

Aphyllporaceous wood-inhabiting fungi on *Pinus* spp. in Italy

ANNAROSA BERNICCHIA¹, ELENA SAVINO² & SERGIO PÉREZ GORJÓN³

¹annarosa.bernicchia@unibo.it ²esavino@et.unipv.it ³spgorjon@usal.es

¹Dipartimento di Scienze e Tecnologie Agroambientali, Patologia Vegetale
Università degli Studi di Bologna, Via Fanin 42, 40127 Bologna Italy

²Dipartimento di Ecologia del Territorio (DET)
Università di Pavia, Via S. Epifanio 14, 27100 Pavia Italy

³Departamento de Botánica & Centro Hispano-Luso de Investigaciones Agrarias
Universidad de Salamanca, Ldo. Méndez Nieto s/n, 37007 Salamanca Spain

Abstract 203 species of 92 genera of aphyllporaceous fungi growing on *Pinus* spp. in Italy are reported. *Dacryobolus karstenii*, *Hypochnicium cremicolor* and *Trechispora kavinioides* are reported as new to Italy. *Antrodia citrina* has previously been described as a new species from this substrata while many species have to be considered rare or infrequent in Italy.

Key words lignicolous fungi, diversity, coniferous forests, Europe

Introduction

In the line of previous works (Bernicchia 2000, Mayrhofer et al. 2001, Pérez Gorjón et al. 2006, Bernicchia et al. 2007) an annotated checklist of aphyllporaceous fungi growing on *Pinus* spp. is presented.

The genus *Pinus* L. includes around 120 species in the northern hemisphere resulting the most numerous among all the Conifers. Pine forests are widely represented in Europe mainly in the mountainous areas and lacking in the less elevated zones of the north of France and Britain Islands, The Netherlands, Belgium, Germany and Denmark (Atlas Flora Europaea 2007) (Figure 1). In Italy about ten *Pinus* species can grow spontaneously (AA.VV. 2005), many others are used above all for plantations of timber or shelter. In the alpine and mountainous zones the most important species are: *P. sylvestris* L. (Scots pine), *P. cembra* L. (Swiss pine), *P. mugo* Turra (Dwarf mountain pine) and its subsp. *uncinata* (Ramond ex. DC.) Domin (Swiss mountain pine). *Pinus pinaster* Aiton (Maritime pine), *P. pinea* L. (Stone pine) and *P. halepensis* Mill. (Aleppo pine) represent the typical Mediterranean pines.

Pinus nigra J.F. Arnold s.l. and its subsp. *nigra* (Austrian pine) grow in many Italian regions; on the contrary the subsp. *laricio* (Poir.) Maire (Corsican pine) is limited to a few restricted Mediterranean areas in Calabria and Sicily, besides to some plantations in Sardinia. Other species used for planted forestry conifers and listed in the present work are: *P. radiata* D. Don (Monterey pine), *P. strobus* L. (Weymouth pine) and *P. heldreichii* var. *leucodermis* (Antoine) Markgr. ex Fitschen (Black pine or Bosnian pine). The last one grows on the mountains of South Italy on dry, sunny areas, mixed with *Abies* and *Fagus*.

At climatic level, Italy has a typically Mediterranean climate, characterized by cold, rainy winter and dry summer, except Alpine in the extreme north and Continental in the north and central east areas. These conditions and the wide ecological rank of the different pine species cause the well represented coniferous forests in Italy and, mainly, in the mountainous zones.

Previously, only scattered regional works had treated fungi in some pine forests in Italy (Bernicchia 1997, Bernicchia & Campadelli 1987 and Bernicchia et al. 1981). With the present work a full list of associated wood-inhabiting aphyllophoraceous fungi growing on pine is presented.

Materials and methods

During the last 25 years, fungi have been collected in the sites listed below (96). Samples were taken to the laboratory for microscopical examination and identification following Eriksson & Ryvarden (1973, 1975, 1976), Eriksson et al. (1978, 1981, 1984), Burdsall (1985), Hjortstam et al. (1988), Køljalg (1995), Ryvarden & Gilbertson (1993, 1994) and Bernicchia (2005). All the specimens are kept in Herbarium HUBO. The list is partially referred to Bernicchia (1995, 2001), Onofri (2005) and the nomenclature to Donk (1984), Parmasto (1997), Hjortstam (1998), Kirk et al. (2001) and CBS (2007).

Collecting localities (see also Figure 2): The collections have been undertaken in the following sites, indicated in the map of Italy. They are numerically arranged by regions, from northern to southern and from the left to the right part of Italy: (1) Valle d'Aosta, Aosta, Chatillon; (2) Valle d'Aosta, Aosta, St. Jean; (3) Piemonte, Torino, Fiorano Canavese; (4) Piemonte, Torino, Rochisie Mont, Roletto; (5) Piemonte, Torino, Piossasco; (6) Piemonte, Verbania, Val Vigizzo; (7) Trentino-Alto Adige, Bolzano, Val d'Ultimo; (8) Trentino-Alto Adige, Bolzano, Castelveccchio; (9) Trentino-Alto Adige, Bolzano, Ponente, Malga S. Pietro; (10) Trentino-Alto Adige, Bolzano, Laranza forest; (11) Trentino-Alto Adige, Bolzano, Selva Tagusa; (12) Trentino-Alto Adige, Bolzano, Tesselberg; (13) Trentino-Alto Adige, Bolzano, Tiles; (14) Trentino-Alto Adige, Bolzano, Valle Anterselva; (15) Trentino-Alto Adige, Bolzano, S. Vigilio di Marebbe, Fannes; (16) Trentino-Alto Adige, Trento, Caldaro-Mendola road; (17) Trentino-Alto Adige, Trento, Rovereto; (18)

