Contributions to the macromycetes in the oak zone of Finland

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The characteristics of the fungus flora of the oak zone of Finland have to some extent been described in the papers of KARSTEN (1859), THESLEFF (1919), EKLUND (1943, 1944), and KALLIO (1963). The northern limit of the oak zone is one of the clearest mycofloristic boundaries in northern Europe and some species — e.g. many boletes (KALLIO 1963) — are particularly good indicators for this zone.

In the following list, new localities of some »southern species» are attached as addenda to the list of KALLIO (1963). Some new points for study have been included in the collecting operations and some of the localities mentioned in the previous list have been collected again.

The nomenclature follows that of SINGER (1962; *Agaricales)* and MOSER (1963; *Ascomycetes*). All the specimens mentioned are preserved in TUR (Herbarium of the University of Turku).Abbreviations of persons: (SH) Seppo Hietavuo, (EK) Esteri Kankainen, (PK) Paavo Kallio, (AN) Antti Nyman, (RS) Raili Suominen. Abbreviations of provinces: A = Ahvenanmaa, V = Varsinais-Suomi, U = Uusimaa, St = Satakunta, EH = Etelä-Häme, EK = Etelä-Karjala.

LIST OF THE SPECIES

Ascomycetes

Xylaria hypoxylon (L.) Dumortier

A: Jomala Ramsholm 20. 9. 64 (PK). V: Turku Ruissalo 4. 10. 56 (PK) and 27. 9. 64 (Aarne Vuorisalo); Piikkiö Tuorla 20. 9. 60 (PK); Nauvo Vikom (on *Betula*) 10. 11. 57 (PK), Storträsk (on *Betula*) 10. 11. 57 (PK); Kemiö Viik 18. 9. 65 (EK). U: Inkoo Fagervik (on *Quercus*) 4. 11. 65 (Holger Såltin). — The species has also been collected in localities north of the oak zone.

Xylaria polymorpha (Pers.) Dumortier

U: Inkoo Fagervik (on *Quercus* trunk) 4. 11. 65 (Holger Såltin).

Bulgaria inquinans Fr.

V: Turku Ruissalo, Sept. 1922 (L. E. Kari), 13. 9. 36 (L. E. Kari). 10. 9. 60 (PK), 16. 9. 65 (PK, Paula Siltanen); Kemiö Viik 18. 9. 65 (EK, PK, Heli Heikkilä), 10. 9. 66 (PK & Paula Siltanen); Mietoinen Saari 17. 9. 65 (PK); Halikko Vuorentaka23. 10. 66 (AN); Karjalohja Piipola Heponiemi 12. 9. 65 and 25. 9. 66 (AN). The fungus grows on *Quercus.*

Helvella crispa (Scop.) Fr.

V: Halikko Vaisakko, on leaves of oak and poplar 2. 10. 65 (AN); Parainen Urheilukenttä 7. 10. 65 (RS).

Basidiomycetes

Polyporaceae

Laetiporus sulphureus (Bull.) Bond. & Sing.

V: Raisio Viheriäinen 1964 (Tapio Laine, private communic.), Kemiö Viik 18. 9. 65 (PK), 10. 9. 66 (PK). The species is found always on *Quercus.*

Polypilus frondosus (Dicks.) Karst.

V: Turku Ruissalo 26. 9. 65 (Paula Siltanen), Kemiö Viik 4. 10. 64 (EK, AN etc.), 10. 9. 66 (PK),

Raisio Perno Tammimäki 25. 9. 66 (Tapio Laine). The fungus grows at the base of old oaks.

Polypilus umbellatus (Pers.) Bond. & Sing.

V: Parainen Attu 30. 8. 65, 27. 9. 67 (SH). This is the second known discovery of the species in Finland (cf. Kallio 1963).

Daedalea quercina (L.) Fr.

V: Kemiö Viik 18. 9. 65 (PK); Uusikaupunki Saraperä 21. 9. 65 (PK); Vehmaa Vinkkilä Saarikko 21. 9. 65 (PK). The species is common on oak stubs.

Fistulina hepatica (Schaeff.) Fr.

V: Halikko Tavola, on living *Quercus* 19. 9. 66 (AN); Karjalohja Piipola Heponiemi, on living *Quercus* 25. 9. 66 (AN). The species has been found every year in the surroundings of Turku.

Tricholomataceae

Laccaria amethystina (Bolt. ex Hooker) Murr.

V: Turku Ruissalo 16. 9. 65 (EK); Kemiö Viik 18. 9. 65 (PK); Uskela Tupuri 10. 10. 66 (AN).

