

## Aphyllophoraceous wood-inhabiting fungi on *Fagus sylvatica* in Italy

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**Abstract** 166 species representing 84 genera of aphyllophoraceous fungi growing on *Fagus sylvatica* in Italy are listed. *Steccherinum robustius* is reported as new to Italy, while many other species are considered rare in Italy, e.g. *Antrodiella ichnusana*, *Crustomyces subabruptus* and *Dentipellis fragilis*. The complete annotated specimen list is available on <http://www.mycotaxon.com/resources/weblast.html>.

**Key words** lignicolous fungi, diversity, beech forests

### Introduction

In parallel with previous reports on Italian lignicolous fungi (Bernicchia 2000, Mayrhofer et al. 2001, Pérez Gorjón et al. 2006, Bernicchia et al. 2007a, b) a list of aphyllophoraceous fungi growing on *Fagus sylvatica* L. (European beech) in Italy is here reported. *F. sylvatica* is widely distributed in western Europe, from Southern Scandinavia (below parallel 60° with the exception of two northern and separated localities of Norway in the surroundings of Oslo and Bergen) to northern Sicily and Greece (Parnaso). Towards the western part of Europe, *F. sylvatica* is present at 5° of longitude W in Cornovaglia, exceeding such limit in Spain (Galizia Mounts). Towards east *F. sylvatica* reaches Moldavia and sometimes it exceeds Dneestr river. It is also present in eastern Crimea (Figure 1). In Italy *F. sylvatica* belongs to the mountain belt, corresponding to the subatlantic belt. The European beech is dominant but mixed with *Abies alba* Mill., *Taxus baccata* L., *Acer pseudoplatanus* L., *Fraxinus excelsior* L., *Ulmus glabra* Huds., *Sorbus aucuparia* L., *Populus tremula* L., etc. In Alp valleys *F. sylvatica* is mixed with *Picea*

*abies* (L.) H. Karst., *Pinus sylvestris* L. and *Larix decidua* Mill. Along the dorsal of Italian Apennine, in the mountainous forest of broad-leaved trees, *F. sylvatica* is the more important forestry species (Tutin 1964, VV.AA. 2005).

In Italy the optimal distribution is from 600 to 1300 m on Alps and between 1000 to 2200 m in the remain parts of the territory including Sicily. According to climatic conditions *F. sylvatica* woods of Gargano (Apulia), Latium and Tuscany are located at 400-500 m. In Sicily *F. sylvatica* woods are restricted in a vegetational belt ranging from 1200 to 2200 m and located on the major mountainous systems (Madonie Mts., Nebrodi Mts., Peloritani Mts. and Etna volcano).

### Materials and methods

During the last 25 years, fungi have been collected in the most representative regions of Italy where *F. sylvatica* occurs. 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), Kõljalg (1995), Ryvarden & Gilbertson (1993, 1994) and Bernicchia (2005). All the specimens are kept in Herbarium HUBO, except for the specimens PAL/Mic, deposited in the Herbarium Mediterraneum (PAL) (these last collections have a provisional numbers). 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) Piemonte, Torino, Cantalupa; (2) Piemonte, Torino, Mirafiori; (3) Piemonte, Verbania, Macugnaga; (4) Lombardia, Pavia, Garzaia di Roggio; (5) Lombardia, Pavia, Nazzano; (6) Lombardia, Milano, Val di Canzio; (7) Lombardia, Bergamo, Val Serina; (8) Trentino Alto Adige, Bolzano, Val d'Ultimo, Parco dello Stelvio; (9) Trentino Alto Adige, Bolzano, Castelvecchio; (10) Trentino Alto Adige, Bolzano, Lauregno; (11) Trentino Alto Adige, Bolzano, Sinablana; (12) Trentino Alto Adige, Bolzano, Favogna di Sopra; (13) Trentino Alto Adige, Trento, Parco Brenta-Adamello, Pradel; (14) Trentino Alto Adige, Trento, Bellamonte; (15) Trentino Alto Adige, Trento, Passo Rolle; (16) Trentino Alto Adige, Trento, Caldonazzo; (17) Trentino Alto Adige, Trento, Sella Valsugana; (18) Veneto, Belluno, Croce d'Aune; (19) Veneto, Belluno, Igne; (20) Veneto, Belluno, Mellere; (21) Veneto, Belluno, Podenzoi; (22) Veneto, Belluno, Torrente Limana; (23) Veneto, Belluno, Col Perer; (24) Veneto, Belluno, Boschi Lentiai; (25) Veneto, Belluno, Bosco del Cansiglio; (26) Veneto, Treviso, Bosco del Cansiglio; (27) Friuli-Venezia Giulia, Pordenone, Bosco del Cansiglio; (28) Friuli-Venezia Giulia, Udine, Treignano; (29) Friuli-Venezia Giulia, Pordenone, Maniago; (30) Emilia-Romagna, Reggio Emilia, Appennino Reggiano; (31) Emilia-Romagna, Reggio Emilia, Febbio; (32) Emilia Romagna, Bologna, Parco Villa Ghigi; (33) Emilia Romagna, Bologna,