Trentino-Alto Adige, Trento, Vallarsa; (19) Veneto, Belluno, National Park of Dolomiti Bellunesi - La Vena d'Oro, Ponte nelle Alpi; (20) Veneto, Belluno, National Park of Dolomiti Bellunesi - Serva Mont; (21) Veneto, Belluno, Greto del Piave; (22) Friuli Venezia Giulia, Pordenone, Maniago; (23) Friuli Venezia Giulia, Pordenone, Jouv Mont; (24) Friuli Venezia Giulia, Udine, Treignano; (25) Friuli Venezia Giulia, Trieste, Basovizza; (26) Friuli Venezia Giulia, Trieste, Borgo Grotta del Gigante; (27) Friuli Venezia Giulia, Trieste, Pese; (28) Veneto, Venezia, Eraclea; (29) Veneto, Venezia, Ca'Savio pine forest; (30) Veneto, Venezia, S. Donà di Piave; (31) Veneto, Venezia, Nordio Forest; (32) Veneto, Venezia, Caroman; (33) Emilia-Romagna, Ferrara, Mesola forest; (34) Emilia-Romagna, Ferrara, Lido di Volano; (35) Emilia-Romagna, Ravenna, Classe pine forest; (36) Emilia-Romagna, Ravenna, S. Vitale pine forest; (37) Emilia-Romagna, Ravenna, Cervia pine forest; (38) Emilia-Romagna, Piacenza, Ponté; (39) Emilia-Romagna, Piacenza, Taverne Mont; (40) Emilia-Romagna, Parma, Fontana del Fò; (41) Emilia-Romagna, Parma, Passo della Cisa; (42) Emilia-Romagna, Bologna, La Martina Park; (43) Emilia-Romagna, Bologna, Cavallo Mont; (44) Emilia-Romagna, Bologna, Piella Mont; (45) Emilia-Romagna, Bologna, Corno alle Scale Park; (46) Emilia-Romagna, Forli-Cesena, Badia Prataglia Reserve; (47) Toscana, Pisa, Calambrone pine forest; (48) Toscana, Pisa, Forest Demaniale of Patti; (49) Toscana, Pisa, Cornacchiaia Reserve; (50) Toscana, Pisa, Tenuta di S. Rossore; (51) Toscana, Siena, Poggio Scalari; (52) Toscana, Arezzo, La Verna; (53) Toscana, Livorno, Forest "Il Giardino"; (54) Toscana, Livorno, Ugione river; (55) Toscana, Livorno, Tirrenia; (56) Toscana, Livorno, Colognole; (57) Toscana, Livorno, Cecina pine forest; (58) Toscana, Livorno, Tombolo pine forest; (59) Toscana, Livorno, Bibbona pine forest; (60) Toscana, Livorno, Bibbona forest; (61) Toscana, Livorno, Rimigliano forest; (62) Toscana, Grosseto, Riserve of Burano; (63) Abruzzo, L'Aquila, Camosciara, National Park of Abruzzo; (64) Lazio, Roma, Villa Doria; (65) Lazio, Latina, Camping Isola verde; (66) Lazio, Latina, National Park of Circeo; (67) Puglia, Lecce, Serra degli Angeli, Torre Lapillo; (68) Puglia, Lecce, Alimini pine forest; (69) Puglia, Lecce, Otranto forest; (70) Calabria, Reggio Calabria, National Park of Calabria; (71) Calabria, Reggio Calabria, Abbruschiata pine forest; (72) Calabria, Reggio Calabria, Piano di Carmelia; (73) Sicilia, Messina, Erbe verdi; (74) Sicilia, Messina, Musolino; (75) Sicilia, Messina, Floresta; (76) Sicilia, Messina, S. Domenica Vittoria; (77) Sicilia, Messina, Ucria; (78) Sicilia, Palermo, Botanical Garden of Palermo; (79) Sardegna, Oristano, Is Arenas pine forest; (80) Sardegna, Oristano, Ala Birdi; (81) Sardegna, Oristano, Arborea; (82) Sardegna, Oristano, S'ena arrubia; (83) Sardegna, Oristano, Arci mont; (84) Sardegna, Nuoro, Santa Lucia pine forest; (85) Sardegna, Nuoro, Supramonte di Orgosolo; (86) Sardegna, Nuoro, Arzana pine forest; (87) Sardegna, Nuoro, Oliena; (88) Sardegna, Nuoro, Villagrande; (89) Sardegna, Nuoro, Montarbu Forest; (90) Sardegna, Nuoro, Tricoli Forest; (91) Sardegna, Nuoro, Marcerei; (92)

Sardegna, Cagliari, Ingurtosu; (93) Sardegna, Cagliari, Portixeddu; (94) Sardegna, Cagliari, Sorgono; (95) Sardegna, Cagliari, Sibiri; (96) Sardegna, Cagliari, San Gavino.



Figure 1. Map of approximate distribution of *Pinus* in Europe (AFE 2007)

Results

In this survey 664 specimens belonging to 203 (4 determined at generic level) species, of ashylophoraceous wood-inhabiting fungi collected on different species of *Pinus* are reported. The species are listed in alphabetic order; substrata precede the number of the locality given in brackets, notes and the herbaria number. Additional comments on distribution or frequency are given for all the species.

Dacryobolus karstenii, *Hypochnicium cremicolor* and *Trechispora kavinioides* are reported as new to Italy (marked with *). Particularly rare or uncommon species are *Amylocorticium subincarnatum*, *A. subsulphureum*, *Antrodia albobrunnea*, *A. alpina*, *A. citrina*, *Cerinomyces crustulinus*, *Ceriporia alachuana*, *C. sulphuricolor*, *Fomitopsis iberica*, *Gloeophyllum protractum*, *Gyrodontium sacchari*,

Hyphoderma cryptocallimon, *H. galactinum*, *Metulodontia nivea*, *Mucronella bresadolae*, *M. calva*, *Oligoporus cerifluus*, *O. septentrionalis*, *O. simanii*, *Paullicorticium pearsonii*, *Perenniporia fulviseda*, *Phlebiella christiansenii*, *Piloderma bicolor*, *Scytinostroma ochroleucum*, *Scytinostromella olivaceoalba*, *Skeletocutis lilacina* and *Trechispora clancularis*.

Some of these species as *Antrodia citrina* have been recorded from *P. pinea* only and from the type locality; *Perenniporia narymica* grows on *Pinus* in Italy while usually it is recorded on deciduous substrata. Some species are more common on deciduous substrata than on conifers as *Abortiporus biennis*, *Antrodia albida*, *Bjerkandera adusta*, *Chondrostereum purpureum*, *Hapalopilus nidulans*, *Oligoporus tephroleucus*, *Peniophora meridionalis* and *Steccherinum fimbriatum* etc.

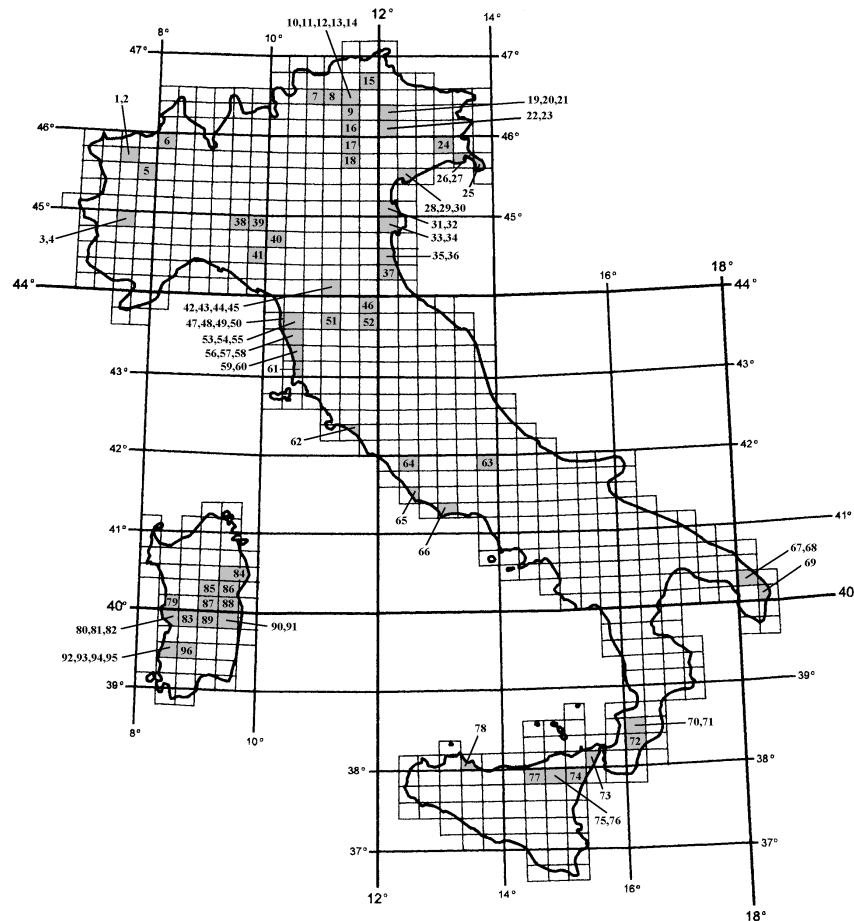


Figure 2. Map of Italy with the collecting sites. Scale 1:50000.

Checklist of collected Aphylophorales

Abortiporus biennis (Bull.) Singer

P. pinea: (57) coll. 1017. A widespread species more common on deciduous wood.

Amphinema byssoides (Pers.) J. Erikss.

