

The macrofungi checklist of Liguria (Italy): the current status of surveys

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Abstract— The paper is aimed at integrating and updating the first edition of the checklist of Ligurian macrofungi. Data are related to mycological researches carried out mainly in some holm-oak woods through last three years. The new taxa collected amount to 172: 15 of them belonging to *Ascomycota* and 157 to *Basidiomycota*. It should be highlighted that 12 taxa have been recorded for the first time in Italy and many species are considered rare or infrequent. Each taxa reported consists of the following items: Latin name, author, habitat, height, and the WGS-84 Global Position System (GPS) coordinates. This work, together with the original Ligurian checklist, represents a contribution to the national checklist.

Key words—mycological flora, new reports

Introduction

Liguria represents a very interesting region from a mycological point of view: macrofungi, directly and not directly correlated to vegetation, are frequent, abundant and quite well distributed among the species. This topic is faced and discussed in Zotti & Orsino (2001). Observations prove an high level of fungal biodiversity (sometimes called “mycodiversity”) since Liguria, though covering only about 2% of the Italian territory, shows more than 36 % of all the species recorded in Italy. Furthermore, the number of species is likely underestimated, as only 50% of Liguria was actually investigated (Fig. 1, available on the web Checklist). As a matter of fact, just a relatively short-time study, carried out on a limited number of new areas, highlights a significant increase of the observed species. This paper is aimed

at integrating and updating the Ligurian checklist (Zotti & Orsino 2001) and the Italian checklist (Onofri et al. 2005) on the basis of data for the most part related to some holm-oak woods (*Quercus ilex* L.) never considered before. Some of these areas are the objective of a recent study (Zotti 2004), where a statistical analysis confirms the high level of mycodiversity. The paper reports data of mycological investigations carried out through the last six years (2001–07). Moreover, a brief annex is also included that lists the species recorded in Liguria and described in recent paper.

Materials and methods

Each specimen was collected and identified on the basis of macro and micromorphological characters, taking into account the following literature: Alessio & Rebaudengo (1980), Antonini & Antonini (2002), Bas et al. (1988, 1990, 1995, 1999, Basso (1999), Bernicchia (2005), Bon (1984), Breitenbach & Kränzlin (1984), Consiglio (1996), Consiglio et al. (2003, 2004, 2005), Contu (2000, 2003), Eyssartier & Buyck (2000), Fontenla et al. (2003), Fraiture (1993), Frøslev et al. (2006), Grupo Ibero-insular de Cortinariologos (GIC 2007), Jülich (1989), Kreisel (1987), Ladurner & Simonini (2003), Malençon & Bertault (1970), Moser (1980), Noordeloos et al., (2001), Raillère & Gannaz (1999), Riva (1988, 2003), Robich (1990), Romagnesi (1967), Sarnari (1998, 2005), Stangl (1991), Traverso (1999), Vesterholt (2002). As concerns the georeferentiation, a Garmin (eTrex Summit) Global Position System (GPS) was employed suitably set in order to express the locations in WGS-84 coordinates in decimal degrees. The names of the family, order and class, which each genus belongs to, are shown mainly according to Kirk et al. (2001), Vizzini (2004), and Hibbett (2006). Abbreviation of author names follows Brummitt & Powell (1992) and IPNI (2008). It should be noted that several species are already present in the previous checklist, since documented by Balletto in his book (1972). The new records aim at filling the gap of information about the collecting time and locality (indicated with an asterisk in the list of taxa). The species indicated with the mark “□” are those not yet recorded in Italian checklist (Onofri et al. 2005). Finally, the annex reports a group of species recently observed and the related bibliographic references.

Results

In this work, 172 taxa belonging to 58 genera from 35 families were recorded. The list is arranged alphabetically in order to simplify the seeking and the reading of species. For each taxon, the following items are given: the Latin name, the author, the WGS-84 Global Position System (GPS) coordinates in decimal degrees, the altitude, the date of the survey during

which the species was found (for the first time) and the habitat of the place where the fungi was collected.

List of Taxa

Ascomycota

Choiromyces Tuberaceae, Pezizales, Pezizomycetes

1.*Choiromyces meandriformis Vittad.

Long. 8.251359° Lat. 44.471268°, 435 m m.s.l., 01.06.2007. Broadleaved woods.

Genea Pyronemataceae, Pezizales, Pezizomycetes

2. Genea fragrans (Wallr.) Sacc.

Long. 8.251362° Lat. 44.471273°, 440 m m.s.l., 22.09.07. Broadleaved woods.

Geopyxis Pyronemataceae, Pezizales, Pezizomycetes

3. Geopyxis carbonaria (Alb. et Schwein.) Sacc.

Long. 9,437260° Lat. 44,267361°, 60 m m.s.l., 07.04.2006. On burnt soil.

Lachnum Hyaloscyphaceae, Helotiales, Leotiomycetes

4. Lachnum tenuissimum (Quél.) Korf & W.Y. Zhuang

Long. 9,440317° Lat. 44.366489°, 60 m m.s.l., 01.05.2002. On rotting twigs.

Peziza Pezizaceae, Pezizales, Pezizomycetes

5. Peziza ampelina Quél.

Long. 8,891218° Lat. 44,464381°, 200 m m.s.l., 04.04.2002. On bare soil.

6. Peziza lobulata (Velen.) Svrček

Long. 8,770981° Lat. 44,451541°, 300 m m.s.l., 26.11.2003. On moist soil.

