.**IF56084**

Type: Finland, Uusimaa, Espoo, Luukki, dust road to the pond Haukkipi (W road), mesic to damp Picea abies dominated forest, Grid Z7E: 6692-33723, 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 convex 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 µm, av. = 7.4-7.9 x 4.6-4.9 µm, 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, Viitari, Kivimäki, near the limestone mine, mesic, fairly old spruce forest (Picea abies) on rich to calcareous ground, Grid Z7E: 6690-3303, 16 Aug 2000, T. Niskanen & I. Kytövuori, I. Kytövuori 00-034 (H), GenBank No. KP165547. Finland, Varsinais-Suomi, Vihti, Salmekartano, Lammasniemi W, Picea forest with some deciduous trees, Grid Z7E 6697-3362, 30 Aug 2004, I. Kytövuori 04-049 (2 ex. H), GenBank No. KP165548, 30 Aug 2005 (H). Finland, Uusimaa, Helsinki, Kivonkka, mesic spruce forest with some Pinus, Betula, Sorbus aucuparia and Salix, Grid Z7E 6677-3390, 29 Aug 1998, I. Kytövuori 98-1459, H6032744 (H). Finland, Pohjois-Häme, Laukaa, Hintonhauta SE, Picea dominated forest by the brook, with Betula, Populus and Salix, Grid Z7E 6931-2-3435-6, 10 Sept 2004, I. Kytövuori et al. 04-048 (H), GenBank No. KP165549. Finland, Pohjois-Häme, Virrat commune, Hauhuu, E side of the lake Hauhusseika, between the small road and Maununkylät, mesic spruce forest with some Pinus, Betula and Populus, Grid Z7E: 6901:3341, 17 Aug 2008, I. Kytövuori 08-1968, H6033579 (H). Etymology: The name refers to the color of the pileus.

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

**Cortinarius fuscovelatus** Kytövä, Niskanen & Liimat., sp.nov.**IF560873**

Type: Sweden, Dalarna, Älvdalen, Karmorasen, mossy, old, Picea abies dominated forest with some Populus tremula, Betula and Pinus sylvestris, 5 Sept 2000, coll. T. Niskanen & I. Kytövuori, I. Kytövuori 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 30-90 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 µm, 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 Boudierenses. 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.

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 µm, 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 Boudierenses. 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. Kytövuori 00-036 (H).

**Cortinarius murinascens** Kytövä, Niskanen & Liimat., sp.nov.**IF560871**

Type: Finland, Kainuu, Suomussalmi commune, Kiannanniemi, Vasoniemi, 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 Z7E 7227-3598, 4 Sept 2008, I. Kytövuori 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 bulbous, 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 7.5-8-11.6 x 4.5-4.8-5.2 µm, av. = 7.6-8.3 x 4.6-5.0 µm, Q = 1.58-1.68-1.82, Qav. = 1.64-1.71 (200 spores, 10 specimens), narrowly ellipsoid to fusoid (somewhat ovoidly to 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 forest, 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. UBCCO3717F, 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 Z7E 6680:3397, 4 Oct 2001, I. Kytövuori 01-058 (H), GenBank No. KP165571. Finland, Kainuu, Paltamo, Melalahti, 10 Aug 2008, I. Kytövuori 08-1430 (H). Finland, Kainuu, Puolanka, Vainryla, Paakko, between Iso Vuorijärvi and the road, fairly rich grass-herb spruce forest with some Pinus, Betula, Populus tremula and Salix, by a track, Grid Z7E 7185:357, 15 Sept 1997, I. Kytövuori 97-1550 (H), GenBank No. KP165572. Finland, Oulun Pohjanmaa, Kemimäen, Alaapaakko, 20 Aug 2007, I. Kytövuori (H). Finland, Pera-Pohjanmaa, Ylitornio, Kuusikkorompaat Nature Reserve, 9 Sept 1997, I. Kytövuori 97-1114 (H); Palorommas Nature Reserve, 9 Sept 1997, I. Kytövuori 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 Z7E 7366:3603, 27 Aug 2007, I. Kytövuori, 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. Kytövuori 07-1085 (H). Finland, Koillismaa, Taivalkoski, Rintela, 1 Sept 2008, I. Kytövuori 08-668 (H). Finland, Pelkosenniemi, Suvanto, Kalkkivaara, 28 Aug 2008, I. Kytövuori 08-3078:3008 (H). GenBank No. FJ865568, Quercus rubra. Etymology: The name refers to the color change of the pileus in drying.