Tricholoma lascivum (Fr.) Gillet

V: Kemiö Viik, under oaks 10. 9. 66 (PK).

Tricholoma sulphureum (Bull. ex Fr.) Kummer

V: Turku Hirvensalo 3. 10. 65 (Kalevi Viljamaa); Kemiö Viik 18. 9. 65 (EK & PK), 10. 9. 66 (PK); Paimio Askala (under hazel) 26. 9. 65 (Reino Alava); Raisio Perno 28. 9. 66 (EK); Mietoinen Saari 17. 9. 65 (PK); Vehmaa Vinkkilä Saarikko, oak-hazel forest 21. 9. 65 (PK); Uusikaupunki Sundholma 21. 9. 65 (PK); Laitila Varpe, pure *Corylus* locality (without oak) 21. 9. 65 (PK), church village (under oak) 21. 9. 65 (PK), and Mustasalo, oak-hazel forest 21. 9. 65 (PK); Parainen Lenholm under oak 19. 9. 66 (SH).

Tricholoma columbetta (Fr.) Kummer

V: Kemiö Viik 18. 9. 65 (PK), 10. 9. 66 (PK); Angelniemi Kokkila 4. 10. 64 (RS), 10. 9. 66 (EK); Pohja Skuru 30. 10. 65 (Holger Såltin); Laitila Varpe 21. 9. 65 (PK). St: Eurajoki Kaunissaari 29. 9. 63 (Matti Sulkinoja); Parainen Lenholm, near oak 19. 9. 66 (SH).

Oudemansiella radicata (Relh. ex Fr.) Sing.

V: Turku Katariinanlaakso 23. 9. 63 (PK), 18. 11. 63 (EK), and Ruissalo 24. 9. 63 (PK).

Marasmiellus ramealis (Bull. ex Fr.) Sing.

V: Turku Ruissalo 9. 9. 66 (EK); Kemiö Viik 10. 9. 66 (PK); Pohja Fiskars 26. 10. 65 (Holger Såltin); Halikko Vuorentaka 18. 9. 65 (AN); Nousiainen Linnavuori 17. 9. 65 (Heli Heikkilä); Vehmaa Vinkkilä Saarikko 21. 9. 65 (PK); Uusikaupunki Sundholma 21. 9. 65 (PK); Laitila Varpe 21. 9. 65 (PK), and Mustasalo 21. 9. 65 (PK). U: Inkoo Fagervik 4. 11. 65 (Holger Såltin).

Marasmius prasiosmus (Fr.) Fr.

V: Kemiö Viik, oak forest 4. 10. 64 (EK); Uskela Tupuri 10. 10. 66 (AN); Halikko Vaisakko 23. 10. 66 (AN); Karjalohja Piipola Heponiemi 25. 9. 66 (AN). The last find seems to be the only find during September (cf. Kallio 1963, p. 48). The species grows on decaying oak leaves.

Mycena inclinata (Fr.) Quél.

V: Turku Ruissalo 25. 9. 64 (EK); Kemiö Viik 4. 10. 64 (EK), 18. 9. 65 (EK), 10. 9. 66 (EK). Abundant on old oak stubs.

Amanitaceae

Amanita pantherina (D. C. ex Fr.) Schumm.

V: Halikko Märy Pihko, under oaks 10. 9. 66 (AN); Parainen Attu 22. 8. 66 (SH).

Amanita phalloides (Vaill. ex Fr.) Secr.

The distribution of this rare species in Finland is only a little known. The following specimens labelled with the name »*phalloides*» are preserved: *Amanita phalloides* Fr. forma *alba* Särkijärvi (Tammela) 24. Sept. 1867. — *Agaricus phalloides* Mustiala 1876 (or 1870). — *Amanita mappa* Batsch var. *phalloides* Runsala (=Turku, Ruissalo) 4. Sept. 1881. All these specimens have been collected by P. A. Karsten. Thesleff has found one specimen in south Karelia, Björkö 17. IX. 1894. W. Nyberg has labelled »Amanita phalloides Fr. — Nästan vit färgform. Grankulla, Sept. 1941, i blandskog, osäker».