Val Serena; (34) Emilia Romagna, Bologna, Monte Cavallo; (35) Emilia Romagna, Bologna, Monte Piella; (36) Emilia Romagna, Bologna, Parco Corno alle Scale; (37) Emilia-Romagna, Forli-Cesena, Ris. di Badia Prataglia; (38) Emilia-Romagna, Forli-Cesena, Ris. di Campigna; (39) Emilia-Romagna, Forli-Cesena, Ris. di Sasso Fratino; (40) Emilia-Romagna, Forli-Cesena, Ronco del Cianco; (41) Toscana, Arezzo, La Verna; (42) Toscana, Arezzo, Passo Sambuca; (43) Toscana, Arezzo, Ris. Di Camaldoli; (44) Toscana, Forli-Cesena, Ris. di Campigna; (45) Marche, Pesaro-Urbino, Monte Boagine; (46) Toscana, Grosseto, Monte Amiata; (47) Toscana, Siena, Monte Amiata; (48) Abruzzo, L'Aquila, Parco Regionale dei Monti Sibillini - Monti della Marsia; (49) Abruzzo, L'Aquila, Parco Nazionale d'Abruzzo, La Camosciara; (50) Basilicata, Potenza, Riserva Regionale Lago Piccolo di Monticchio; (51) Basilicata, Potenza, Parco Nazionale del Pollino, Passo del Dragone; (52) Calabria, Cosenza, Tempore Morello; (53) Calabria, Cosenza, Taverna; (54) Calabria, Cosenza, Serra San Bruno; (55) Calabria, Cosenza, Zagarise; (56) Calabria, Reggio Calabria, Parco Naturale Regionale delle Serre - Bosco Archiforo; (57) Calabria, Reggio Calabria, Faggetea Tripitò; (58) Calabria, Reggio Calabria, Calabria National Park - Leccetea Tripitò; (59) Calabria, Reggio Calabria, Calabria National Park, Gambarie; (60) Calabria, Reggio Calabria, Pineta dell'Abbruschiata, Polistena; (61) Calabria, Reggio Calabria, Cicciarella; (62) Calabria, Reggio Calabria, Giffone; (63) Sicilia, Palermo, Parco delle Madonie; (64) Sicilia, Messina, Parco dei Nebrodi; (65) Sicilia, Messina, Riserva Naturale Bosco di Malabotta; (66) Sicilia, Messina, Floresta; (67) Sicilia, Catania, Parco dell'Etna.



**Figure 1.** Map of approximate distribution of *Fagus sylvatica* in Europe. AFE 2007

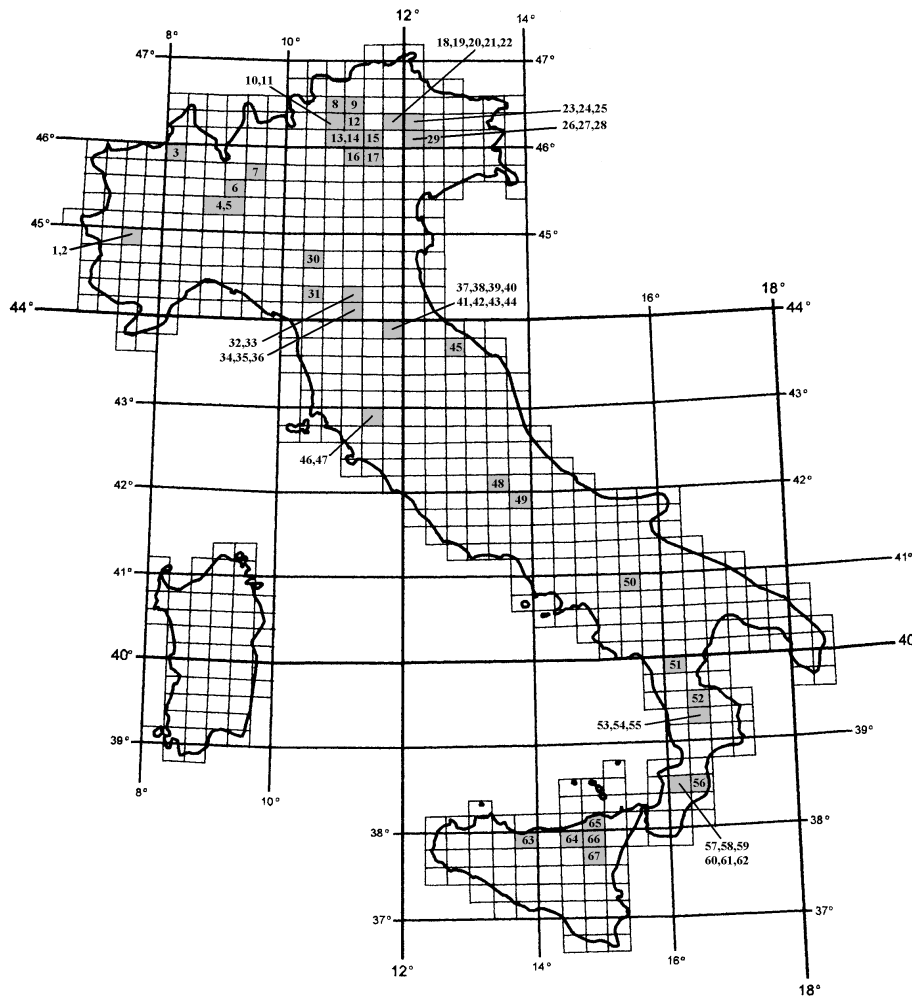


Figure 2. Map of Italy with the collecting sites. Scale 1:50000.