P. nigra subsp. *laricio*: (70) burnt wood, coll. 4919, (71) coll. 5040; *P. nigra*: (38) coll. 7148, (42) coll. 6340, (43) coll. 2612, (76), coll. 7287; *P. pinaster*: (86) log lying on the ground, coll. 7014; *P. pinea*: (30) coll. 651, (62) coll. 5429, (79) coll. 2015, 2017, 2025, (80) branch, coll. 1910, 1912. A very common species on all kinds of wood.

Amylocorticium cebennense (Bourdot) Pouzar

P. nigra: (40) coll. 4736; *P. pinea*: (59) coll. 4334, 4406; *P. sylvestris*: (23) coll. 6216. A common species on decayed coniferous wood.

Amylocorticium subincarnatum (Peck) Pouzar

P. pinea: (66) branch, coll. 3175. A rare species collected only one more time on *Helichrysum*.

Amylocorticium subsulphureum (P. Karst.) Pouzar

P. nigra: (40) coll. 4741, 4743, (44) L.R. 22233. Rare species with only two collecting localities in Italy.

Amylostereum chailletii (Pers.) Boidin

P. nigra: (42), coll. 7552; *Pinus* sp.: (89) on lying trunk, coll. 7413. A common species also collected on other coniferous substrata.

Antrodia albida (Fr.) Donk

P. pinea: (80) coll. 1915. A sporadically distributed species, more common on deciduous substrata.

Antrodia albobrunnea (Romell) Ryvarden

P. nigra subsp. *laricio*: (70) coll. 4894. A rare species in Italy, collected only once, more common in northern Europe.

Antrodia alpina (Litsch.) Gilb. & Ryvarden

P. cembra: (2) on trunk and stump, coll. 7563, 7939. A rare species presents in North America, and in Europe only in the Alps, on different coniferous substrata.

Antrodia citrina Bernicchia & Ryvarden

P. pinea: (36) on very old trunks lying on the ground, coll. 7682, 7683, 7684, 7685, 7715, 7769, 7787, 7817, 7820, 7875. A very rare species only known from the type locality till now.

Antrodia gossypium (Speg.) Ryvarden

P. halepensis: (68) stump, coll. 6063; *P. nigra* subsp. *laricio*: (70) burnt wood, coll. 4886, 4888, 4906, (85) trunks lying on the ground, coll. 7724, 7725; *P. nigra*: (25) coll. 5903, (42) coll. 7838, (44) coll. 5974, 5975, (75) at the base of trunk, coll. 7276, 7930; *P. pinea*: (3) coll. 7070, (35) coll. 5855, (37) coll. 5031, (66) coll. 7866; *P. radiata*: (88) coll. 7716. A sporadically distributed species, locally more frequent, also collected on *Abies* and *Cupressus* too.

- Antrodia ramentacea* (Berk. & Broome) Donk
P. nigra: (25) coll. 5840, (42) coll. 6995; *P. pinea*: (66) coll. 3485, (79) coll. 2005, stump, coll. 4036, 4063; *P. radiata*: (42) coll. 7929, (88) on trunk, coll. 7720; *P. sylvestris*: (17) coll. 2251, (42) coll. 7087, (46) coll. 8088; *Pinus* sp.: (91) coll. 7926. Widespread species.
- Antrodia xantha* (Fr.) Ryvarden
P. pinea: (36) trunk on the ground, coll. 7904; *P. sylvestris*: (12) stump, coll. 7945. Sporadic species in Italy, common in Northern European coniferous forests.
- Antrodiella pallescens* (Pilát) Niemelä & Miettinen
P. pinea: (58) trunk, coll. 620; *P. sylvestris*: (42) coll. 6011. A widely distributed species in Europe, more frequent on deciduous wood in Italy.
- Athelia acrospora* Jülich
P. sylvestris: (8) coll. 5696. Common species on deciduous wood.
- Auriscalpium vulgare* Gray
P. nigra: (42) coll. 1868, 1879. Common species on coniferous cones.
- Basidihradulum radula* (Fr.) Nobles
P. nigra: (42) trunk, coll. 6541, 7520; *P. pinea*: (37) branch on the ground, coll. 5937. Widely distributed species, more common on deciduous woods.
- Bjerkandera adusta* (Willd.) P. Karst.
P. pinea: (28) coll. 684, (50) coll. 634, (96) on pine-needles, coll. 2382. Common on deciduous wood, rare on coniferous substrata.
- Bjerkandera fumosa* (Pers.) P. Karst.
P. pinea: (3) on stump, coll. 7097. Widely distributed species, less common than *B. adusta*.
- Boidinia furfuracea* (Bres.) Stalpers & Hjortstam
P. pinea: (3) coll. 6019. Uncommon species.
- Botryobasidium candicans* J. Erikss.
P. pinea: (66) trunk, coll. 3115. Infrequent species in Italy.
- Botryobasidium intertextum* (Schwein.) Jülich & Stalpers
P. nigra subsp. *laricio*: (71) coll. 5016. Uncommon species, collected on *Abies* too.
- Botryobasidium medium* J. Erikss.
P. pinea: (60) coll. 4365. Uncommon species.
- Botryobasidium subcoronatum* (Höhn. & Litsch.) Donk
P. pinea: (36) on branches, coll. 1112, 2150, 4316, 657. A very common species.
- Botryohypochnus isabellinus* (Fr.) J. Erikss.
P. nigra subsp. *laricio*: (71) coll. 5031; *P. pinea*: (57) coll. 1011. Frequent species with a scattered distribution.
- Byssocorticium atrovirens* (Fr.) Bondartsev & Singer ex Singer
P. pinaster: (90) coll. 6974. With a scattered distribution in Italy.
- Ceraceomyces serpens* (Tode) Ginns
P. pinea: (49) trunk on the ground, coll. 6264. Not frequent in Italy.

- Ceratobasidium cornigerum* (Bourdot) D.P. Rogers
P. pinea: (60) coll. 4386, (79) coll. 2002, 2087. Collected on several substrata.
- Cerinomyces crustulinus* (Bourdot & Galzin) G.W. Martin
P. nigra: (63) coll. 3391. A rare species. Also recorded on *Tamarix* by Losi (2003).
- Ceriporia alachuana* (Murrill) Hallenb.
P. pinea: (36) trunk, coll. 7883. A very rare species in Europe, with only two collecting localities in Italy, also on *Hedera helix*.
- Ceriporia reticulata* (Hoffm.) Doma_ski
P. pinea: (36) coll. 511. A widely distributed species in some European countries, sporadic in Italy.
- Ceriporia sulphuricolor* Bernicchia & Niemelä
P. pinea: (3) inside the holed stump, coll. 6591, 6592, 6684, 6685, 6696. A very rare species, known only from the type locality.
- Ceriporiopsis mucida* (Pers.) Gilb. & Ryvarde
P. nigra: (63) coll. 3353. A common, widely distributed species.
- Ceriporiopsis rivulosa* (Berk. & M.A. Curtis) Gilb. & Ryvarde
P. pinea: (54) coll. 5298, (61) stump, coll. 1023, (77) coll. 7932. Typical North American species, rare in Europe, with a prevalent Mediterranean distribution.
- Chondrostereum purpureum* (Pers.) Pouzar
P. pinea: (28) coll. 27. Common species, more frequent on deciduous wood.
- Coltricia perennis* (L.) Murrill
Pinus sp.: (94) coll. 2695. A common mycorrhizal species, in conifer forests.
- Coniophora arida* (Fr.) P. Karst.
P. nigra: (17) coll. 671, (26) coll. 5734, (38) trunk on the ground, coll. 7166, (45) coll. 6355, (52) coll. 7145; *P. pinea*: (36) coll. 450, 5598, (53) coll. 976, 995, (57) coll. 1008, (60) coll. 4330; *P. sylvestris*: (8) coll. 5704. A common species.
- Coniophora fusispora* (Cooke & Ellis) Cooke
P. nigra subsp. *laricio*: (71) lying trunk, coll. 4983, 5048; *P. heldreichii* var. *leucodermis*: (75), coll. 7267. Not a frequent species in Italy.
- Coniophora olivacea* (Fr.) P. Karst.
P. pinea: (66) coll. 7914; *P. sylvestris*: (9) coll. 5636. Common species.
- Coniophora puteana* (Schumach.) P. Karst.
P. nigra: (44) coll. 5973; *P. pinea*: (28) coll. 32, (36) coll. 606, (92) living branch, coll. 2389. A very common species, on all kinds of substrata.
- Coriolopsis gallica* (Fr.) Ryvarde
P. pinea: (79) coll. 4015. Frequent species in southern European countries.
- Crustoderma dryinum* (Berk. & M.A. Curtis) Parmasto