7. Peziza limnaea Maas Geest. (= *Peziza limosa* (Grelet) Nannf.)

Long. 8,809921° Lat. 44,518287°, 900 m m.s.l., 07.10.2007. On bare soil.

Pyrenopeziza Dermateaceae, Helotiales, Leotiomycetes

8. Pyrenopeziza adenostylidis (Rehm) Gremmen

Long. 9,441954° Lat. 44,267127°, 60 m m.s.l., 07.08.2002. On fallen twigs.

Pyronema Pyronemataceae, Pezizales, Pezizomycetes

9. Pyronema domesticum (Sowerby) Sacc.

Long. 9,438647° Lat. 44,267473°, 60 m m.s.l., 07.08.2002. On burnt soil in pine wood.

*Tuber Tuberaceae, Pezizales, Pezizomycetes***10. *Tuber borchii*** Vittad.

Long. 8.261409° Lat. 44.483226°, 500 m m.s.l., 12.03.2007. Broadleaved woods.

11. *Tuber macrosporum* Vittad.

Long. 8.239283° Lat. 44.362751°, 460 m m.s.l., 21.04.2007. Broadleaved woods.

12. *Tuber magnatum* Pico

Long. 8.219521° Lat. 44.355831°, 525 m m.s.l., 24.09.2007. Broadleaved woods.

13. *Tuber melanosporum* Vittad.

Long. 8.190522° Lat. 44.363218°, 450 m m.s.l., 24.08.2007. Broadleaved woods

14. *Tuber puberulum* Berk. & Broome

Long. 8.249642° Lat. 44.382861°, 485 m m.s.l., 21.04.2007. Broadleaved woods.

*Urnula Sarcosomataceae, Pezizales, Pezizomycetes***15. *Urnula pouchetii*** Berthet & Rioussset

Long. 8,486437° Lat. 44,470674°, 785 m m.s.l., 12.04.2007. On soil in pine wood.

Basidiomycota*Agaricus Agaricaceae, Agaricales, Agaricomycetes***1. *Agaricus moelleri*** Wasser

Long. 9,171017° Lat. 44,329398°, 417 m m.s.l., 27.10.2001. Under *Thuja occidentalis* L.

2. *Agaricus xanthoderma* Genev. var. *lepiotoides* Maire

Long. 9,171015° Lat. 44,329421°, 427 m m.s.l., 27.10.2001. Under *Thuja occidentalis* L.

*Agrocybe Bolbitiaceae, Agaricales, Agaricomycetes***3.**Agrocybe erebia*** (Fr.) Kühner ex Singer

Long. 8,922057° Lat. 44,481773°, 80 m m.s.l., 20.10.2006. Broadleaved woods.

*Alnicola Cortinariaceae, Agaricales, Agaricomycetes***4. *Alnicola scolecina*** (Fr.) Romagn.

Long. 8,822186° Lat. 44,517672°, 750 m m.s.l., 07.10.2007. Under *Corylus avella* L. and *Carpinus betulus* L.

Amanita Amanitaceae, Agaricales, Agaricomycetes

5. *Amanita battarrae* (Boud.) Bon

Long. 9,482437° Lat. 44,308849°, 600 m m.s.l., 13.08.2002. Chestnut wood.

6. *Amanita franchetii* (Boud.) Fayod f. *lactella* Neville & Poumarat (= *Amanita aspera* ss. Vittad., Quél. f. *lactella* Gilbert & Kühner)

Long. 8,851400° Lat. 44,505816°, 406 m m.s.l., 20.09.2001. Under *Quercus pubescens* Willd.

7. *Amanita dryophila* Cons. & Contu

Long. 9,501742° Lat. 44,262437°, 377 m m.s.l., 23.08.2002. Chestnut wood.

8. *Amanita eliae* Quél. var. *griseovelata* (Bertault) Migl. & Camboni

Long. 8,487403° Lat. 44,472682°, 380 m m.s.l., 10.06.2007. Broadleaved woods.

9. *Amanita pachyvolvata* (Bon) Krieglst.

Long. 9,482839° Lat. 44,310891°, 625 m m.s.l., 14.07.2001. Chestnut wood.

10. *Amanita praelongipes* Kärcher & Contu (= *A. vaginata* (Bull.) Lam. var. *praelongipes* Kärcher)

Long. 8,85375° Lat. 44,504492°, 450 m m.s.l., 10.08.2002. Under *Ostrya carpinifolia* Scop.

11. *Amanita separata* Contu

Long. 8,336882° Lat. 44,204184°, 301 m m.s.l., 06.11.2001. Holm-oak wood

12. *Amanita vaginata* (Bull.) Lam. var. *alba* (De Seynes) Veselý

Long. 8,851400° Lat. 44,505816°, 406 m m.s.l., 19.08.2002. Under *Quercus pubescens* Willd.

Battarrea Tulostomataceae, Agaricales, Agaricomycetes

13. *Battarrea phalloides* (Dicks.: Pers.) Pers.

Long. 8,37188°; Lat. 44,181607°, 200 m m.s.l.; 19.11.2006. Under *Cupressus sempervirens* L.

Boletus Boletaceae, Boletales, Agaricomycetes

14. *Boletus comptus* Simonini

Long. 8,383499° Lat. 44,198431°, 270 m m.s.l., 06.10.2001. Holm-oak wood.

15. *Boletus luteocupreus* Bertéa & Estadès

Long. 8,849333° Lat. 44,49705°, 475 m m.s.l., 20.08.2001. Under *Quercus pubescens* Willd.

16. *Boletus pseudoregius* Hubert ex Estadès

Long. 9,482897° Lat. 44,312408°, 650 m m.s.l., 06.07.2003. Chestnut wood.