## Results

166 species of 84 different genera of aphylophoraceous wood-inhabiting fungi were collected during the field investigation. The species are listed in alphabetic order; the number of the locality is given in brackets and it is followed by herbaria number. Additional notes on distribution or frequency are given for all the species. *Steccherinum robustius* (J. Erikss. & S. Lundell) J. Erikss. is new to Italy. Rare or infrequent species include *Antrodiella fissiliformis* (Pilát) Gilb. & Ryvar den, *A. ichnusana* Bernicchia, Renvall & Arras, *Ceriporia excelsa* (S. Lundell) Parmasto,

*Ceriporiopsis pannocincta* (Romell) Gilb. & Ryvarden, *Crustomyces subabruptus* (Bourdot & Galzin) Jülich, *Datronia stereoides* (Fr.) Ryvarden, *Dentipellis fragilis* (Pers.) Donk, *Stereum insignitum* Quél., *Tyromyces wynnei* (Berk. & Broome) Donk and *Vuilleminia coryli* Boidin, Lanq. & Gilles.

Some species are more common on coniferous substrata than on deciduous wood as *Dacryobolus sudans* (Alb. & Schwein.) Fr., *Hyphodontia breviseta* (P. Karst.) J. Erikss., *Oligoporus caesius* (Schrad.) Gilb. & Ryvarden, *Phaeolus schweinitzii* (Fr.) Pat., *Resinicium bicolor* (Alb. & Schwein.) Parmasto, etc.

While many of these species can grow on other substrata, some of them typically fruit on *Fagus*, such as *Antrodiella fissiliformis*. & Ryvarden, *Datronia stereoides*, *Dentipellis fragilis*, *Hericium cirrhatum* (Pers.) Nikol., *Inonotus hastifer* Pouzar, *I. nodulosus* (Fr.) P. Karst., *Ischnoderma resinoseum* (Schrad.) P. Karst., *Meripilus giganteus* Schrad., *Plicaturopsis crispa* (Pers.) D.A. Reid, *Phanerochaete filamentosa* (Berk. & M.A. Curtis) Burds., *Polyporus varius* (Pers.) Fr., *Trametes gibbosa* (Pers.) Fr. and *Tyromyces wynnei*. The last mainly grows on litter, probably connected with roots.

### Checklist of collected Aphyllophorales

*Amylostereum areolatum* (Chaillet) Boidin

(19) coll. 5631. Widespread, but with a scattered distribution in Central Europe, recorded on *Picea* in Italy

*Antrodia albida* (Fr.) Donk

(39) coll. 6947. Sporadically distributed species, frequent in Central and Southern Europe on different broad-leaved trees.

*Antrodiella fissiliformis* (Pilát) Gilb. & Ryvarden

(39) coll. 5987, 6055, 6244, 6552, 6816, 6809, 6928, 7636; (41) coll. 8098. Rare species with scattered records in Europe and Italy, almost only on *Fagus*.

*Antrodiella ichnusana* Bernicchia, Renvall & Arras

(36) coll. 8104. This is the first report on *Fagus sylvatica*, until now it has only been collected on *Populus alba* and *Alnus glutinosa* from Emilia-Romagna and the type locality in Sardinia. For a detailed description of this recent species see Bernicchia 2005.

*Antrodiella pallescens* (Pilá) Niemelä & Miettinen

(27) coll. 4723; (33) coll. 7643; (39) coll. 6056. A widely distributed species, not very frequent in Italy.

*Antrodiella romelli* (Donk) Niemelä

(37) coll. 6511. Widely distributed species, frequent in Central Europe and sporadic in Italy.

*Athelia acrospora* Jülich

(39) coll. 7181; (49) coll. 5. A common species on deciduous wood.

*Athelia binucleospora* J. Erikss. & Ryvarden

- (51) coll. LR 22507. A rare species with a spoadic presence in Italy.  
*Athelia epiphylla* Pers.  
 (51) coll. 3313. A widespread and common species.
- Athelia fibulata* M.P. Christ.  
 (26) coll. 2844, 2863. An infrequent species in Italy.
- Athelopsis glaucina* (Bourdot & Galzin) Oberw. ex Parmasto  
 (27) coll. 4420; (34) coll. 2980; (39) coll. 5497, 5521; (57) coll. 5015.  
 A species with a scattered distribution frequently collected in Italy.
- Basidioradulum radula* (Fr.) Nobles  
 (27) coll. 4419; (36) coll. 8105. A widely distributed species, more common on deciduous wood, collected on several substrata in Italy.
- Bjerkandera adusta* (Willd.) P. Karst.  
 (19) coll. 5619; (27) coll. 4414; (43) coll. 5887; (57) coll. 4900; (60) coll. 5017; (63) PAL/Mic coll. 25, 29; (64) PAL/Mic 19, 22. A common and cosmopolitan species.
- Bjerkandera fumosa* (Pers.) P. Karst.  
 (4) coll. 7510. A widely distributed species less common than *B. adusta* and with a more Southern distribution.
- Botryobasidium candicans* J. Erikss.  
 (39) coll. 5513. A infrequent species in Italy, collected on decayed wood of trees and shrubs.
- Botryobasidium medium* J. Erikss.  
 (49) coll. 3348. An infrequent species.
- Botryobasidium pruinaum* (Bres.) J. Erikss.  
 (9) coll. 5643. A infrequent species in Italy once collected on *Robinia pseudoacacia*.
- Botryobasidium vagum* (Berk. & M.A. Curtis) D.P. Rogers  
 (51) coll. 5643. A not very frequent species in Italy.
- Brevicellicium olivascens* (Bres.) K.H. Larss. & Hjortstam  
 (51) coll. 3309. A common species collected on several substrata in Italy.
- Byssocorticium atrovirens* (Fr.) Bondartsev & Singer ex Singer  
 (39) coll. 7546. A species with a scattered distribution in Italy.
- Ceraceomyces serpens* (Tode) Ginns  
 (37) coll. 7768. An infrequent species in Italy.
- Ceriporia excelsa* (S. Lundell) Parmasto  
 (30) coll. 4132; (39) coll. 6774, 6933; (41) coll. 8096. It seems to be a rare species but widely distributed, always recorded on *Fagus*.
- Ceriporia purpurea* (Fr.) Donk  
 (39) coll. 6124; (49) coll. 3396. Widely distributed species in Europe, frequent in Italy specially on soaked substrata.
- Ceriporia reticulata* (Hoffm.) Doma\_ski  
 (39) coll. 5485. Common species in Europe, sporadically distributed in Italy.
- Ceriporia viridans* (Berk. & Broome) Donk  
 (39) coll. 6243, 6934; (41) coll. 7139. Widely distributed species, on many different broadleaves.