- P. pinea* (79) stump, coll. 6618. Rare species. Also recorded by Losi (1999).
- Cylindrobasidium evolvens* (Fr.) Jülich
P. sylvestris: (7) coll. 4628. Common species in all European forests.
- **Dacryobolus karstenii* (Bres.) Oberw. ex Parmasto
P. nigra subsp. *laricio*: (85) on lying trunk, coll. 8090. Widely distributed species, the first record in Italy.
- Dacryobolus sudans* (Alb. & Schwein.) Fr.
P. nigra subsp. *laricio*: (85) brunch, coll. 4089; *P. nigra*: (42) coll. 5476; *P. pinea*: (3) coll. 6022, (60) coll. 4333, (66) coll. 3428. Widely distributed species in Italy.
- Diplomitoporus flavescens* (Bres.) Doma_ski
P. nigra: (42) coll. 7523; *P. pinea*: (96) still attached dead branch, coll. 6854; *P. sylvestris*: (4) coll. 2401, (10) on stump, coll. 6668; (46) coll. 4317. Uncommon species in Europe with a few collecting localities in Italy, more frequent in Sardinia.
- Fibricium rude* (P. Karst.) Jülich
P. pinaster: (35) cone, coll. 5783; *P. pinea*: (36) cone, coll. 7941, (59) coll. 4398, (57) coll. 1005, 1006, 1016; *P. radiata*: (88) coll. 8094 Not common species in Italy.
- Fibulomyces fusoides* Jülich
P. nigra subsp. *laricio*: (70) coll. 4936; *P. nigra*: (38) lying trunk, coll. 7171. A rare, small species easily overlooked.
- Fibulomyces mutabilis* (Bres.) Jülich
P. nigra: (43) coll. 2606. A rare species in Italy.
- Fomitopsis iberica* Melo & Ryvarden
P. halepensis: (78) on trunk, coll. 7920; *P. nigra* subsp. *laricio*: (70) coll. 4937; *P. pinea*: (32) stump, coll. 6830. A very rare species collected only in some European countries.
- Fomitopsis pinicola* (Sw.) P. Karst.
P. cembra: (1) coll. 1340; *P. pinea*: (79) stump, coll. 2034. A common and widely distributed species being an important brown wood-inhabiting fungi.
- Ganoderma applanatum* (Pers.) Pat.
P. pinea: (50) stump, coll. 1409, (66) coll. 3456. Common species.
- Gloeocystidiellum porosum* (Berk. & M.A. Curtis) Donk
P. pinea: (66) trunk, coll. 3032, 3093. Common species, frequent in deciduous forests.
- Gloeophyllum abietinum* (Bull.) P. Karst.
P. pinea: (30) coll. 29. A species with Central and Southern European distribution.
- Gloeophyllum protractum* (Fr.) Imazeki
P. nigra subsp. *laricio*: (70) trunk, coll. 4911; *P. pinea*: (47) coll. 6263. A rare species in Europe, very rare in Italy.
- Gloeophyllum sepiarium* (Wulfen) P. Karst.
P. cembra: (1) coll. 1336; *P. sylvestris*: (11) on surfacing root, coll. 3698. A widely distributed species in the tempered North zone.

- Gyrodontium sacchari* (Spreng.) Hjortstam
P. pinea: (84) pine-needles, coll. 5280, 5283. A very rare species, this is the first and unique record in Europe.
- Hapalopilus nidulans* (Fr.) P. Karst.
P. pinea: (36) coll. 3496. Common species on deciduous wood.
- Hapalopilus salmonicolor* (Berk. & M. A. Curtis) Pouzar
P. sylvestris: (13) stump, coll. 5307. A rare species in Europe, in Italy only known from Alps.
- Heterobasidion annosum* (Fr.) Bref.
P. nigra: (25) stump, coll. 5907; *P. pinea*: (30) coll. 630, (31) coll. 1570, (36) coll. 378, 501, 1374, (58) coll. 2827, 3576, (66) coll. 3403. A widely distributed species in all European forests.
- Hyphoderma argillaceum* (Bres.) Donk
P. nigra subsp. *laricio*: (70) coll. 4946; *P. nigra*: (25) branch on the ground, coll. 5911, (38) coll. 7172, (42) coll. 5990, (63) coll. 3378; *P. pinaster*: (86) coll. 7009; *P. pinea*: (66) coll. 3045, 3052, 3060, 3451. A locally frequent species.
- Hyphoderma cryptocallimon* B. de Vries
P. pinea: (62) coll. 7440. Rare species with only two collecting localities in Italy, and on *Juniperus oxycedrus* too.
- Hyphoderma galactinum* G. Manjón, G. Moreno & Hjortstam
P. pinea: (79) trunk, coll. 7532. A rare species with this only locality in Italy.
- Hyphoderma medioburiense* (Burt) Donk
P. pinea: (79) coll. 2013. Rather a common species, growing on several substrata.
- Hyphoderma pallidum* (Bres.) Donk
P. nigra subsp. *laricio*: (71) coll. 4883; *P. pinea*: (80) coll. 1908, 1909, (79) coll. 2024. A frequent species.
- Hyphoderma praetermissum* (P. Karst.) J. Erikss. & Å. Strid
P. nigra subsp. *laricio*: (70) coll. 4929, (71) coll. 5011; *P. nigra*: (42) coll. 6004, (44) coll. 2608, (63) coll. 3360; *P. pinea*: (36) coll. 505, (53) cone, coll. 949, (59) coll. 4384, 4391, 4393, 4410, (66) coll. 3432, (80) brunch, coll. 1903, 1921, (79) coll. 2008, 2010, 2012, 2016, 2019. A very common species, on all kinds of wood.
- Hyphoderma puberum* (Fr.) Wallr.
P. nigra: (25) trunk, coll. 5894; *P. pinea*: (33) coll. 6687, (35) coll. 5947, (60) coll. 4353, (66) coll. Ryvarden 22373. A common species on decorticated deciduous wood, less frequent on conifers.
- Hyphoderma roseocremaum* (Bres.) Donk
P. nigra subsp. *laricio*: (70) coll. 942. Not a frequent species, rarer on coniferous wood.
- Hyphoderma setigerum* (Fr.) Donk
P. nigra: (38) lying trunk, coll. 7158. A frequent species.
- Hyphoderma* sp.
P. pinea: (79) brunch, coll. 6629, 6630, close to *H. sabinicum* Manjón & G. Moreno.