17. *Boletus xanthocyaneus* Romain ex Romagn.

Long. 9,499995° Lat. 44,261279°, 350 m m.s.l., 25.05.2002. Chestnut wood.

Cantharellus Cantharellaceae, Cantharellales, Agaricomycetes

18. *Cantharellus cibarius* Fr. var. *alborufescens* Malen.

Long. 8,908226° Lat. 44,417015°, 50 m m.s.l., 26.11.2003. Holm-oak wood.

19. *Cantharellus cibarius* Fr. var. *rufipes* (Gillet) Cooke

Long. 9,205867° Lat. 44,317101°, 190 m m.s.l., 23.10.2001. Holm-oak wood.

Chlorophyllum Agaricaceae, Agaricales, Agaricomycetes

20. *Chlorophyllum brunneum* (Farl. & Burt) Vellinga

Long. 8,872417° Lat. 44,466131°, 750 m m.s.l., 09.10.2001. Grassy place.

Chroogomphus Gomphidiaceae, Boletales, Agaricomycetes

21. *Chroogomphus fulmineus* (Heim) Courtec.

Long. 9,439450° Lat. 44,267155°, 100 m m.s.l., 01.11.2001. Under *Pinus pinaster* Aiton.

Clitocybe Tricholomataceae, Agaricales, Agaricomycetes

22. **Clitocybe sinopica* (Fr.) Kumm.

Long. 8,853918° Lat. 44,508448°, 359 m m.s.l., 28.03.2001. Under *Castanea sativa* Mill.

23. *Clitocybe pruinosa* (Lasch) P.Kumm.

Long. 8,811942° Lat. 44,524137°, 800 m m.s.l., 21.03.2006. Under *Pinus nigra* Mill.

Clitocybula Tricholomataceae, Agaricales, Agaricomycetes

24. *Clitocybula lacerata* (Scop.) Métrod

Long. 8,571864° Lat. 44,430604°, 1200 m m.s.l., 02.11.2007. Under *Picea abies* (L.) Karsten.

Coprinopsis Psathyrellaceae, Agaricales, Agaricomycetes

25. *Coprinopsis spilospora* (Romagn.) Redhead, Vilgalys & Moncalvo

Long. 8,455099° Lat. 44,33713°, 68 m m.s.l., 14.05.2002. Holm-oak wood.

Cortinarius Cortinariaceae, Agaricales, Agaricomycetes

26. *Cortinarius aurantiobasalis* Bidaud

Long. 8,965081° Lat. 44,413391°, 250 m m.s.l., 24/10/2006. Holm-oak wood.

27. *Cortinarius catharinae* Cons.

Long. 9,44914° Lat. 44,2418°, 100 m m.s.l., 19.11.2003. Holm-oak wood.

28. □*Cortinarius chevassutii* Rob. Henry

Long. 9,153074° Lat. 44,321951°, 150 m m.s.l., 11.11.2005. Holm-oak wood.

29. *Cortinarius hillieri* R.Henry

Long. 9,166572° Lat. 44,328144°, 570 m m.s.l., 24.10.2006. Holm-oak wood.

30. □*Cortinarius ionochlorus* Maire var. *leucophyllus* Malençon

Long. 8,905911° Lat. 44,422131°, 135 m m.s.l., 10.11.2001. Holm-oak wood.

31. *Cortinarius moenne-locozii* Bid.

Long. 8,839383° Lat. 44,508388°, 600 m m.s.l., 11.10.2005. Under *Carpinus betulus* L.

32. □*Cortinarius murellensis* Cors. Gutiérrez *et al.*

Long. 9,153081° Lat. 44,322725°, 200 m m.s.l., 08.12.2007. Holm-oak wood.

33. ▼*Cortinarius parasuaveolens* (Bon & Trescol) Bidaud *et al.*

Long. 9,154329° Lat. 44,320784°, 160 m m.s.l., 26.11.2006. Holm-oak wood.

34. *Cortinarius porphyropus* (Alb. & Schwein.) Fr.

Long. 8,820241° Lat. 44,515422°, 800 m m.s.l., 29.09.2006. Under *Corylus avellana* L.

35. *Cortinarius psathyrobtusus* Rob. Henry

Long. 8,872417° Lat. 44,466131°, 368 m m.s.l., 03.01.2003. Holm-oak wood.

36. ▼*Cortinarius sancti-felicis* Frøslev & T.S. Jeppesen

Long. 9,178510° Lat. 44,360880°, 240 m m.s.l., 08.12.2007. Holm-oak wood

37. *Cortinarius variiformis* Malençon

Long. 9,178514° Lat. 44,360888°, 240 m m.s.l., 29.11.2006. Holm-oak wood.

38. **Cortinarius velenovskyi* Rob. Henry

Long. 9,205799° Lat. 44,317164°, 215 m m.s.l., 16.05.2002. Holm-oak wood.

39. □*Cortinarius veraprilis* Chevassut *et al.*

Long. 8,905664° Lat. 44,423585°, 175 m m.s.l., 03.04.2003. Holm-oak wood.

Crepidotus Crepidotaceae, Agaricales, Agaricomycetes

40. *Crepidotus calolepis* (Fr.) P.Karst.

Long. 9,442616° Lat. 44,266287°, 160 m m.s.l., 10.08.2002. On dead wood of *Eucalyptus camaldulensis* Dehnh.