- Ceriporiopsis gilvescens* (Bres.) Doma\_ski  
(37) coll. 7726, 7873; (39) coll. 6937, 7810. Sporadically distributed species, sometimes common locally.
- Ceriporiopsis mucida* (Pers.) Gilb. & Ryvar den  
(36) coll. 6869; (49) coll. LR 22654. Common and widely distributed species.
- Ceriporiopsis pannocincta* (Romell) Gilb. & Ryvar den  
(39) coll. 6784, 6931, 7638. A species with a diffuse distribution in Europe, but rare in Italy.
- Cerreña unicolor* (Bull.) Murrill  
(48) coll. 469. Common species on different deciduous wood.
- Chondrostereum purpureum* (Pers.) Pouzar  
(64) PAL/Mic coll. 60, 70, 71, 72. Widely distributed species.
- Coniophora olivacea* (Fr.) P. Karst  
(32) coll. 2804. Both on deciduous and coniferous wood.
- Coniophora puteana* (Schumach.) P. Karst  
(44) coll. 6217. Very common species, recorded on several substrata.
- Corioloopsis trogii* (Berk.) Doma\_ski  
(1) coll. 2832. Cosmopolitan species, more common in Central and Southern Europe, especially on *Populus*.
- Corticium meridioroseum* Boidin & Lanq.  
(13) coll. 5585. Infrequent species.
- Cristinia helvetica* (Pers.) Parmasto  
(39) coll. 6042. Widespread species, growing on various substrata.
- Crustomyces subabruptus* (Bourdot & Galzin) Jülich  
(39) coll. 6938. A rare species, circumscribed to a small area, and recorded only once from Italy; it seems to be one of indicator for old forest with little anthropic impact.
- Cylindrobasidium evolvens* (Fr.) Jülich  
(32) coll. 2732; (36) coll. 189; (38) coll. 6324; (39) coll. 5557, 7612.  
Common species in all forested areas.
- Dacryobolus sudans* (Alb. & Schwein.) Fr.  
(26) coll. 4435. Widely distributed species, but on coniferous wood.
- Daedaleopsis confragosa* (Bolton) J. Schröt.  
(6) coll. 1815, 1818; (12) coll. 1753, 4133. Very common species, and macroscopically very variable.
- Daedaleopsis tricolor* (Bull.) Bondartsev & Singer  
(28) coll. 1479. Infrequent species in Italy. It has been emphasized as a Southern ecotype of *D. confragosa* (Ryvarden & Gilbertson 1993) also supported by molecular data (Ko & Jung 1999).
- Datronia mollis* (Sommerf.) Donk  
(8) coll. 4827; (17) coll. 4190; (27) coll. 4394; (36) coll. 846; (39) coll. 5079, 5372, 6946, 7123, 7635; (41) coll. 8095. Widely distributed species in Europe, more common in Northern Italy, very often on *Fagus*.
- Datronia stereoides* (Fr.) Ryvarden