- Hyphoderma tsugae* (Burt) J. Erikss. & Å. Strid
P. nigra subsp. *laricio*: (70) coll. 4961. A rare species, collected in Sardinia and Calabria only.
- Hyphodontia alutacea* (Fr.) J. Erikss.
P. nigra: (42) stump, coll. 6291. Not very common species.
- Hyphodontia alutaria* (Burt) J. Erikss.
P. halepensis: (68) trunk, coll. 6077; *P. nigra*: (45) coll. 6371; *P. pinea*: (57) coll. 1001, (60) coll. 4385. Locally may be a common species.
- Hyphodontia arguta* (Fr.) J. Erikss.
P. pinea: (31) coll. 1574, (36) coll. 1209, (57) coll. 1013, (66) coll. 3051. A very common species in Italy, growing on several substrata.
- Hyphodontia aspera* (Fr.) J. Erikss.
P. nigra: (5) coll. 3787, (26) coll. 5736, (38) lying trunk, coll. 7157, (42) coll. 6885, (44) coll. 5968; *P. pinea*: (60) coll. 4342. Frequent species on all decayed type of wood.
- Hyphodontia barba-jovis* (Bull.) J. Erikss.
P. nigra: (26) coll. 5743. Uncommon species.
- Hyphodontia crustosa* (Pers.) J. Erikss.
P. pinea: (57) coll. 998. A widely distributed species.
- Hyphodontia detritica* (Bourdot & Galzin) J. Erikss.
P. pinea: (62) coll. 5445, (66) lying trunk, coll. 3105. Infrequent species.
- Hyphodontia floccosa* (Bourdot & Galzin) J. Erikss.
P. nigra: (42) coll. 6866. Uncommon species, growing on *Larix* and *Picea* too.
- Hyphodontia gossypina* (Parmasto) Hjortstam
P. pinea: (80) coll. 1901. A fairly common species in Southern Europe, rare in the North.
- Hyphodontia nespori* (Bres.) J. Erikss. & Hjortstam
P. pinea: (36) coll. 486, (66) coll. 3081, 3120. A rare North European species, quite common in Italy.
- Hyphodontia pallidula* (Bres.) J. Erikss.
P. nigra: (63) coll. 3393; *P. pinea*: (36) coll. 1170, 2158, 7580. A frequent species in coniferous forests.
- Hyphodontia spathulata* (Schrad.) Parmasto
P. nigra: (42) coll. 5997. A rather frequent species in Central Europe, rare in Italy.
- Hyphodontia subalutacea* (P. Karst.) J. Erikss.
P. nigra subsp. *laricio*: (70) 4959; *P. nigra*: (42) coll. 1853, 1856; *P. pinea*: (57) coll. 1002, (66) coll. 3043, 3084. Common species in Europe.
- Hypochniciellum molle* (Fr.) Hjortstam
P. nigra subsp. *laricio*: (85) coll. 4769, 4778. With a scattered distribution.
- Hypochniciellum ovoideum* (Jülich) Hjortstam & Ryvarde
P. nigra subsp. *laricio*: (71) coll. 5018; *P. pinea*: (33) coll. 6351,

- 7253; *P. nigra*: (42) coll. 6005, 6533, (38) lying trunk, coll. 7149, (52) coll. 7140. A frequent species, growing on a wide range of substrata.
- Hypochnicium erikssonii* Hallenb. & Hjortstam
P. nigra: (44) coll. Widely distributed species on different substrata.
- Hypochnicium geogenium* (Bres.) J. Erikss.
P. nigra: (44) coll. Ryvarde 22315, 22336. Infrequent species.
- **Hypochnicium cremicolor* (Bres.) H. Nilsson & Hallenb.
P. nigra: (38) coll. 7150. Close to *H. punctulatum* (Cooke) J. Erikss., but small-spored taxon (Nilsson & Hallenberg 2003).
- Ischnoderma benzoinum* (Wahlenb.) P. Karst.
P. nigra: (42) standing tree, coll. 7827; *Pinus* sp.: (64) coll. 1503. Common Central and Southern European species, not very common in Italy.
- Leptoporus mollis* (Pers.) Quél.
P. nigra subsp. *laricio*: (85) coll. 7787. Rare species, with scattered collecting localities in Italy.
- Leptosporomyces roseus* Jülich
P. pinea: (66) coll. 3412. A very rare species, with only this collecting area in Italy.
- Leucogyrophana mollusca* (Fr.) Pouzar
P. pinea: (36) coll. 458, 1117, 1118, (37) coll. 5941; stump of *P. pinaster*: (90) coll. 7020. Frequently collected on many coniferous wood.
- Leucogyrophana romellii* Ginns
P. pinea: (36) coll. 6452, (66) coll. 3460, 3496. A sporadically distributed species.
- Leucogyrophana sororia* (Burt) Ginns
P. nigra subsp. *laricio*: (71) coll. 4885; *P. nigra*: (38) coll. 7151, (44) coll. Ryvarde 22283; *P. pinea*: (36) lying trunk, coll. 6453, 7589. Not very common species.
- Lindtneria leucobryophila* (Henn.) Jülich
P. pinea: (36) coll. 7596, 7598. A very rare species in Europe. Also recorded on *Ulmus minor* by Losi (1999).
- Lindtneria* sp.
P. pinea: (36) coll. 7599.
- Melzericium udicola* (Bourdot) Hauerslev
P. pinea: (92) coll. 5866. A rare species in Italy, collected only in Sardinia.
- Membranomyces delectabilis* (H.S. Jacks.) Kotir. & Saaren.
P. nigra: (44) coll. Ryvarde 22297. A rare species with a record on *Polystichum setigerum* too.
- Meruliopsis hirtella* (Burt) Jinns
P. halepensis: (67) coll. 6259; *P. pinea*: (80) coll. 1920, (81) coll. 1995. Frequent species growing on several substrata.
- Meruliopsis taxicola* (Pers.) Bondartsev
P. nigra: (27) coll. 5913, (38) coll. 7167, (42) coll. 5797, 7204, (44)