The specimens collected by Karsten are very small. The cap is only 3 cm broad and the stipe 2—4 mm thick. The appearence is quite different from those collected by us from Turku Ruissalo. The appearance of the specimens of Karsten resembles most closely *Amanita porphyria* (Alb. & Schw.) Fr. It is probable that Karsten in his labels has meant *Amanita phalloides* Secr., which is the same as *A. porphyria* (cf. Veselý 1934, p. 17). Karsten (1876, pp. 23—24) records *Agaricus porphyrius* and as its synonym »*Agaricus phalloides* e.Fr. Syst. Myc. I. p. 13», and has added in his description: »formam majorem huius speciei (*Ag. sinuatum* Schum.) stipite bulboso farcto ad *Ag. phalloidem*, quocum statura omnino conventit, olim retulimus». In 1879 (p. 2) Karsten used the name *Amanita bulbosa* (Schaeff.) Pers. and recorded its distributional area »Ryssl. (Ural.); Scand.» indicating that the species had not been found in Finland previously.

Also the specimen collected by Thesleff cannot further be determined. The specimens collected by Nyberg have quite another type of the stipe base than this *phalloides* we know, and we want to underline the designation »osäker» (=not sure). Eklund has mentioned that the species occurs in the archipelago of Turku (1943, p. 18). In both localities, in Korppoo like in Houtskari, the habitat has been a meadow forest also growing oak. No collections are preserved from these localities. Stenlid has (1947) recorded the species from Ahvenanmaa Lemland: Nåtö.

In 1963 *Amanita phalloides* was found in V: Kakskerta Kulho (20. 9.) by Ulla Laaksonen. The habitat is a rich oak forest known by its southern fungi (cf. Kallio 1963). In the same year the species was found by the authors in two localities in Turku Ruissalo. 1. Oct. in all ten fruit bodies were found. The fruit bodies are most typical when compared with the description by Lange 1935. The largest caps were 14 cm in diameter and the stem was in all specimens more than one cm thick. The tallest specimens were 16 cm in height. The colour of the fruit bodies was typical olive greenish, and some of the colour was seen in the stem. On some caps remnants of the volva were seen. These were gray or grayish white. The volva was wide and somewhat greenish in colour. — The habitat was a luxuriant meadow forest west of the »conservation area» of Ruissalo. *Tilia* is the dominant tree. Later the species was found also in a forest west of the »conservation area». It was found also in 1965 and

Fig. 1. *Amanita phalloides* from Ruissalo.

in 1966 (one not well developed fruit body). In 1967 *A. phalloides* was found by Antti Nyman in Halikko. It is probable that the distribution of this species is restricted to the oak zone in Finland.

Amanita junquillea Quél.

This species has earlier been recorded from Finland by KALLIO (1952) but no specimen is preserved. It was found 3. 9. 1965 in V: Raisio Kallastenmäki by Ulla Laaksonen (LAAKSONEN 1966). To this species belongs also in all probability a specimen in H with a label: »Amanita mappa (Willd.). Ab, Pojo Brödtorp, Björkkulla, leg. E. Hisinger. Fyndet Gjort någon Gång kring år 1860».

The Raisio specimen corresponds in all details with the description of PILÁT 1932 and LANGE 1935. Fig. 117 below to the left in PILÁT 1954 is exactly similar to our specimen.

The habitat of the Raisio locality is pine growing rocky heath on a hill slope above a hazel copse with some old oaks. The associates were *Pleurozium schreberi* (60 %), *Luzula pilosa, Calamagrostis arundinacea, Maianthemum bifolium.* The acidity of the soil was pH 4.4.

The species is rare both in Denmark and southern Sweden, where it has first been found in 1936 (LUNDELL & NANNFELDT 1936). In Finland it is obviously a southern termophilous species (cf. PILÁT 1954, p. 117).

Amanita citrina (Schaeff.) S. F. Gray

A: Lemland Flaka 11. 9. 63 (EK). V: Kemiö Viik 18. 9. 65 and 10. 9. 66 (PK); Parainen Peksor 17. 9. 66 (SH); Uusikaupunki Sundholma 21. 9. 65 (PK); Vehmaa Saarikko 21. 9. 65 (PK); Laitila Varpe 21. 9. 65 and Mustasalo 21. 9. 65 (PK). EK: Kymi Saksala 18. 9. 66 (Kalevi Viljamaa).

Amanita spissa (Fr.) Kummer.

V: Turku Ruissalo, roadside near Kansanpuisto, under *Tilia* (in the square no. 101 by LINDGREN 1954) 29. 4. 64 (EK & PK), 1. 10. 64 (PK), 24. 8. 65 (Ulla Laaksonen), 4. 9. 65 (EK & PK). The species was abundant in 1964 and 1965, but in 1966 it was not found. The habitat is dry and almost barren ground.

Boletaceae

Gyroporus cyanescens (Bull.) Quél.