- (13) coll. 5578, 7884; (36) coll. 200. Infrequent species, very rare in Italy with only two collecting areas, but always on *Fagus*.
- Dentipellis fragilis* (Pers.) Donk  
(39) coll. 6484, 7543, 7614, 7631, 7664; (41) coll. 8099. Very rare species in Italy, restricted to two areas of Casentinesi Forests National Park, very often on *Fagus*.
- Dichomitus campestris* (Quél.) Domański & Orlicz  
(13) coll. 4162. Widely distributed species.
- Fomes fomentarius* (L.) J.J. Kickx  
(39) coll. 5370; (49) coll. 5317; (51) coll. 3283; (52) coll. 1420. Cosmopolitan species, common and widely distributed.
- Ganoderma applanatum* (Pers.) Pat.  
(39) coll. 5197; (53) coll. 1443; (57) coll. 4976. A widely distributed species, common on different substrata.
- Ganoderma adspersum* (Schulzer) Donk  
(63) PAL/Mic 74. With a wide distribution in Italy, but more frequent on other substrata.
- Ganoderma lucidum* (Curtis) P. Karst.  
(56) coll. 2480. Common species.
- Gloeocystidiellum lactescens* (Berk.) Boidin  
(51) coll. 3306. Common species, recorded on several substrata.
- Gloeocystidiellum luridum* (Bres.) Boidin  
(17) coll. 4200, 4163; (34) coll. 2966; (36) coll. 2480; (57) coll. 4967. Important wood-decaying species, common in Italy on deciduous substrata.
- Gloeocystidiellum porosum* (Berk. & M.A. Curtis) Donk  
(12) coll. 5710; (13) coll. 2503; (27) coll. 4358, 4541; (31) coll. 6735; (36) coll. 184; (37) coll. 4687; (39) coll. 5522, 680; (51) coll. 3307; (56) coll. 4901; (63) PAL/Mic 75. Very common species in Italy.
- Granulobasidium vellereum* (Ellis & Cragin) Jülich  
(39) coll. 7183. Frequent species in Italy, common on *Ulmus*.
- Grifola frondosa* (Dicks.) Gray  
(39) coll. 6948. Infrequent species in Europe, recorded on *Castanea* and *Quercus* too.
- Hericium cirrhatum* (Pers.) Nikol.  
(57) coll. 5060; (62) coll. 4926. Eastern species in Europe and rare in Italy, recorded on *Fagus*.
- Hericium coralloides* (Scop.) Pers.  
(39) coll. 6289. Infrequent species in Italy, more common on *Quercus*.
- Hyphoderma medioburiense* (Burt) Donk  
(8) coll. 4862. A species with a scattered distribution, growing on several different substrata.
- Hyphoderma mutatum* (Peck) Donk  
(36) coll. 188. Rare, but locally it may be frequent.
- Hyphoderma praetermissum* (P. Karst.) J. Erikss. & Å. Strid  
(49) coll. 3381. Very common and widely distributed.

- Hyphoderma puberum* (Fr.) Wallr.  
(51) coll. 3291. Common on decorticated deciduous wood.
- Hyphoderma setigerum* (Fr.) Donk  
(7) coll. 4319; (39) coll. 6522, 7182; (66) PAL/Mic 78. Common species.
- Hyphoderma transiens* (Bres.) Parmasto  
(7) coll. 4324. Widespread species in Mediterranean area and frequent in Italy on *Quercus*.
- Hyphodermella corrugata* (Fr.) J. Erikss. & Ryvarde  
(51) coll. 3342. Common species in Central and Southern Europe.
- Hyphodontia aspera* (Fr.) J. Erikss.  
(36) coll. 839. Common species in all parts of Europe and very frequent collected in Italy on several substrata.
- Hyphodontia barba-jovis* (Bull.) J. Erikss.  
(27) coll. 4510, 4328. Not frequent in Italy.
- Hyphodontia breviseta* (P. Karst.) J. Erikss.  
(46) coll. 5134. Very frequent species in coniferous forests, less frequently recorded on deciduous substrata.
- Hyphodontia crustosa* (Pers.) J. Erikss.  
(46) coll. 6429; (57) coll. 5014. Widely distributed species.
- Hyphodontia quercina* (Pers.) J. Erikss.  
(36) coll. 838. A frequent species in European *Quercus* areas, and present on several decorticated deciduous trees.
- Hyphodontia sambuci* (Pers.) J. Erikss.  
(32) coll. 2134; (36) coll. 843. Very common species, growing on several substrata and few times on coniferous wood.
- Hyphodontia subalutacea* (P. Karst.) J. Erikss.  
(47) coll. 7537. Common species.
- Hypochnicium erikssonii* Hallenb. & Hjortstam  
(35) coll. 2945; (37) coll. 6872; (57) coll. 4970. Frequent on several substrata.
- Inonotus cuticularis* (Bull.) P. Karst.  
(39) coll. 6943; (61) coll. 4966. A widespread species in temperate Europa, locally frequent in Italy.
- Inonotus hastifer* Pouzar  
(13) coll. 286; (23) coll. 5635; (26) coll. 4455; (27) coll. 4463; (39) coll. 5169; (41) coll. 8089; (51) coll. 3339. Common species in all Central European beech forests.
- Inonotus nodulosus* (Fr.) P. Karst.  
(38) coll. 6041; (39) coll. 1756, 5542, 6376; (41) coll. 7141; (63) coll. PAL/Mic 80, 82, 87; (64) PAL/Mic 79. infrequent species.
- Irpex oreophilus* (Lindsey & Gilb.) Niemelä  
(62) coll. 4941. Rare species in Europe, only known from two localities in Italy.
- Ischnoderma resinosum* (Schrad.) P. Karst.  
(37) coll. 4126; (39) coll. 6791, 7611. Widely distributed species in Central and south Europe, recorded only on *Fagus* in Italy.,