- coll. 2938, L.R. 22305; *P. pinea*; (36) coll. 650; *P. sylvestris*: (17) coll. 2254, (20) coll. 4963, (22) coll. 2809. Widely distributed species, locally may be frequent.
- Merulius tremellosus* Schrad.
P. nigra: (42) coll. 6330; *P. pinea*: (50) stump, coll. 610. Common species.
- Metulodontia nivea* (P. Karst.) Parmasto
P. sylvestris: (16) lying trunk, coll. 7822. A very rare species with only one collecting locality, and growing on *Abies alba* too.
- Mucronella bresadolae* (Quél.) Corner
P. nigra: (42) coll. 6111, 6531, 6535, 6536. Very rare species.
- Mucronella calva* (Alb. & Schwein.) Fr.
P. sylvestris: (42) coll. 5962. Rare species with a restricted distribution in Italy and known until now only growing on *Abies alba*.
- Oligoporus balsameus* (Peck) Gilb. & Ryvarde
P. pinea: (36) trunk, coll. 1165, 7421, 7554, 7922, 7826. Widely distributed species in Europe, but not too frequent, rare in Italy, recorded on *Taxus*, *Arbutus* and *Populus* too.
- Oligoporus cerifluus* (Berk. & M.A. Curtis) Gilb. & Ryvarde
P. pinaster: (37) 5030; *P. pinea*: (36) 7831, 7832, 7935, 7949. Very rare species with only a few collected localities in Europe.
- Oligoporus floriformis* (Quél.) Gilb. & Ryvarde
P. nigra subsp. *laricio*: (72) on the riverside stump, coll. 4939; *P. pinaster*: (90) coll. 6968; *P. pinea*: (36) coll. 2600, 3192, 7835, (37) coll. 5029, (66) coll. 3445, (74) lying trunk, coll. 7283. Uncommon species in Italy, while it is widely distributed in other European countries.
- Oligoporus fragilis* (Fr.) Gilb. & Ryvarde
P. nigra subsp. *laricio*: (70) lying trunk, coll. 4962, (85) coll. 4770; *P. pinea*: (33) coll. 2985, 3189, 3190, 3191, (66) coll. 3490; *P. sylvestris*: (21) coll. 4933. A frequent species in Europe and America.
- Oligoporus hibernicus* (Berk. & Broome) Gilb. & Ryvarde
P. nigra: (38) trunk, coll. 7136, 7164, (42) coll. 5633, (63) coll. Ryvarde 22672; *P. pinaster*: (37) branch, coll. 7886; *P. pinea*: (33) trunk, coll. 6671; *Pinus* sp.: (89) lying trunk, coll. 7290. Uncommon species in Europe, only recorded from some Italian regions.
- Oligoporus inocybe* (A. David & Malençon) Ryvarde & Gilb.
P. pinea: (59) coll. 4336. Thermophilous species, with a main Mediterranean distribution, rare in Italy.
- Oligoporus leucomallellus* (Murrill) Gilb. & Ryvarde
P. nigra: (26) coll. 5732, (39), coll. 6745, (43) coll. 3595, 5971; *P. pinaster*: (73) lying trunk, coll. 7278, (86) coll. 6965, (90) coll. 7011; *P. pinea*: (33) coll. 6024, (36) coll. 575, (37) standing tree, coll. 5942, (50) coll. 3586, (57) coll. 1004, 1296, (59) coll. 4338, 4382, 4402, (66) coll. 3035, 3056, 3057, 3063, 3423, 3438, (79) coll. 6617, (83) coll. 1330; *P. sylvestris*: (17) coll. 2307, (19) trunk, coll. 5480, (42)

- lying trunk, coll. 6016. Frequent species in many coniferous forests, but with some records on deciduous wood.
- Oligoporus rennyi* (Berk. & Broome) Donk
P. halepensis: (68) coll. 6349; *P. nigra*: (38) coll. 7169; *P. pinea*: (33) coll. 7213, (79) branches, coll. 2026, 2028. Widely distributed, but not frequent in Italy.
- Oligoporus septentrionalis* Vampola
P. nigra: (42) coll. 6499. Very rare species, recorded from few European countries and only once from Italy.
- Oligoporus sericeomollis* (Romell) M. Bondartseva
P. pinea: (36) coll. 1132, (65) trunk, coll. 7869. Present in all European countries, but it seems to be infrequent in Italy.
- Oligoporus simanii* (Pilát) Bernicchia
P. nigra: (63) coll. 3380. A very rare species with only few collecting localities in Italy.
- Oligoporus stipticus* (Pers.) Gilb. & Ryvarden
P. halepensis: (68) coll. 5417, 6072; *P. nigra*: (39), lying trunk, coll. 6748; *P. pinaster*: (34) coll. 6440, (42) coll. 6339; *P. pinea*: (36) coll. 509, 7593, (37) coll. 5070. Widespread in Europe on different coniferous substrata.
- Oligoporus tephroleucus* (Fr.) Gilb. & Ryvarden
P. nigra subsp. *laricio*: (70) coll. 4907, (71) coll. 4896; *P. pinaster*: (86) coll. 6980; *P. sylvestris*: (41) coll. 2183, (42) lying trunk, coll. 5991; *P. pinea*: (33) coll. 6436, (53) coll. 965, 968. Common species, particularly on deciduous wood.
- Oxyporus latemarginatus* (Durieu & Mont.) Donk
P. pinaster: (93) at the base of trunk, coll. 7412 ; *P. pinea*: (79) branches, coll. 2027, 2030. Common species in the Northern tempered zones.
- Parmastomyces mollissimus* (Maire) Pouzar
P. nigra: (42) coll. 5996, 6868, 7833; *P. pinaster*: (66) coll. 7911; *P. pinea*: (36) coll. 3179, 7422, 7423, (37) coll., 5022, 5938, (65) coll. 7900; *P. sylvestris*: (46) 7734. Very often it grows on lying trunks, and it seems to be an uncommon species in Europe.
- Paullicorticium pearsonii* (Bourdot) J. Erikss.
P. nigra: (44) coll. 5965. Very rare species growing on soaked, decayed wood.
- Peniophora cinerea* (Pers.) Cooke
P. sylvestris: (8) coll. 5694. Common species on deciduous wood.
- Peniophora lycii* (Pers.) Höhn. & Litsch.
P. pinea: (37) standing trunk, coll. 5943, (79) coll. 2014. A very common species in Italy, mainly growing on numerous deciduous substrata.
- Peniophora meridionalis* Boidin
P. pinea: (82) coll. 2084. Commonly it is considered a typical macchia species, principally on deciduous substrata.
- Peniophora pithya* (Pers.) J. Erikss.

- P. sylvestris*: (11) coll. 3687. Not very frequent species in Italy, very common in the spruce forests of Scandinavia.
- Perenniporia fulviseda* (Bres.) Dhanda
Pinus sp.: (3) coll. 698. A rare species known only from some Mediterranean European countries, India and Japan.
- Perenniporia medulla-panis* (Jacq.) Donk
P. heldreichii var. *leucodermis*: (85) coll. 7334; *P. pinea*: (33) coll. 6681. Cosmopolitan species, widely distributed in Europe, mainly in the *Quercus* forests.
- Perenniporia narymica* (Pilát) Pouzar
P. pinea: (66) coll. 3418, 3429, 3441, 3444, 3449, 3457, 3492, 3498;
Pinus sp.: (92) coll. 5844. Growing only on conifers in Italy, while in Europe is recorded very often on deciduous wood.
- Perenniporia* sp.
Pinus sp.: (24) coll. 1552.
- Perenniporia subacida* (Peck) Donk
P. nigra: (40) coll. 4751. Uncommon species in Europe, very rare in Italy.
- Phaeolus schweinitzii* (Fr.) Pat.
P. pinea: (36) coll. 3569, 6444, (49) coll. 6265, (81) coll. 1989. A cosmopolitan and common species in Europe.
- Phanerochaete aculeata* Hallenb.
P. pinea: (37) coll. 7849. Uncommon species, but with a worldwide distribution.
- Phanerochaete laevis* (Fr.) J. Erikss. & Ryvarden
P. pinea: (37) coll. 7850. Frequent species.
- Phanerochaete sanguinea* (Fr.) Pouzar
P. nigra: (42) coll. 6346; *P. pinea*: (59) coll. 4362. Common and widely distributed species.
- Phanerochaete sordida* (P. Karst.) J. Erikss. & Ryvarden
P. nigra: (42) coll. 6323, (43) coll. 2973; *P. sylvestris*: (42) coll. 7551. Common and widely distributed species, more frequent on deciduous wood.
- Phanerochaete tuberculata* (P. Karst.) Parmasto
P. pinea: (82) coll. 2097. Common species.
- Phanerochaete velutina* (DC.) Parmasto
P. nigra: (44) coll. 5988. Common species in deciduous forests, infrequent on coniferous substrata.
- Phellinus chrysoloma* (Fr.) Donk
P. nigra: (63) coll. 3388. Cosmopolitan species, not common in Italy.
- Phellinus pini* (Fr.) Bondartsev & Singer
P. halepensis: (68) coll. 4177; *P. pinea*: (36) coll. 494, 524, (37) coll. 7847, (50) coll. 1602, 2264, 3588, (55) coll. 613, (92) 4091, (95) coll. 2388. Widely distributed species, frequent in restricted areas.
- Phellinus torulosus* (Pers.) Bourdot & Galzin
P. pinea: (79) coll. 3783, (80) coll. 1914. Common and thermophilous species with a southern European distribution.