Holotype: I. Kytövuori 08-958 (H).

juous trees, 11 Sept 2007, I. Kytövuori 07-1085 (H). Finland, Koillismaa, Taivalkoski, Rintela, 1 Sept 2008, I. Kytövuori 08-668 (H). Finland, Pelkosenniemi, Suvanto, Kalkkivaara, 28 Aug 2008, I. Kytövuori 08-3078:3008 (H). GenBank No. FJ865568, Quercus rubra. Etymology: The name refers to the color change of the pileus in drying.

Holotype: I. Kytövuori 08-958 (H).

**Cortinarius privignipalpis** Kytövä, Niskanen & Liimat., sp.nov.**IF560879**

Type: Finland, Uusimaa, Espoo, Nuuskio National Park, Hogbacka N, mesic spruce forest with some Pinus and Betula, Grid Z7E 6692:3363, 21 Sept 2004, I. Kytövuori 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 light brown. Odor of lamellae indistinct. Exsiccata not blackened. Basidiospores 7.5-8-9.1 x 5.7-6.2-6.3 µm, av. = 7.8-8.8 x 5.9-6.3 µm, 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, Lintumäki, mesic spruce forest, Grid Z7E 670:335, 7 Oct 2001, H. Tuovila & I. Kytövuori 01-057 (H), GenBank No. KP165564. Finland, Uusimaa, Sipoo, Hindsby, Sipoonkorpi National Park, mesic spruce forest, 7 Oct 2005, I. Kytövuori (H). Finland, Etela-Karjala, Anjalankoski, Kaipainen, mesic spruce forest with pines and few birches and hardwood bushes, Grid Z7E 6755:3506, 15 Sept 1994, I. Kytövuori 94-571 (H), GenBank No. KP165565. Finland, Etela-Häme, Virrat, Monokylä, mesic spruce forest, Grid Z7E 6900:3343, 12 Oct 1997, I. Kytövuori 97-2310b (H). Finland, Pohjois-Häme, Laukaa, Ajjala, Heinaaho, mesic spruce forest, 10 Sept 2004, J. Ruotsalainen (H). Finland, Pohjois-Häme, Saarijärvi, Mahlu, Jylhänpuro, damp spruce forest, Grid Z7E 6950:3398, 16 Sept 2008, I. Kytövuori 08-1922 (H); Pyhä-Häkki National Park, Mastomäki, mesic to dryish, old spruce forest, Grid Z7E 6971:2-3422, 16 Sept 2008, I. Kytövuori 08-1870 (H). Finland, Kainuu, Kajaani, Hietalahki, Lemmivaara grass-herb spruce forest, 7137:3544, 13 Sept 2008, I. Kytövuori 08-1669 (H).

45-90 mm long, 7-14 mm thick at apex, at first forming a orange or yellowish 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 and at the pileus and at the base of the stipe. Basidiospores 7.5-8-9.1 x 5.7-6.2-6.3 µm, av. = 7.8-8.8 x 5.9-6.3 µm, 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 species of the subgenus 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, Lintumäki, mesic spruce forest, Grid Z7E 670:335, 7 Oct 2001, H. Tuovila & I. Kytövuori 01-057 (H), GenBank No. KP165564. Finland, Uusimaa, Sipoo, Hindsby, Sipoonkorpi National Park, mesic spruce forest, 7 Oct 2005, I. Kytövuori (H). Finland, Etela-Karjala, Anjalankoski, Kaipainen, mesic spruce forest with pines and few birches and hardwood bushes, Grid Z7E 6755:3506, 15 Sept 1994, I. Kytövuori 94-571 (H), GenBank No. KP165565. Finland, Etela-Häme, Virrat, Monokylä, mesic spruce forest, Grid Z7E 6900:3343, 12 Oct 1997, I. Kytövuori 97-2310b (H). Finland, Pohjois-Häme, Laukaa, Ajjala, Heinaaho, mesic spruce forest, 10 Sept 2004, J. Ruotsalainen (H). Finland, Pohjois-Häme, Saarijärvi, Mahlu, Jylhänpuro, damp spruce forest, Grid Z7E 6950:3398, 16 Sept 2008, I. Kytövuori 08-1922 (H); Pyhä-Häkki National Park, Mastomäki, mesic to dryish, old spruce forest, Grid Z7E 6971:2-3422, 16 Sept 2008, I. Kytövuori 08-1870 (H). Finland, Kainuu, Kajaani, Hietalahki, Lemmivaara grass-herb spruce forest, 7137:3544, 13 Sept 2008, I. Kytövuori 08-1669 (H).