- Junghuhnia nitida* (Pers.) Ryvarden  
(17) coll. 4305; (36) coll. 2485; (37) coll. 7517; (39) coll. 5347, 5378, 6372, 7641; (46) coll. 5183. Cosmopolitan species, widely distributed in all deciduous forests.
- Kavinia himantia* (Schwein.) J. Erikss.  
(37) coll. 7799; (39) coll. 7640, 7770, 7790; (63) PAL/Mic coll. 84. Recorded both from deciduous and coniferous wood, especially from *Juniperus* spp.
- Laxitextum bicolor* (Pers.) Lentz  
(9) coll. 5703; (26) coll. 4431, 4811. Diffuse on different deciduous wood.
- Lenzites betulina* (L.) Fr.  
(39) coll. 6926. Very common and cosmopolitan species.
- Meripilus giganteus* (Pers.) P. Karst.  
(2) coll. 3795; (37) coll. 7130, 7508; (39) coll. 7891; (40) coll. 7797; (56) coll. 4960; (63) PAL/Mic coll. 68, 69; (64) PAL/Mic coll. 88, 89. Not very common in Italy, but on different deciduous wood.
- Meruliopsis corium* (Pers.) Ginns  
(32) coll. 3544; (39) coll. 6385; (50) coll. 727; (57) coll. 5013; (63) PAL/Mic coll. 56, 58; (64) PAL/Mic coll. 40, 42, 43; (67) PAL/Mic coll. 51, 52. Common and widespread species.
- Meruliopsis hirtella* (Burt) Ginns  
(5) coll. 7927. Frequently recorded on multiple substrata.
- Merulius tremellosus* Schrad.  
(39) coll. 6309, 6956; (60) coll. 5041. Common species, both on coniferous and deciduous wood.
- Mycoacia fuscoatra* (Fr.) Donk  
(46) coll. 5185. Frequent species.
- Mycoacia uda* (Fr.) Donk  
(62) coll. 4952. Common species on deciduous wood.
- Oligoporus caesius* (Schrad.) Gilb. & Ryvarden  
(56) coll. 4953. Rather common and widely distributed in Italy, but more frequent on coniferous wood.
- Oligoporus subcaesius* (A. David) Ryvarden & Gilb.  
(36) coll. 183; (39) coll. 7184; (49) coll. 3389. Common species.
- Oligoporus tephroleucus* (Fr.) Gilb. & Ryvarden  
(37) coll. 7872; (39) coll. 6935; (46) coll. 5178; (57) coll. 4977; (60) coll. 5043; (66) coll. 7931. Common species on deciduous wood, but sometimes recorded from *Abies* and *Pinus* spp.
- Oxyporus populinus* (Schumach.) Donk  
(13) coll. 5179; (37) coll. 7905. With a scanty distribution in Italy
- Peniophora aurantiaca* (Bres.) Bourdot & Galzin  
(8) coll. 45. Common in Central and south Europe.
- Peniophora cinerea* (Pers.) Cooke  
(26) coll. 4343, 4449; (37) coll. 5526; (39) coll. 5562; (41) coll. 8093; (49) coll. 1, 8, 44. Widespread on deciduous substrata.
- Peniophora incarnata* (Pers.) P. Karst.

- (13) coll. 5584; (27) coll. 2812; (36) coll. 840; (38) coll. 6297; (39) 6778; (47) coll. 7534; (51) coll. 3289. Frequently recorded on deciduous wood.
- Peniophora lycii* (Pers.) Höhn & Litsch.  
(39) coll. 5556, 6519; (51) coll. 3330. Very common species, growing on different deciduous substrata.
- Peniophora polygonia* (Pers.) Bourdot & Galzin  
(13) coll. 2491. Infrequent species.
- Peniophora quercina* (Pers.) Cooke  
(63) PAL/Mic coll. 94. Widespread and common species.
- Phaeolus schweinitzii* (Fr.) Pat.  
(56) coll. 1432, 1434. A cosmopolitan and common species on conifers, more rare on hardwoods.
- Phanerochaete calotricha* (P. Karst.) J. Erikss. & Ryvarde  
(39) coll. 7639. Rare species, recorded on deciduous substrata in Italy.
- Phanerochaete filamentosa* (Berk. & M.A. Curtis) Burds.  
(9) coll. 5637, 5825; (26) coll. 5539; (27) coll. 4807; (36) coll. 6411. Widespread species but not frequent in Italy, exclusively recorded on *Fagus*.
- Phanerochaete laevis* (Fr.) J. Erikss. & Ryvarde  
(13) coll. 5439; (27) coll. 4481; (36) coll. 6107; (39) coll. 6795; (41) coll. 7138, 8097. Frequent both on coniferous and deciduous substrata.
- Phanerochaete sanguinea* (Sw.) Pouzar  
(41) coll. 8103. Common and widely distributed species.
- Phanerochaete sordida* (P. Karst.) J. Erikss. & Ryvarde  
(12) coll. 5640; (27) coll. 4329, 4494; (39) coll. 6785; (55) coll. 1430. Common and widely distributed on many different substrata.
- Phanerochaete tuberculata* (P. Karst.) Parmasto  
(13) coll. 5600, (64) PAL/Mic coll. 95, 97. Common species.
- Phanerochaete velutina* (D.C.) Parmasto  
(35) coll. 2971. Frequent on deciduous substrata.
- Phellinus ferruginosus* (Schrad.) Pat.  
(39) coll. 5488, 5860, 6920. Rather frequent in Central and Southern Europe.
- Phlebia livida* (Pers.) Bres.  
(39) coll. 5928, 7772. Frequent species on different substrata.
- Phlebia rufa* (Pers.) M.P. Christ.  
(22) coll. 5626; (48) coll. 462. Commonly recorded on deciduous substrata.
- Phlebiopsis gigantea* (Fr.) Jülich  
(35) coll. 2957. Widespread and common species on coniferous wood.
- Phlebiopsis roumeguerei* (Bres.) Jülich & Stalpers  
(37) coll. 5558; (49) coll. 3365; (50) coll. 94. Quite a common species in Mediterranean area.