- Phlebia lilascens* (Bourdot) J. Erikss. & Hjortstam
P. nigra subsp. *laricio*: (71) lying trunk, coll. 5042. Locally frequent in some European countries, not very common in Italy.
- Phlebia radiata* Fr.
P. nigra: (45) coll. 6366; *P. pinea*: (60) coll. 4356. Widely distributed species and frequent on deciduous substrata.
- Phlebia rufa* (Pers.) M.P. Christ.
P. nigra: (26) standing tree, 5742. Rather rare species on conifers.
- Phlebiella allantospora* (Oberw.) K.H. Larss. & Hjortstam
P. nigra: (40) coll. 4739. Uncommon species, with a southern European distribution.
- Phlebiella christiansenii* (Parmasto) K.H. Larss. & Hjortstam
P. nigra: (45) coll. 6881. A rare species in Italy.
- Phlebiopsis gigantea* (Fr.) Jülich
P. halepensis: (69) coll. 6092; *P. nigra*: (74) coll. 7260; *P. pinaster*: (86) coll. 6966; *P. pinea*: (36) coll. 2157, (60) coll. 4337, 4364, 4407, (64) coll. 464, (79) stump, coll. 2032; *P. sylvestris*: (7) coll. 4629, (18) coll. 2249. Common species in coniferous forests.
- Piloderma bicolor* (Peck) Jülich
P. nigra: (38) coll. 7163. A rare species.
- Piloderma byssinum* (P. Karst.) Jülich
P. nigra: (38) lying trunk, coll. 7153. Widely distributed species, but rare in Italy.
- Poria lindbladii* (Berk.) Cooke
P. nigra: (25) lying trunk, coll. 5914, (38) coll. 7152; *P. pinaster*: (36) trunk, coll. 7648; *P. pinea*: (36) coll. 493, 7419; *P. sylvestris*: (46) coll. 6363. A frequent species in some Italian regions.
- Porostereum spadiceum* (Pers.) Hjortstam & Ryvarden
P. pinea: (33) coll. 6395. Common species on deciduous wood.
- Pseudomerulius aureus* (Fr.) Jülich
P. pinaster: (51) coll. 1746; *P. pinea*: (62) coll. 5428. Uncommon species with only few collecting localities.
- Pseudotomentella griseopergamacea* M.J. Larsen
P. nigra: (75), trunk, coll. 7928. A rare species.
- Pseudotomentella mucidula* (P. Karst.) Svr_ek
P. nigra: (44) coll. Ryvarden 22291. A rare species, but widely distributed in Europe.
- Pseudotomentella tristis* (P. Karst.) M.J. Larsen
P. halepensis: (68) 6079. Common species.
- Radulomyces confluens* (Fr.) M.P. Christ.
P. pinea: (37) col. 5936. Very common species both on coniferous and deciduous substrata.
- Radulomyces rickii* (Bres.) M.P. Christ.
P. pinea: (59) coll. 4331. Frequent species.
- Resinicium bicolor* (Alb. & Schwein.) Parmasto
P. nigra subsp. *laricio*: (71) coll. 5034; *P. sylvestris*: (14) coll. 5886. Very common species.

- Schizopora paradoxa* (Schrad.) Donk
P. nigra: (25) coll. 5896, (26) coll. 5731; *P. pinea*: (36) coll. 2147, (50) coll. 3592, (66) coll. 3415, 3480, 3491, 3518, 3121; *P. strobus*: (5) coll. 2290. A cosmopolitan species, both on deciduous and coniferous wood.
- Scytinostroma ochroleucum* (Bres. & Torrend) Donk
P. pinea: (57) coll. 1003. Very rare species with only few collecting localities.
- Scytinostromella olivaceoalba* (Bourdot & Galzin) Ginns & M.N.L. Lefebvre. *P. pinea*: (29) coll. 6477, (66) coll. 3424, coll. Ryvarden 22376. Very rare species.
- Serpula himantoides* (Fr.) P. Karst.
P. pinea: (36) coll. 7587, (65) coll. 7896, 7913. Uncommon species.
- Sistotrema confluens* Pers.
P. nigra: (45) coll. 5422; *P. radiata*: (88) coll. 8081. Sporadic in Europe, uncommon in Italy.
- Sistotrema coroniferum* (Höhn. & Litsch.) Donk
P. nigra: (25) coll. 5901. Uncommon species.
- Sistotrema diademiferum* (Bourdot & Galzin) Donk
P. pinea: (66) on cone and twigs, coll. 3067, coll. Ryvarden 22362. Frequent species in Italy.
- Sistotrema muscicola* (Pers.) S. Lundell
P. nigra: (42) coll. 7037. Rare species in Europe, sporadically distributed in Italy.
- Sistotrema octosporum* (J. Schröt. ex Höhn. & Litsch.) Hallenb.
P. pinaster: (37) coll. 6059. Rare species.
- Skeletocutis amorpha* (Fr.) Kotl. & Pouzar
P. nigra subsp. *laricio*: (85) coll. 7786; *P. heldreichii* var. *leucodermis*: (75) coll. 7264, 7284; *P. nigra*: (42) coll. 1854, 1855, 6538, 6539, (75), coll. 7264, 7284; *P. pinaster*: (36) coll. 7676, (73) coll. 7277, (86) coll. 6967; *P. pinea*: (33) on stump, 6319, (36) coll. 7676; *P. sylvestris*: (4) coll. 2397. Widely distributed species.
- Skeletocutis carneogrisea* A. David
P. sylvestris: (6) trunk, coll. 4679. Uncommon species, rare in Italy.
- Skeletocutis kuehneri* A. David
P. nigra: (42) trunk, coll. 7540, 7553, 7729, 7830. Uncommon species, with a restricted locally distribution.
- Skeletocutis lenis* (P. Karst.) Niemelä
P. nigra: (40) coll. 4747, (48) coll. 6728; *P. pinea*: (33) coll. 6676, (57) coll. 1009, 1010. Common and widely distributed species, both on deciduous and coniferous substrata.
- Skeletocutis lilacina* A. David & Jean Keller
P. pinaster: (90) coll. 6906. A very rare species in Europe with this only one collecting area in Italy.
- Skeletocutis percandida* (Malençon & Bertault) Jean Keller
P. pinea: (57) coll. 1015, (60) coll. 4389, (66) coll. 7909, (79) coll. 1999, (81) coll. 7198, (80) coll. 1902, 1904, 1905, 1907, 1918, (82)