Crinipellis Marasmiaceae, Agaricales, Agaricomycetes

41. *Crinipellis tomentosa* (Quél.) Singer

Long. 8,848532° Lat. 44,496666°, 460 m m.s.l., 06.10.2003. On dead twigs of *Castanea sativa* Mill.

Cystolepiota Agaricaceae, Agaricales, Agaricomycetes

42. *Cystolepiota hetieri (Boud.) Singer

Long. 8,90737° Lat. 44,423267°, 150 m m.s.l., 18.10.2001. On fallen branches of *Ostrya carpinifolia* Scop.

Dacrymyces Dacrymycetaceae, Dacrymycetales, Dacrymycetes

43. Dacrymyces chrysospermus Berk. & M.A. Curtis

Long. 8,812635° Lat. 44,527234°, 800 m m.s.l., 01.10.2007. On fallen branches of *Pinus nigra* Mill.

Daedaleopsis Polyporaceae, Polyporales, Agaricomycetes

44. Daedaleopsis confragosa (Bolton) J. Schröt.

Long. 8,565273° Lat. 44,435932°, 1200 m m.s.l., 18.11.06. On fallen branches of *Castanea sativa* Mill.

Entoloma Entolomataceae, Agaricales, Agaricomycetes

45. Entoloma formosum (Fr.) Noordel.

Long. 9,447531° Lat. 44,241406°, 100 m m.s.l., 19.11.2003. Holm-oak wood.

46. Entoloma longistratum (Peck) Noordel.

Long. 8,571864° Lat. 44,430604°, 1200 m m.s.l., 08.10.2006. Margin of deciduous wood.

Hebeloma Cortinariaceae, Agaricales, Agaricomycetes

47. Hebeloma pallidum Malençon

Long. 9,479726° Lat. 44,302946°, 400 m m.s.l., 23.08.2006. Under *Castanea sativa* Mill.

48. Hebeloma versipelle (Fr.) Gillet

Long. 8,336882° Lat. 44,204184°, 301 m m.s.l., 06.04.2001. Holm-oak wood.

Hydropus Tricholomataceae, Agaricales, Agaricomycetes

49. Hydropus floccipes (Fr.) Sing. (= *Mycena floccipes* (Fr.) Kühner)

Long. 8,869783° Lat. 44,465547°, 407 m m.s.l., 03.12.2003. On fallen twigs of *Quercus ilex* L.

Hygrocybe Hygrophoraceae, Agaricales, Agaricomycetes

50. Hygrocybe calciphila Arnolds

Long. 9,446155° Lat. 44,241614°, 200 m m.s.l., 12.11.2002. Margin of conifer wood.

51. *Hygrocybe calyptriformis* (Berk. & Broome) Fayod

Long. 8,849133° Lat. 44,496631°, 477 m m.s.l., 10.11.2001. Grassy place.

52. *Hygrocybe flavipes* (Britzelm.) Bon

Long. 8,856653° Lat. 44,50314°, 300 m m.s.l., 12.11.2001. Grassy place.

53. *Hygrocybe fornicata* (Fr.) Singer

Long. 8,849130° Lat. 44,496633°, 477 m m.s.l., 29.10.2007. Grassy place

54. **Hygrocybe spadicea* (Scop.) Karst.

Long. 8,849133° Lat. 44,496631°, 477 m m.s.l., 18.10.2001. Grassy place.

Hygrophorus Hygrophoraceae, Agaricales, Agaricomycetes

55. *Hygrophorus leucophaeo-ilicis* Bon & Chevassut

Long. 9,205867° Lat. 44,317101°, 190 m m.s.l., 07.03.2002. Holm-oak wood.

56. *Hygrophorus lindtneri* M.Moser

Long. 8,334718° Lat. 44,203451°, 270 m m.s.l., 04.11.01. Holm-oak wood.

Hygrophoropsis Hygrophoropsidaceae, Boletales, Agaricomycetes

57. *Hygrophoropsis pallida* (Peck) Kreisel

Long. 8,579997° Lat. 44,470337°, 800 m m.s.l., 18.10.2003. On dead wood.

Inocybe Inocybaceae, Agaricales, Agaricomycetes

58. *Inocybe brunneorufa* Stangl & J. Veselsky

Long. 8,450401° Lat. 44,342919°, 72 m m.s.l., 13.05.2001. Holm-oak wood.

59. *Inocybe cryptocystis* Stunz

Long. 8,747862° Lat. 44,431934°, 40 m m.s.l., 16.10.2003. Broadleaved woods.

60. *Inocybe decemgibbosa* (Kühner) Vauras

Long. 8,455099° Lat. 44,33713°, 68 m m.s.l., 23.08.04. Under *Tilia platyphyllos* Scop.

61. *Inocybe flavella* P.Karst

Long. 9,177893° Lat. 44,316437°, 100 m m.s.l., 16.02.2004. Holm-oak wood.

62. *Inocybe maculata* Boud. f. *fastigella* (Atk.) Kühner & Romagn.

Long. 8,455099° Lat. 44,33713°, 460 m m.s.l., 06.10.2003. Under *Castanea sativa* Mill.

63. **Inocybe margaritospora* (Berk.) Sacc.

Long. 8,455099° Lat. 44,33713°, 68 m m.s.l., 02.04.2002. Holm-oak wood.

64. *Inocybe napipes* Lange

Long. 8,805085° Lat. 44,525634°, 730 m m.s.l., 07.10.2007. Under *Corylus avellana* L. and *Carpinus betulus* L.

65. *Inocybe splendens* R. Heim var. *phaeoleuca* (Kühner) Kuyper
Long. 8,926863° Lat.44,415933°, 40 m m.s.l., 18.11.06. Broadleaved woods.