V: Kemiö Viik, oak forest 18. 9. 65 (EK); Kisko Niemenkylä 12. 9. 65 (Hanna Heiskanen). EK: Virolahti Eerikkilä, sandy pine forest 23. 9. 65 (Tapio Rintanen), and Ravijoki Lapuri, on sand 12. 9. 65 (Tapio Rintanen). — In these specimens two different types of habitats are represented: a luxuriant meadow forest and sandy open soil.

Gyroporus castaneus (Bull. ex Fr.) Quél.

V: Turku Ruissalo, west of the nature protection area, on barren ground (roadside) under oaks 24. 8. 66 (SH), 9. 9. 66 (PK).

Suillus granulatus (L. ex Fr.) O. Kuntze

A: Jomala roadside between Jomala and Lemland 20. 9. 64 (PK). V: Turku Katariinanlaakso 23. 9. 63 (PK); Korppoo Åvensor Karheri 25. 9. 66 (PK). The species was found in many places in Parainen, where it seems to be rather common in pine forests on calcareous soil. The pH value of some habitats has been measured and it is mostly about 7 (6.4—7.6). The specimens from Parainen (SH): Peksor, cp in pine forest 28. 7. 65; Kurchas 30. 7. 65; Ersby-Simonkylä 28. 7. 65; Mustfinnö 3. 9. 66.

Xerocomus chrysenteron (Bull. ex St.Am.) Quél.

A: Jomala Ramsholm 20. 9. 64 (PK). V: Kemiö Viik 18. 9. 65 (PK); Korppoo Åvensor

Karheri 25. 9. 66 (PK); Parainen Peksor 10. 8. 65 and 16. 8. 66 (SH), Lenholm 10. 8. 65, Attu 16. 8. 65. Always near oak or hazel.

Boletus edulis Bull. ex Fr. var. *reticulatus* (Schaeff.) Boud.

V: Halikko Märy Pihko, under oaks 22. 8. 66 (AN); Parainen Lenholm, near oaks 30. 8. 66 (SH).

Boletus erythropus (Fr. ex Fr.) Pers.

V: Kakskerta Järvistensaari 15. 7. 66 (Pirjo Karunen); Parainen Peksor 31. 8. and 7. 7. 65 (SH). Lenholm 30. 8. 66 (SH). EH: Tampere Kaupinmetsä 15. 9. 65 (Maija Rantala). This very typical specimen of the species is thus found north of the oak zone and there were no oaks or other »southern» trees in the vicinity, but only pine and birch.

Boletus luridus Schaeff. ex Fr.

A: Eckerö Skag 12. 9. 63 (EK); Lemland Flaka 11. 9. 63 (EK). The species grew in mixed forest with oaks.

Russulaceae

Russula laurocerasi Melz.

V: Turku Ruissalo, at the spring of Choraeus and at the roadside to Pikkupukki 10. 9. 56 (PK), Ruissalo 24. 8. 65 (RS), Katariinanlaakso 17. 9. 63 (RS); Raisio Perno 21. 9. 63 (RS); Halikko Tavola 18. 9. 65 (AN). All the habitats are near oaks. The species is easily discerned from *R. foetens* by the odour and the form of the spores.

Russula lepida Fr.

The species, which has not been closely described from Finland (cf., however, RAUTAVAARA 1947: I p.), is like the more common *R. pseudointegra* Arn. & Goris. The spore colour is, however, white and the stem has often the same reddish colour as the cap. All characteristics agree with the description by SCHAEFFER (1952).

V: Turku Ruissalo, Kauppila 2. 10. 63 (RS); Halikko Pihko 2. 10. 63 (RS). Both localities are rather luxuriant meadow forests with *Picea, Corylus* and *Quercus*. According to SCHAEFFER (1952) *R. lepida* is a typical fungus in the beech forests of south and central Germany.

Russula lutea (Huds. ex Fr.) Fr.

V: Turku Ruissalo 7. 10. 63 (RS), Katariinanlaakso 26. 9. 56 (PK), 4. 9. 61 (PK), 28. 9. 63 (RS); Kaarina Karpanmäki, Sept. -60 (PK); Kakskerta Kulho Linnavuori 29. 8. 62 (PK); Lieto Vieru 11. 9. 66 (Paula Siltanen); Halikko Vaisakko 16. 9. 62, 15. 9. 63 (RS), Pihko 15. 9. 63 (RS), Tavola 18. 9. 65 (AN); Uskela Veitakkala 15. 9. 63 (RS); Kemiö Viik 10. 9. 66 (EK). EH: Asikkala Vääksy 17. 8. 62 (Lahja Hakala). Although the species is not restricted to the oak zone in Finland, it is, however, a typical fungus in Ruissalo and in other oak forests in Turku area.