- coll. 2001. Thermophilous and Mediterranean species.
- Skeletocutis* sp.
P. nigra: (45) coll. 6416.
- Skeletocutis subincarnata* (Peck) Jean Keller
P. pinea: (66) coll. 3410, 3425, 3461; *P. radiata*: (87) lying trunk, coll. 6653. Widely distributed in Europe, not very frequent in Italy.
- Skeletocutis vulgaris* (Fr.) Niemela & Y.C. Dai
P. pinea: (56) on lying trunk, coll. 7637; *P. radiata*: (88) coll. 7717; *P. sylvestris*: (42) coll. 7745. Its distribution is not completely clear, due to the confusion with *Skeletocutis lenis*, but it seems to be a more southern species.
- Steccherinum fimbriatum* (Pers.) J. Erikss.
P. nigra: (42) coll. 6342. Common species, especially on deciduous wood.
- Stereum sanguinolentum*: (Alb. & Schwein.) Fr.
P. nigra subsp. *laricio*: (70) coll. 4949; *P. nigra*: (42) coll. 64, (44) coll. 2611; *P. pinea*: (36) coll. 615, 643, (80) 1911; *P. sylvestris*: (8) coll. 5695. Common species on coniferous substrata, very often associated with *Trichaptum abietinum*.
- Thelephora terrestris* Ehrh.
P. pinea: (79) coll. 2105. Common species.
- Tomentella atroarenicolor* Nikol.
P. pinea: (33) inside an holed stump, coll. 6782, 6783. Rare species with only one collecting area in Italy.
- Tomentella lilacinogrisea* Wakef.
P. nigra subsp. *laricio*: (70) coll. 4938. Rather a common species, with a worldwide distribution, but rare in Italy.
- Tomentella punicea* (Alb. & Schwein.) J. Schröt.
P. pinea: (79) on burnt stump, coll. 2699. Widely distributed, it seems to be a rare species in Italy.
- Tomentellina fibrosa* (Berk. & M.A. Curtis) M.J. Larsen
P. pinaster: (90) stump, coll. 6971. Common and widely distributed species with only one collecting locality in Italy.
- Tomentellopsis echinospora* (Ellis) Hjortstam
P. halepensis: (68) coll. 6103; *P. nigra*: (44) coll. 2616; *P. pinea*: (66) coll. 3126. Common species.
- Trametes ochracea* (Pers.) Gilb. & Ryvarden
P. pinea: (57) coll. 2370. Common species in Europe, frequent in Italy.
- Trametes versicolor* (L.) Lloyd
P. pinea: (66) coll. 3484. Cosmopolitan and very common species on deciduous wood.
- Trechispora alnicola* (Bourdot & Galzin) Liberta
P. pinea: (66) coll. 3400. Uncommon species with a southern European distribution, rare in Italy.
- Trechispora clancularis* (Park.-Rhodes) K.H. Larss.
P. pinea: (36) on trunks, pine-needles, 7346, 7424, 7429, 7579, 7581,

- 7590, 7642, 7678. A very rare species recorded from few European countries, in addition to Brasil and Tanzania.
- Trechispora cohaerens* (Schwein.) Jülich & Stalpers
P. pinea: (36) brunch, coll. 7812, (37) coll. 6456, (57) coll. 39.
 Common species, less frequent on coniferous substrata.
- Trechispora farinacea* (Pers.) Liberta
P. nigra: (25) coll. 5893, (26) lying trunk, coll. 5741, (38) coll. 7156, (42) coll. 1852; *P. pinea*: (36) trunks lying on the ground, coll. 22, 1355, 1364, 2159, 5597, 6455, (37) coll. 5946, (49) brunch, coll. 6261, (57) coll. 986. Very common species, both on coniferous and deciduous substrata.
- **Trechispora kavinioides* B. de Vries
P. sylvestris: (12) coll. 7658. It is the first record, collected on very old lying trunk, with a very characteristic hydroid basidiomata, monomitic hyphal system, and smooth basidiospores.
- Trechispora mollusca* (Pers.) Liberta
P. nigra subsp. *laricio*: (71) coll. 5039. Widespread, but not very common species.
- Trichaptum abietinum* (Dicks.) Ryvar den
P. halepensis: (69) stump, coll. 6093; *P. nigra*: (42) on standing trunks, coll. 5993; *P. pinea*: (36) coll. 4729. Widely distributed species.
- Trichaptum fuscoviolaceum* (Ehrenb.) Ryvar den
P. nigra: (5) coll. 2413, (38) tronco, coll. 7165; *P. pinaster*: (47) coll. 6271, (86) coll. 6976; *P. pinea*: (3) coll. 6558, 6875, (28) coll. 1073, (37) coll. 5944, (36) coll. 18, 262, 542, 6441, 7418, (53) coll. 961, 971, (93) coll. 7306; *P. sylvestris*: (42) coll. 62, 1876. Common and widely distributed species, very often on old, lying trunks.
- Tubulicrinis angustus* (D.P. Rogers & Weresub) Donk
P. nigra: (44) coll. 6036. Rare species in Italy.
- Tubulicrinis borealis* J. Erikss.
P. nigra: (44) coll. Ryvar den 22334. Uncommon species in Italy.
- Tubulicrinis calotrix* (Pat.) Donk
P. pinea: (57) coll. 1012, (59) coll. 4408. Not a frequent species, collected on *Larix* and *Picea* too.
- Tubulicrinis confusus* K.H. Larss. & Hjortstam
P. nigra subsp. *laricio*: (70) coll. 4957. Rare species in Italy.
- Tubulicrinis gracillimus* (Ellis & Everh. ex D.P. Rogers & H.S. Jacks.) G. Cunn.
P. nigra: (40) coll. 4735. Infrequent species in Italy.
- Tubulicrinis medius* (Bourdot & Galzin) Oberw
P. laricio: (71) coll. 3996; *P. mugo*: (15) lying trunk, coll. 6770. Rather common species.
- Tubulicrinis subulatus* (Bourdot & Galzin) Donk
P. nigra subsp. *laricio*: (71) coll. 4982; *P. nigra*: (40) coll. 4738, (44) coll. Ryvar den 22288; *P. sylvestris*: (14) coll. 5876. Rather common species, both on deciduous and coniferous wood.

- Tulasnella violea* (Quél.) Bourdot & Galzin
P. halepensis: (69) stump, coll. 6091. Common species.
- Tyromyces fissilis* (Berk. & M.A. Curtis) Donk
P. pinea: (36) coll. 5158. Not very common, sporadically collected, more frequently on deciduous wood.
- Vararia investiens* (Schwein.) P. Karst.
P. pinea: (79) coll. 4026. Uncommon species.
- Vararia ochroleuca* (Bourdot & Galzin) Donk
P. nigra: (25) lying trunk, coll. 5897, (38) coll. 7170; (42) coll. 6350;
P. pinea: (36) coll. 7420. Widely distributed and frequently collected in some restricted areas.
- Vesiculomyces citrinus* (Pers.) E. Hagstr.
P. nigra subsp. *laricio*: (71) lying trunk, coll. 5004; *Pinus nigra*: (40) coll. 4745; *P. pinea*: (36) coll. 453, 483, 485, 1134, 1146, 1237, (60) coll. 4357, 4383. Common species, growing both on standing and lying trunks. In some forests it is the more common wood-inhabiting species.
- Xenasma tulasnelloideum* (Höhn. & Litsch.) Donk
P. pinea: (66) coll. 3161. A widely distributed species.
- Xenasmatella vaga* (Fr.) Stalpers
P. nigra: (25) brunch, coll. 5904, (42) coll. 6341. Very common species, growing on deciduous and coniferous substrata.

Conclusions

Comparing with other investigated substrata, *Pinus*, as substratum for wood-inhabiting fungi, presents a very high fungal diversity in Italy (203 species), even more than *Abies alba* (190 species) (Bernicchia et al. 2007). As regards other conifers, Bernicchia (2000) on *Juniperus* spp. recorded 105 species. The number of species isolated from broadleaves is still lower: 126 species on *Castanea sativa* (Mayrhofer et al. 2001), and 52 species on *Arbutus unedo* (Pérez Gorjón et al. 2006). This high diversity is partly due to the great range of distribution of pine forests, both in the coastal and on mountainous pinery forests. At least one recently described species, *Antrodia citrina*, has been recorded only on *Pinus pinea*, till now.

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