66. ▼ *Inocybe squarrosa* Rea
Long. 8,8008°; Lat. 44,518217°, 715 m m.s.l., 07.10.2007. Broadleaved woods.

Laccaria Hydnangiaceae, Agaricales, Agaricomycetes

67. *Laccaria bisporigena* Contu & Ballero
Long. 8,105931° Lat. 44,233377°, 800 m m.s.l., 12.10.2001. Margin of chestnut wood on sandy soil.

68. □ *Laccaria macrocystidiata* (Migl. et Lavorato) Pázmány
Long. 8,272652° Lat. 44,205188°, 530 m m.s.l., 28.10.2005. On bare soil.

Lepiota Agaricaceae, Agaricales, Agaricomycetes

69. *Lepiota cristata* (Bolton) P. Kumm. var. *exannulata* Bon
Long. 8,336882° Lat. 44,204184°, 301 m m.s.l., 19.10.2002. Holm-oak wood.

70. *Lepiota cystophoroides* Joss. & Rioussset
Long. 8,33255° Lat. 44,202317°, 248 m m.s.l., 13.12.2001. Holm-oak wood.

71. *Lepiota echinacea* J. Lange
Long. 8,15326° Lat. 44,184617°, 750 m m.s.l., 18.10.2001. Under *Corylus avellana* L.

72. *Lepiota fulvella* Rea
Long. 8,905427° Lat. 44,424287°, 150 m m.s.l., 17.10.2001. Under *Ostrya carpinifolia* Scop.

73. **Lepiota fuscovinacea* F.H. Møller & J.E:Lange
Long. 8,853918° Lat. 44,508448°, 390 m m.s.l., 18.10.2001. Under *Corylus avellana* L.

74. *Lepiota grangei* (Eyre) Kühner
Long. 8,746714° Lat. 44,431522°, 36 m m.s.l., 24.10.2002. Broadleaved woods.

75. *Lepiota lilacea* Bres.
Long. 9,205867° Lat. 44,317101°, 190 m m.s.l., 23.10.2001. Holm-oak wood.

76. *Lepiota rufipes* Morgan
Long. 8,333017° Lat. 44,203184°, 268 m m.s.l., 26.09.2001. Holm-oak wood.

Leucoagaricus Agaricaceae, Agaricales, Agaricomycetes

77. *Leucoagaricus americanus* (Peck) Vellinga (= *L. bresadolae* (Schulzer) Bon & Boiffard)
Long. 8,855791° Lat. 44,509698°, 370 m m.s.l., 26.09.2002. On dung.

78. *Leucoagaricus barssii* (Zeller) Vellinga (= *L. macrorhizus* Locq. ex E. Horak)
Long. 9,440227° Lat. 44,268092°, 50 m m.s.l., 25.10.2001. Under *Robinia pseudoacacia* L.

Limacella Amanitaceae, Agaricales, Agaricomycetes

79. *Limacella subfurnacea* Contu
Long. 9,153081° Lat. 44,322725°, 200 m m.s.l., 28.11.2002. Holm-oak wood.

Lyophyllum Tricholomataceae, Agaricales, Agaricomycetes

80. *Lyophyllum mephiticum* (Fr.) Singer
Long. 8,103662° Lat. 44,234949°, 830 m m.s.l., 06.10.2006. Under *Fagus sylvatica* L.

Melanoleuca Tricholomataceae, Agaricales, Agaricomycetes

81. \square *Melanoleuca amica* (Fr.) Singer
Long. 8,935389° Lat. 44,424483°, 200 m m.s.l., 27.10.2006. Margin of conifer wood.

82. \square *Melanoleuca grammopodia* (Bull.) Murrill var. *obscura* Bon
Long. 8,688753° Lat. 44,411847°, 100 m m.s.l., 30.11.2002. On bare soil under *Quercus ilex* L.

83. *Melanoleuca iris* Kühner
Long. 8,764553° Lat. 44,447635°, 300 m m.s.l., 31.03.2004. On waste land.

84. *Melanoleuca kuehneri* Bon
Long. 8,906109° Lat. 44,422798°, 150 m m.s.l., 18.04.2005. On bare soil.

Myriostoma Geastraceae, Geastrales, Agaricomycetes

85. *Myriostoma coliforme* (With.: Pers.) Corda
Long. 8,33255° Lat. 44,202317°, 248 m m.s.l., 26.10.2001. On bare soil under *Quercus ilex* L.

Octaviania Octavianiaceae, Boletales, Agaricomycetes

86. *Octaviania asterosperma* (Vittad.) Kunze
Long. 9,490769° Lat. 44,31332°, 600 m m.s.l., 10.07.2007. Under *Castanea sativa* Mill.

Phaeolus Polyporaceae, Polyporales, Agaricomycetes

87. **Phaeolus schweinitzii* (Fr.) Pat.
Long. 9,507517° Lat. 44,261331°, 400 m m.s.l., 23.08.2002. On wood of *Pinus pinaster* Aiton.

Phellinus Hymenochaetaceae, Hymenochaetales, Agaricomycetes

88 *Phellinus robustus (P. Karst.) Bourdot et Galzin

Long. 8,450401° Lat. 44,342919°, 72 m m.s.l., 10.03.2001. On wood of *Quercus ilex* L.

Pholiota Strophariaceae, Agaricales, Agaricomycetes,

89. Pholiota conissans (Fr.) Kuyper & Tjall. (= *P. graminis* (Quél.) Singer)

Long. 8,450367° Lat. 44,343°, 72 m m.s.l., 16.10.2004. Grassy place.