Russula aurata (With.) Fr.

A: Jomala Gottby 21. 9. 64 (PK and RS). V: Turku Ruissalo, rich copse with *Quercus, Tilia* etc. 15. 9. 67 (RS); Halikko Vaisakko 15. 9. 63 (RS), 26. 8. 65 (RS). The habitat in A was a dry pine forest on rock ground (with *Cladina*-lichens). In Halikko the habitat was a rather rich meadow forest with pH 5.9 and with the typical vascular plants: *Picea, Corylus, Rhamnus frangula, Quercus.*

Russula olivacea (Schaeff. ex Schw.) Fr.

This species resembles somewhat the more common *R. cyanoxantha,* from which it is, however, easily separated by the coloured spore powder. All the characteristics agree with those of the fruit bodies collected by the author, Kankainen, in Denmark.

V: Turku Ruissalo, oak forest near the spring of Choraeus 24. 9. 63 (PK). The species is not recorded from Finland previously. In south and central Germany it is one of the most common species (SCHAEFFER 1952).

Russula pseudointegra Arn. & Goris

V: Turku Ruissalo 28. 9. 63 (RS), 7. 10. 63 (RS), 24. 8. 65 (RS), 2. 9. 65 (PK), 8. 10. 65 (RS); Raisio Perno 17. 9. 65 (Ulla Laaksonen), Vatsela Kallastenvuori 6. 9. 65 (EK); Kemiö Viik 18. 9. 65 (EK), 10. 9. 66 (PK). Very common in Ruissalo in 1966.

Lactarius volemus (Fr) Fr.

V: Turku Ruissalo 4. 9. 65 (PK) and 9. 9. 66 (PK); Parainen Pettiby 20. 8. 66 (SH); Kemiö Viik 10. 9. 66 (PK); Halikko Tavola 18. 9. 65 (AN); Piikkiö Pukkila 25. 9. 66 (Saara Tamminen); Raisio Kallastenvuori 6. 9. 65 (PK & EK); Naantali Luonnonmaa 17. 9. 66 (Paula Siltanen); Mietoinen Saari 17. 9. 65 (PK). EK: Virolahti Ylä-Säkäjärvi 7. 9. 66 (Tapio Rintanen).

Lactarius azonites Bull. ex Gmel.

V: Kemiö Viik 18. 9. 65 (EK & PK), and 10. 9. 66 (EK & PK); Raisio Perno 17. 9. 65 (EK). The species was found in oak forest.

Lactarius piperatus (L. ex Fr.) S.F. Gray

A: Lemland Flaka Herrö 11. 9. 63 (EK). V: Turku Katariinanlaakso 2. 9. 65 (PK); Kemiö Viik 4. 10. 64 (RS) and 18. 9. 65 (EK); Halikko Vaisakko 10. 10. 65.

Lactarius glaucescens Crossl.

V: Kemiö Viik 18. 9. 65 (PK); Karjalohja Piipola Heponiemi, oak forest 12. 9. 65 (AN); Halikko Keravuori in a rich hazel copse 1965 (AN, private communic.); Mietoinen Saari, oak forest 17. 9. 65 (PK).

Lactarius vellereus (Fr.) Fr.

V: Kemiö Viik 4. 10. 64 (EK), 10. 9. 66 (PK); Mietoinen Saari 17. 9. 65 (PK); Uusikaupunki Sundholma 21. 9. 65 (PK). EK: Virolahti Ravijoki-Länsikylä, birch forest 15. 9. 65 (Tapio Rintanen).

Lactarius quietus Fr.

V: Kemiö Viik 4. 10. 64 (EK), 18. 9. 65 (EK & PK) and 10. 9. 66 (PK); Halikko Vaisakko and Pihko 10. 10. 65 (AN); Karjalohja Piipola Heponiemi 12. 9. 65 (AN); Raisio Kallastenvuori 6. 9. 65 (EK & PK).

Cantharellaceae

Craterellus sinuosus (Fr.) Fr.

V: Kemiö Viik 18. 9. 65 (EK & PK), and 10. 9. 66 (EK & Paula Siltanen). The species grows in oak-hazel forest.

Gasteromycetes

Lycoperdon echinatum Pers.

V: Halikko Vuorentaka Vaisakko 2. 10. 65 (AN). About twenty specimens were growing under oak.

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