

# New and interesting clavarioid fungi from the hemiboreal zone of Finland

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During a work in the provinces Åland (Alandia, Ahvenanmaa) and Varsinais-Suomi 24 species of clavarioid fungi (Basidiomycota) were collected, including the rare *Multiclavula mucida*, *Ramaria fennica*, *Ramariopsis crocea*, *Typhula capitata*, *T. olivascens* and *T. spathulata*. New to Finland are *Typhula abietina* and *T. sphaeroidea*. Most of the species are widely distributed in the hemiboreal zone in Europe. The localities, habitats, substrates and short ecological notes for the new and some rare species are given.

Key words: Distribution, Finland, hemiboreal, Typhula

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## Introduction

The distribution and ecology as well as the species diversity of some fungal groups are poorly known, and the clavarioid fungi is one of those. The basic studies of this fungal group in Finland were those of Karsten (1879, 1881, 1882, 1899), but the distribution of most of the species could not be determined even 100 years later (Hansen & Knudsen 1997). Since Hansen and Knudsen (1997) there is only one publication dealing with *Typhula* species. Shiryayev and Kotiranta (2007) made a check-list of the species in Finnish herbaria with some notes on the distribution, hosts and ecology.

The aim of this work is to describe the diversity and some ecological features of the clavarioid fungi in the hemiboreal zone in Finland.

## Material and methods

A total of 52 specimens of clavarioid fungi were collected by the author in October 2007. In each locality a special effort was made to examine the main types of microhabitats. Specimens are deposited in the mycological herbarium of the Institute of Plant and Animal Ecology of Ural division of the Russian Academy of Sciences, Ekaterinburg (SVÉR). For the identification Corner (1950, 1970),

Berthier, (1976), Hansen and Knudsen (1997), Franchi and Marchetti (2001) were used, and the nomenclature follows <http://www.indexfungorum.org/Names/Names.asp> and that of vascular plants Hämet-Ahti et al. (1998). The biological provinces and collecting sites are according to Heikinheimo and Raatikainen (1981), and the provinces are illustrated in Hansen and Knudsen (1997: 28). The following abbreviations for substrates are used: *Acer* refers to *A. platanooides*, *Betula* to *B. pendula* and *B. pubescens*, *Corylus* to *C. avellana*, *Fraxinus* to *F. excelsior*, *Picea* to *P. abies*, *Pinus* to *P. sylvestris*, *Populus* to *Populus tremula* and *Quercus* to *Q. robur*. Species new to Finland are marked with an asterisk (\*). The biological province Alandia (Åland, Ahvenanmaa) is abbreviated as A, and Varsinais-Suomi as V.

## List of species

*Multiclavula mucida* (Pers.) R. H. Petersen  
Syn. *Lentaria m.* (Pers.) Corner

**A:** Lemland, Herrö (59°55'N, 20°15'E), grass-herb forest (*Betula*, *Quercus*, *Corylus*, *Fraxinus*, *Picea*, *Viburnum opulus*), on fallen trunk of *Quercus*, 2.X.2007 Shiryayev (SVÉR(F) 67435).  
**V:** Parainen (60°17'N, 22°19'E), seashore with *Alnus glutinosa* and *Populus*, on decaying *Populus* trunk, 3.X.2007 Shiryayev (SVÉR(F) 67432).

Lohja (60°13'N 24°06'E), Tamminiemi Nature Reserve, luxuriant broad-leaved grass–herb forest, on *Quercus* trunk, 3.X.2007 *Shiryae*v (SVER(F) 67444).

***Pterula gracilis*** (Desm. & Berk.) Corner

**A:** Jomala (60°08'N, 20°01'E), partly cleared mixed forest (*Picea*, *Pinus*, *Betula*, *Malus sylvestris*, *Acer*, *Sorbus aucuparia*) near the sea shore, on decaying leaves of *Betula*, 1.X.2007 *Shiryae*v (SVER(F) 67437). **V:** Parainen (60°17'N, 22°19'E), luxuriant deciduous forest close to the seashore, on decaying leaves of *Betula*, 3.X.2007 *Shiryae*v (SVER(F) 67438).

***Pterula multifida*** (Chevall.) Fr.

Syn. *P. subulata* Fr.

**A:** Jomala (60°08'N, 20°01'E), grass–herb forest on foot-hill (*Picea*, *Pinus*, *Betula*, *Malus sylvestris*, *Acer*, *Sorbus aucuparia*) near the sea shore, on soil 1.X.2007 *Shiryae*v (SVER(F) 67416).

***Ramaria fennica*** (P. Karst.) Ricken

**A:** Lemland, Herrö (59°55'N, 20°15'E), grass–herb forest (*Betula*, *Quercus*, *Corylus*, *Fraxinus excelsior*, *Picea*, *Sorbus hybrida*, *Viburnum opulus*), on soil, 2.X.2007 *Shiryae*v (SVER(F) 67423).