Psilocybe Strophariaceae, Agaricales, Agaricomycetes

90. Psilocybe luteonitens (Vahl) Park.-Rhodes

Long. 8,455099° Lat. 44,33713°, 68 m m.s.l., 14.10.2006. On bare soil.

Pluteus Pluteaceae, Agaricales, Agaricomycetes

91. Pluteus atromarginatus (Konrad) Kühner

Long. 8,151424° Lat. 44,188209°, 800 m m.s.l., 20.10.2001. On stump of *Pinus nigra* Arnold.

Ramaria Ramariaceae, Gomphales, Agaricomycetes

92. Ramaria abietina (Pers.) Quél. (= *R. ochraceovirens* (Junghuhn) Donk)

Long. 8,144282° Lat. 44,23273°, 700 m m.s.l., 05.10.2001. Under *Picea abies* (L.) Karsten.

Rhodocybe Entolomataceae, Agaricales, Agaricomycetes

93. Rhodocybe gemina (Fr.) Kuyper & Noordel. var. *subvermicularis* (Maire) Quadr. & Lunghini

Long. 9,205867° Lat. 44,317101°, 190 m m.s.l., 24.10.2001. Holm-oak wood.

94. *Rhodocybe popinalis (Fr.) Singer (= *R. mundula* (Lasch) Singer)

Long. 9,50977° Lat. 44,260524°, 400 m m.s.l., 14.08.2001. Chestnut wood.

Russula Russulaceae, Russulales, Agaricomycetes

95. Russula amethystina Quél.

Long. 9,448873° Lat. 44,242904°, 100 m m.s.l., 19.11.2003. Under *Quercus ilex* L.

96. Russula archaeosuberis Sarnari

Long. 8,851352° Lat. 44,506321°, 406 m m.s.l., 09.09.2006. Under *Quercus pubescens* Willd.

97. Russula atramentosa Sarnari

Long. 8,812416° Lat. 44,519191°, 900 m m.s.l., 10.02.02. Under *Corylus avellana* L.

- 98. *Russula atropurpurea*** (Krombh.) Britzelm. f. *dissidens* Zvára
Long. 8,853918° Lat. 44,508448°, 359 m m.s.l., 20.08.2002. Chestnut wood.
- 99. *Russula camarophylla*** Romagn.
Long. 8,822257° Lat. 44,515556°, 775 m m.s.l., 10.08.2002. Under *Corylus avellana* L. and *Fagus sylvatica* L.
- 100. *Russula chloroides*** (Krombh.) Bres. var. *trachyspora* (Romagn.) Sarnari
Long. 8,859768° Lat. 44,50332°, 300 m m.s.l., 29.09.2003. Chestnut wood.
- 101. *Russula clariana*** R. Heim ex Kuyper & Vuure
Long. 8,84999° Lat. 44,500251°, 400 m m.s.l., 02.11.2003. Under *Ostrya carpinifolia* Scop.
- 102. *Russula cuprea*** (Krombh.) J.E. Lange
Long. 9,205799° Lat. 44,317164°, 215 m m.s.l., 26.09.2002. Holm-oak wood.
- 103. *Russula farinipes*** Rommell
Long. 8,840846° Lat. 44,510475°, 500 m m.s.l., 14.08.2002. Under *Corylus avellana* L.
- 104. *Russula flavispora*** J. Blum ex Romagn.
Long. 8,814678° Lat. 44,431815°, 50 m m.s.l., 16.10.2003. Chestnut wood.
- 105. *Russula fragrantissima*** Romagn.
Long. 8,799362° Lat. 44,520218°, 900 m m.s.l., 15.08.2002. Under *Quercus pubescens* Willd.
- 106. *Russula fuliginosa*** Sarnari
Long. 8,819051° Lat. 44,52468°, 880 m m.s.l., 31.08.2004. Broadleaved woods.
- 107. *Russula globispora*** (J. Blum) Bon
Long. 8,334718° Lat. 44,203451°, 270 m m.s.l., 16.06.2002. Holm-oak wood.
- 108. *Russula helios*** Malençon ex Sarnari
Long. 8,455582° Lat. 44,353783°, 397 m m.s.l., 09.06.2002. Holm-oak wood.
- 109. *Russula hortensis*** Sarnari
Long. 9,206068° Lat. 44,316714°, 185 m m.s.l., 15.05.2002. Holm-oak wood.
- 110. *Russula inamoena*** Sarnari
Long. 9,157693° Lat. 44,319631°, 200 m m.s.l., 26.10.2002. Holm-oak wood.
- 111. *Russula ionocholora*** Romagn.
Long. 8,858753° Lat. 44,462235°, 470 m m.s.l., 03.06.2005. Under *Castanea sativa* Mill.
- 112. *Russula juniperina*** Ubaldi

Long. 9,159068° Lat. 44,319809°, 300 m m m.s.l., 26.10.2002. Holm-oak wood.

113. *Russula laricina* Velen.

Long. 9,483832° Lat. 44,490997°, 1300 m m.s.l., 28.06.2003. Under *Picea abies* (L.) Karsten.

114. **Russula lilacea* Quéf.

Long. 8,853918° Lat. 44,508448°, 359 m m.s.l., 26.08.2002. Chestnut wood.

115. *Russula luteotacta* Rea

Long. 8,333017° Lat. 44,203184°, 268 m m m.s.l., 06.10.2001. Holm-oak wood.