- Physisporinus vitreus* (Pers.) P. Karst.  
(39) coll. 7633. Widely distributed species in Europe, both on coniferous and deciduous wood.
- Piloderma lanatum* (Jülich) J. Erikss. & Hjortstam  
(51) coll. 3320. Very rare species in Italy.
- Plicaturopsis crispa* (Pers.) D.A. Reid  
(16) coll. 4311; (25) coll. 2751; (36) coll. 6106, 6567. Frequent species in beech forests.
- Podoscypha multizonata* (Berk. & Broome) Pat  
(36) coll. 6900. A rare species in Italy, recorded on *Quercus* too.
- Polyporus alveolaris* (D.C) Bondartsev & Singer  
(29) coll. 2823; (63) PAL/Mic coll. 98. Not very common species in Italy, however locally it can be frequent.
- Polyporus arcularius* (Batsch) Fr.  
(39) coll. 5933; (63) PAL/Mic coll. 101, 104; (64) PAL/Mic coll. 100. Widely distributed in Europe but not very frequent.
- Polyporus badius* (Pers.) Schwein.  
(39) coll. 6742, 7272; (54) PAL/Mic coll. 115, 117; (67) coll. 123. A species with a wide distribution, sporadic in Italy and recorded on *Abies* too.
- Polyporus brumalis* (Pers.) Fr.  
(17) coll. 4182; (21) coll. 4932; (25) coll. 4442; (36) coll. 196, 6412; (48) coll. 470; (55) coll. 1425; (56) coll. 4010; (57) coll. 5044; (63) PAL/Mic coll. 129, 133; (64) PAL/Mic coll. 124, 126, 127. Cosmopolitan species.
- Polyporus ciliatus* Fr.  
(7) coll. 4325; (36) coll. 6893; (63) PAL/Mic coll. 149, 154; (64) PAL/Mic coll. 140, 142. Widely distributed and frequent.
- Polyporus melanopus* (Pers.) Fr.  
(17) coll. 4303; (27) coll. 4361; (36) coll. 6032, 6391, 6905; (64) PAL/Mic coll. 156. Infrequent in Italy.
- Polyporus tuberaster* (Jacq.) Fr.  
(39) coll. 4690, 6944; (54) coll. 1419; (56) coll. 4925. Widely distributed species in Europe, frequent in the Mediterranean area.
- Polyporus umbellatus* (Pers.) Fr.  
(20) coll. 4809. Sporadically distributed in Italy.
- Polyporus varius* (Pers.) Fr.  
(12) coll. 5641; (15) coll. 5272; (23) coll. 4471; (25) coll. 3607; (36) coll. 4523; (49) coll. 26, 33; (51) coll. 3295; (55) coll. 1444; (63) PAL/Mic coll. 167, 169; (64) PAL/Mic coll. 157, 160. Common and frequent species in all Italian beech forests.
- Porostereum spadiceum* (Pers.) Hjortstam & Ryvarde  
(10) coll. 5628; (35) coll. 2982. Common species on deciduous wood.
- Pycnoporus cinnabarinus* (Jacq.) Fr.  
(13) coll. 2498; (14) coll. 1752; (63) PAL/Mic coll. 198, 199; (64) PAL/Mic coll. 192, 194. Cosmopolitan species.
- Radulomyces confluens* (Fr.) M.P. Christ.

- (29) coll. 2808; (36) coll. 192. Common both on coniferous and deciduous substrata.
- Resinicium bicolor* (Alb. & Schwein.) Parmasto  
(26) coll. 4456. Common species very important as wood-rotting fungi in coniferous forests, more rare on deciduous wood.
- Rigidoporus crocatus* (Pat.) Ryvarden  
(54) coll. 1431. Very rare species in Italy, scantily collected in Europe.
- Rigidoporus ulmarius* (Sow.) Imazeki  
(63) PAL/Mic coll. 200, 201. With a Central and Southern European distribution, not common in Italy.
- Rigidoporus undatus* (Pers.) Donk  
(13) coll. 5594; (18) coll. 6806; (49) coll. 3375, LR 22657. With a wide distribution in Europe but not frequent, infrequent in Italy.
- Schizopora paradoxa* (Schrad.) Donk  
(63) PAL/Mic coll. 202, 204; (64) PAL/Mic coll. 207; (67) PAL/Mic coll. 210. Cosmopolitan species, very frequent on deciduous wood.
- Scopuloides rimosa* (Cooke) Jülich  
(39) coll. 5499. Frequent species in deciduous forests.
- Scytinostroma portentosum* (Berk. & M.A. Curtis) Donk  
(39) coll. 7175, 7663; (41) coll. 7174. With a scanty distribution.
- Sistotrema confluens* Pers.  
(36) coll. 6408. Sporadically distributed species in Italy.
- Sistotrema sernanderi* (Litsch.) Donk  
(51) coll. 3292. Very rare species in Italy with only one collecting locality.
- Skeletocutis alutacea* (J. Lowe) Jean Keller  
(39) coll. 6514. Infrequent species in Europe, rare in Italy.
- Skeletocutis lenis* (P. Karst.) Niemelä  
(39) coll. 8102. Common and widely distributed species on very rotten wood.
- Skeletocutis nivea* (Jungh.) Jean Keller  
(24) coll. 5621; (39) coll. 5563, 6246, 6799, 6932; (41) coll. 810; (50) coll. 706; (57) coll. 5038. Common and frequent in Italy.
- Spongipellis pachyodon* (Pers.) Kotl. & Pouzar  
(39) coll. 8101. Infrequent species in Italy, but locally it can be common.
- Steccherinum fimbriatum* (Pers.) J. Erikss.  
(27) coll. 4491; (46) coll. 5150; (51) coll. 3302. Common species on decorticated deciduous wood.
- Steccherinum ochraceum* (Pers.) Gray  
(39) coll. 5916; (63) PAL/Mic coll. 213, 214; (64) PAL/Mic coll. 198, 199. Very common species on deciduous wood.
- Steccherinum robustius* (J. Erikss. & S. Lundell) J. Erikss.  
(39) coll. 7632, 7672. A rare species in Italy restricted to this unique collecting area.
- Stereum gausapatum* (Fr.) Fr.