and Betula, Grid Z7E is: Pileus 30-55 mm, greyish white fibrillose, 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 and at the pileus and at the base of the stipe. Basidiospores 7.5-8-9.1 x 5.7-6.2-6.3 µm, av. = 7.8-8.8 x 5.9-6.3 µm, 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 species of the subgenus 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, Lintumäki, mesic spruce forest, Grid Z7E 670:335, 7 Oct 2001, H. Tuovila & I. Kytövuori 01-057 (H), GenBank No. KP165564. Finland, Uusimaa, Sipoo, Hindsby, Sipoonkorpi National Park, mesic spruce forest, 7 Oct 2005, I. Kytövuori (H). Finland, Etela-Karjala, Anjalankoski, Kaipainen, mesic spruce forest with pines and few birches and hardwood bushes, Grid Z7E 6755:3506, 15 Sept 1994, I. Kytövuori 94-571 (H), GenBank No. KP165565. Finland, Etela-Häme, Virrat, Monokylä, mesic spruce forest, Grid Z7E 6900:3343, 12 Oct 1997, I. Kytövuori 97-2310b (H). Finland, Pohjois-Häme, Laukaa, Ajjala, Heinaaho, mesic spruce forest, 10 Sept 2004, J. Ruotsalainen (H). Finland, Pohjois-Häme, Saarijärvi, Mahlu, Jylhänpuro, damp spruce forest, Grid Z7E 6950:3398, 16 Sept 2008, I. Kytövuori 08-1922 (H); Pyhä-Häkki National Park, Mastomäki, mesic to dryish, old spruce forest, Grid Z7E 6971:2-3422, 16 Sept 2008, I. Kytövuori 08-1870 (H). Finland, Kainuu, Kajaani, Hietalahki, Lemmivaara grass-herb spruce forest, 7137:3544, 13 Sept 2008, I. Kytövuori 08-1669 (H).

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# Oui mais... les champignons en zone urbaine ?

## Les parents pauvres des études naturalistes

- **Défaut de prise en compte**
- **Des problèmes spécifiques liés aux inventaires fongiques**
- **Des problèmes pour l'interprétation des résultats**
- **Manque... de mycologues**

# Oui mais... les champignons en zone urbaine ?





Paris

# Résultats taxinomiques

**Bois de Vincennes (5 années) :**

**1 768 espèces**

**Bois de Boulogne (5 années) :**

**1 256 espèces**

**Parc du Sausset (3 années) :**

**1540 espèces**

**Parc de la Courneuve (3 années) :**

**875 espèces**

# Résultats taxinomiques



*Psathyrella conferta*

# Résultats taxinomiques



*Psathyrella citerinii*

# Résultats taxinomiques



*Entoloma saussetiense*



# Résultats « patrimoniaux »

**Espèces exotiques**

**(liste DAISIE)**



# Résultats « patrimoniaux »



*Leratiomyces ceres*

# Résultats « patrimoniaux »



*Agrocybe putaminum*

# Résultats « patrimoniaux »



*Agrocybe rivulosa*

# Résultats « patrimoniaux »



*Clathrus archeri*

# Résultats « patrimoniaux »



*Clathrus ruber*

# Résultats « patrimoniaux »



*Rhodotus palmatus*

# Résultats « patrimoniaux »



*Atheniella adonis*