116. *Russula medullata* Romagn.

Long. 8,853918° Lat. 44,508448°, 359 m m.s.l., 25.09.2001. Chestnut wood

117. *Russula melzeri* Zvára

Long. 8,853918° Lat. 44,508448°, 359 m m.s.l., 20.08.2002. Chestnut wood.

118. *Russula odorata* Romagn.

Long. 9,205799° Lat. 44,317164°, 215 m m.s.l., 16.05.2002. Holm-oak wood.

119. *Russula paraodorata* Sarnari

Long. 9,447452° Lat. 44,242163°, 200 m m.s.l., 19.11.2003. Holm-oak wood.

120. *Russula pelargonia* Niolle

Long. 8,853918° Lat. 44,508448°, 359 m m.s.l., 05.08.2002. Chestnut wood.

121. *Russula pelargonia* Niolle var. *citrinovirens* Sarnari

Long. 8,853918° Lat. 44,508448°, 359 m m.s.l., 05.08.2002. Chestnut wood.

122. *Russula poikilochroa* Sarnari

Long. 8,825366° Lat. 44,525666°, 800 m m.s.l., 19.09.2006. Under *Quercus pubescens* Willd.

123. *Russula poikilochroa* Sarnari f. *heliochroma* Sarnari

Long. 8,799495° Lat. 44,517585°, 850 m m.s.l., 20.08.2002. Under *Quercus pubescens* Willd.

124. *Russula prinophila* Sarnari

Long. 8,615124° Lat. 44,375558°, 200 m m.s.l., 17.11.2003. Holm-oak wood.

125. *Russula pseudoaeruginea* (Romagn.) Romagn. ex Kuyper & Vuure

Long. 8,869783° Lat. 44,465547°, 407 m m.s.l., 06.06.2002. Holm-oak wood.

126. *Russula pseudoaeruginea* (Romagn.) ex Kuyper & Vuure f. *galochroa* Sarnari

Long. 8,8514° Lat. 44,505816°, 406 m m.s.l., 20.08.2002. Under *Quercus pubescens* Willd.

127. *Russula queletii* Fr.

Long. 8,803038° Lat. 44,52148°, 900 m m.s.l., 20.10.2002. Under *Picea abies* (L.) Karsten.

128. *Russula risigallina* (Batsch) Sacc. f. *batschiana* Singer

Long. 8,853918° Lat. 44,508448°, 359 m m.s.l., 12.08.2002. Chestnut wood.

129. *Russula risigallina* (Batsch) Sacc. f. *luteoroseella* (Britz.) Bon

Long. 8,817845° Lat. 44,521892°, 800 m m.s.l., 20.07.02. Under *Corylus avellana* L.

130. *Russula roseoaurantia* Sarnari

Long. 9,227649° Lat. 44,564352°, 800 m m.s.l., 12.08.2006. Broadleaved woods.

131. **Russula rubra* (Lam.) Fr.

Long. 8,81574° Lat. 44,526407°, 800 m m.s.l., 06.09.2002. Chestnut wood.

132. *Russula rubroalba* (Singer) Romagn. var. *albocretacea* Sarnari

Long. 8,872417° Lat. 44,466131°, 368 m m.s.l., 07.05.2005. Holm-oak wood.

133. *Russula sanguinea* (Bull.) Fr. f. *sulphurea* Velen.

Long. 8,682795° Lat. 44,566141°, 440 m m.s.l., 01.11.2003. Conifer wood.

134. *Russula sericatula* Romagn.

Long. 8,816165° Lat. 44,43165°, 50 m m.s.l., 20.10.2002. Under *Ostrya carpinifolia* Scop.

135. *Russula stenotricha* Romagn.

Long. 8,450401° Lat. 44,342919°, 72 m m.s.l., 09.06.2002. Holm-oak wood.

136. □*Russula subazurea* Bon

Long. 8,886603° Lat. 44,461019°, 450 m m.s.l., 01.06.2005. Holm-oak wood.

137. *Russula tyrrhenica* Sarnari

Long. 9,451326° Lat. 44,242476°, 100 m m.s.l., 19.11.2003. In conifer wood under *Cistus salviifolius* L.

138. *Russula versatilis* Romagn.

Long. 8,817007° Lat. 44,52216°, 800 m m.s.l., 12/10/2004. Under *Corylus avellana* L. and *Quercus pubescens* Willd.

Sphaerobolus Sphaerobolaceae, Geastrales, Agaricomycetes

139. *Sphaerobolus stellatus* Tode

Long. 9,437253° Lat. 44,264692°, 60 m m.s.l., 02.05.2004. On manufactured wood.

Strobilurus Marasmiaceae, Agaricales, Agaricomycetes

140. *Strobilurus stephanocystis* (Hora) Singer

Long. 9,205867° Lat. 44,317101°, 190 m m.s.l., 16.05.2002. On fallen cones of *Pinus pinaster* Aiton.

Tricholoma Tricholomataceae, Agaricales, Agaricomycetes**141. *Tricholoma cingulatum*** (Fr.) Jacobasch

Long. 8,849133° Lat. 44,496631°, 477 m m.s.l., 20.10.2002. Margin of *Alnus* sp. wood.

142. *Tricholoma gausapatum* (Fr.) Quéf.

Long. 9,161029° Lat. 44,320374°, 300 m m.s.l., 07.12.2002. Holm-oak wood.

143. *Tricholoma myomyces* (Pers.) J.E. Lange

Long. 8,913878° Lat. 44,320374°, 200 m m.s.l., 11.12.2006. Under *Quercus* sp.