- PAL/Mic (63) coll. 223; PAL/Mic (64) coll. 230, these are the only records from Italy on *Fagus*.
- Stereum hirsutum* (Wild.) Pers.  
PAL/Mic (63) coll. 233; PAL/Mic (64) coll. 243, 257, recorded only from Sicily on *Fagus*.
- Stereum insignitum* Quél.  
(39) coll. 60, 5500, 5551, 5849; (60) coll. 5006. Very rare species in Italy, not recorded in the last years.
- Stereum rugosum* Pers.  
(11) coll. 5612; (25) coll. 2847; (36) coll. 6360; (48) coll. 1450; (49) coll. 5327; (53) coll. 1436. Frequent on deciduous wood.
- Stereum subtomentosum* Pouzar  
(39) coll. 4699, 6953; (46) coll. 5437. Rather frequent species, recorded on *Alnus* and *Quercus* too.
- Stromatoscypha fimbriata* (Pers.) Donk  
(39) coll. 5189. Cosmopolitan species, with a sporadic presence in Italy.
- Terana caerulea* (Lam.) Kuntze  
(39) coll. 6521; (57) coll. 5036; (63) PAL/Mic coll. 191. Very common species on many deciduous substrata.
- Thanatephorus fusisporus* (J. Schröt.) Hauer & P. Roberts  
(51) coll. LR 22515. A species with a scattered distribution in Europe, diffuse in Italy.
- Trametes gibbosa* (Pers.) Fr.  
(39) coll. 5368; (57) coll. 5032. Widely distributed species, very often on *Fagus*.
- Trametes hirsuta* (Wulfen) Pilát  
(55) coll. 1428; (57) coll. 5026; (63) PAL/Mic coll. 281, 282; (64) PAL/Mic coll. 273, 275. Cosmopolitan and widely distributed.
- Trametes ochracea* (Pers.) Gilb. & Ryvarden  
(58) coll. 5003. Common species.
- Trametes pubescens* (Schumach.) Pilát  
(10) coll. 5613; (27) coll. 2818; (39) coll. 6524. Rather common and widely distributed species.
- Trametes versicolor* (L.) Pilát  
(55) coll. 1422; (39) coll. 5375; (63) PAL/Mic coll. 283, 285; (64) PAL/Mic coll. 286, 288. Cosmopolitan and very common species on deciduous wood.
- Trechispora byssinella* (Bourdot) Liberta  
(17) coll. 4308. Infrequent species with only this collecting locality in Italy.
- Trechispora cohaerens* (Schwein.) Jülich & Stalpers  
(39) coll. 6812. Common on deciduous wood, recorded on several substrata in Italy.
- Trechispora farinacea* (Pers.) Liberta  
(37) coll. 5525; (49) coll. 24. Widespread and common species.
- Trechispora hymenocystis* (Berk. & Broome) K.H. Larss.

- (3) coll. 7755; (49) coll. LR 22649. Widely distributed species in Europe, infrequent in Italy, and usually on coniferous substrata.
- Tyromyces chioneus* (Fr.) P. Karst.  
(39) coll. 6527. Widely distributed species.
- Tyromyces fissilis* (Berk. & M.A. Curtis) Donk  
(39) coll. 7767; (45) coll. 5570. Infrequent, with sporadic records in Italy.
- Tyromyces wynnei* (Berk. & Broome) Donk  
(13) coll. 5593; (39) coll. 7728. Infrequent species in Europe, present in some northern areas of Italy.
- Vararia investiens* (Schwein.) P. Karst.  
(36) coll. 191. Infrequent species.
- Vesiculomyces citrinus* (Pers.) E. Hagstr.  
(44) coll. 5890. Very common species, especially on coniferous substrata.
- Vuilleminia comedens* (Nees) Maire  
(46) coll. 5181. Widespread and common species.
- Vuilleminia coryli* Boidin, Lanq. & Gilles  
(46) coll. 5149. Rare species, recorded on different deciduous substrata.
- Xenasma tulasnelloideum* (Höhn. & Litsch.) Donk  
(27) coll. 4375, 4507. Widely distributed species.
- Xenasmatella vaga* (Fr.) Stalpers  
(34) coll. 2631. Very common species on all kinds of substrata.

## Conclusions

*Fagus sylvatica* is widely distributed in Italy, often mixed with *Abies alba* and some broad-leaved trees. The mycobiota of *F. sylvatica* showed a high diversity in Italy with 166 species recorded, compared to other substrata: 203 species on *Pinus* spp., (Bernicchia et al. 2007b), 190 on *Abies alba* (Bernicchia et al. 2007a), 126 species on *Castanea sativa* (Mayrhofer et al. 2001), 105 on *Juniperus* spp. (Bernicchia 2000) and 52 species on *Arbutus unedo* (Pérez Gorjón et al. 2006). In Italy, fallen branches and logs of beech are often removed from the habitat because of their economic value, which reduces the potential fungal biodiversity on *Fagus*.

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