144. *Tricholoma scalpturatum* (Fr.) Quéf. f. *album* Hermosilla & Sánchez

Long. 8,815187° Lat. 44,431235°, 50 m m.s.l., 13.11.2003. Holm-oak wood.

145. *Tricholoma viridifucatum* Bon

Long. 8,935247° Lat. 44,423614°, 200 m m.s.l., 27.11.2001. Broadleaved woods.

Volvariella Pluteaceae, Agaricales, Agaricomycetes**146. *Volvariella pusilla*** (Pers.) Singer

Long. 8,852833° Lat. 44,507101°, 379 m m.s.l., 06.10.2003. Grassy place.

147. *Volvariella volvacea* (Bull.) Singer

Long. 9,205799° Lat. 44,317164°, 215 m m.s.l., 06.11.2001. Holm-oak wood.

148. *Volvariella taylorii* (Berk. & Broome) Singer

Long. 8,455099° Lat. 44,33713°, 68 m m.s.l., 18.09.2003. Grassy place.

Xerocomus Boletaceae, Boletales, Agaricomycetes**149. *Xerocomus dryophilus*** (Thiers) Sing.

Long. 8,383533° Lat. 44,452218°, 255 m m.s.l., 06.10.2001. Holm-oak wood.

150. *Xerocomus ichnusanus* Alessio, Galli & Littini

Long. 8,617903° Lat. 44,376058°, 100 m m.s.l., 30.08.2006. Holm-oak wood.

151. *Xerocomus persicolor* H. Engel, Klofac, H. Grünert & R. Grünert

Long. 8,853918° Lat. 44,508448°, 359 m m.s.l., 22.09.2001. Chestnut wood.

Xerula Marasmiaceae, Agaricales, Agaricomycetes**152. *Xerula radicata*** (Relhan) Dörfelt var. *alba* Dörfelt

Long. 8,412445° Lat. 44,373097°, 720 m m.s.l., 29.10.2003. Margin of chestnut wood.

153. *Agaricus rusiophyllus* Lasch (Aste & Barbierato 2004).
154. *Amanita erythrocephala* Neville, Poumarat & Aste (Neville et al. 2000, 2003).
155. *Marasmiellus virgatocutis* Robich, Esteve-Raventòs & Moreno (Zotti & Traverso 2003).
156. *Melanoleuca politoinaequalipes* Béguet in M. Traverso & Zotti (Traverso & Zotti 2002).
157. *Paxillus panuoides* (Fr.) Fr. var. *ionipus* Quél. (now *Tapinella panuoides* f. *ionipus* (Quél.) Šutara) (Aste 2000).

Discussion

The paper reports the new species observed in Liguria through the last six years (2001–07) of mycological surveys, mainly carried out in some holm-oak woods. The new records amount to 172 related to taxa belonging to *Basidiomycota* and *Ascomycota*. The paper highlights that the mycological researches in Liguria are still partial and uncompleted and remarks the very high level of fungal richness. Although the areas where the species were collected represent a negligible portion of the whole Ligurian territory, the increase of observed species amounts to about 13% of all the records of the previous list. Furthermore, as concerns the *Basidiomycota*, 12 taxa, viz. *Cortinarius chevassutii* Rob. Henry, *C. ionochlorus* var. *leucophyllus* Malençon, *C. murellensis* Cors. Gutiérrez *et al.*, *C. parasuaveolens* (Bon & Trescol) Bidaud *et al.*, *C. sancti-felicis* Frøslev & T.S. Jeppesen, *C. veraprilis* Chevassut *et al.*, *Inocybe squarrosa* Rea, *Laccaria macrocystidiata* (Migl. & Lavorato) Pázmány, *Melanoleuca amica* (Fr.) Singer, *M. grammopodia* var. *obscura* Bon, *Russula subazurea* Bon, *Xerula radicata* var. *alba* Dörfelt, were never recorded in the Italian checklist (Onofri *et al.* 2005). These facts should encourage to study new territories and habitats. Finally, a deep investigation on some complex genus, such as *Russula* and *Cortinarius*, might yield new records of species never observed before.

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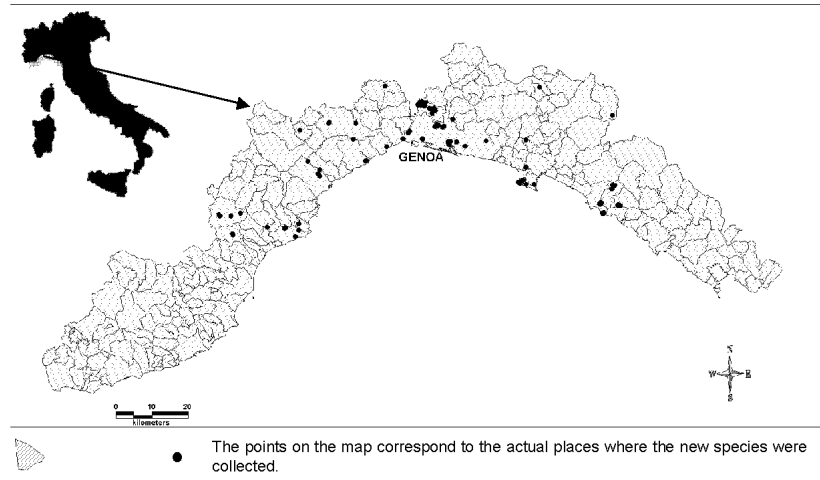


Figure 1: Italy and Liguria, the region where the investigations were carried out.