***Ramariopsis crocea*** (Pers.) Corner

**A:** Lemland, Herrö (59°55'N, 20°15'E), grass–herb forest (*Betula*, *Quercus*, *Corylus*, *Fraxinus*, *Picea*, *Sorbus hybrida*, *Taxus baccata*, *Viburnum opulus*), on soil, 2.X.2007 *Shiryae*v (SVER(F) 67433).

**\**Typhula abietina*** (Fuckel) Corner

**A:** Jomala (60°08'N, 20°01'E), luxuriant grass–herb forest on slope of foot-hill (*Picea*, *Pinus*, *Alnus glutinosa*, *Betula*, *Sorbus aucuparia*, *Ribes alpinum*) near the sea shore, on decaying *Pinus* needles, 1.X.2007 *Shiryae*v (SVER(F) 67428).

***Typhula capitata*** (Pat.) Berthier

**A:** Lemland, Järsö (60°01'N, 20°00'E), wet fern- and herb-rich luxuriant forest close to the seashore with *Alnus glutinosa*, *Betula*, *Fraxinus*, *Hippophaë rhamnoides*, *Picea* and *Sorbus hybrida*, on decaying leaves of *Calamagrostis arundinacea*, 2.X.2007 *Shiryae*v (SVER(F) 67426).

***Typhula caricina*** P. Karst.

**V:** Parainen (60°17'N, 22°19'E), seashore with *Alnus glutinosa*, on decaying leaves of *Carex* sp., 3.X.2007 *Shiryae*v (SVER(F) 67427).

***Typhula lutescens*** Boud.

**V:** Parainen (60°17'N, 22°19'E), luxuriant grass–herb forest on foot-hill of a steep north facing rock with *Quercus*, *Tilia cordata*, *Betula*, and *Picea*, on decaying *Betula* leaves buried in mosses, 3.X.2007 *Shiryae*v (SVER(F) 67434).

***Typhula olivascens*** Berthier

**V:** Kaarina, Kakskerta (60°22'N, 22°14'E), deciduous forest (*Betula*, *Sorbus aucuparia*, *Acer*, *Picea*), on decayed petioles of *Dryopteris filix-mas*, 3.X.2007 *Shiryae*v (SVER(F) 67429).

***Typhula spathulata*** (Peck) Berthier

**A:** Lemland, Järsö (60°01'N, 20°00'E), grass–herb forest close to the seashore (*Betula*, *Corylus*, *Fraxinus*, *Picea*, *Viburnum opulus*), on decaying twigs of *Salix* sp., 2.X.2007 *Shiryae*v (SVER(F) 67441). **V:** Kaarina, Kakskerta (60°22'N, 22°14'E), cut forest area with bushes (*Betula*, *Corylus*, *Sorbus aucuparia*), on dead twig of *Corylus*, 3.X.2007 *Shiryae*v (SVER(F) 67430).

**\**Typhula sphaeroidea*** Remsberg

**A:** Lemland (60°04'N, 20°10'E), deciduous grass–herb forest (*Betula*, *Fraxinus*), on decaying twigs of *Fraxinus*, 2.X.2007 *Shiryae*v (SVER(F) 67439). Jomala (60°08'N, 20°01'E), pastured mixed grass–herb forest (*Picea*, *Quercus*, *Pinus*, *Betula*, *Sorbus aucuparia*) near the sea shore, on decayed twigs of *Rubus* sp., 1.X.2007 *Shiryae*v (SVER(F) 67440).

***Typhula struthiopteridis*** Corner

**A:** Lemland, Järsö (60°01'N, 20°00'E), fern- and herb-rich luxuriant forest close to the seashore with *Alnus glutinosa*, *Betula*, *Fraxinus*, *Hippophaë rhamnoides*, *Picea*, *Sorbus hybrida*, on decaying petioles of *Matteuccia struthiopteris*, 2.X.2007 *Shiryae*v (SVER(F) 67424). **V:** Lohja, Tamminiemi Nature Reserve (60°13'N, 24°06'E), broad-leaved grass–herb forest, brook slope, on the decaying petioles of *Matteuccia struthiopteris*, 3.X.2007 *Shiryae*v (SVER(F) 67445).

***Typhula uncialis*** (Grev.) Berthier

**A:** Jomala (60°08'N, 20°01'E), partly cut mixed forest (*Picea*, *Pinus*, *Alnus glutinosa*, *Betula*, *Sorbus aucuparia*) near the sea shore, on decayed *Anthriscus sylvestris*, 1.X.2007 Shiryaev (SVER(F) 67431). **V:** Kaarina, Kakskerta (60°22'N, 22°14'E), deciduous forest with *Betula*, *Corylus*, *Alnus glutinosa* and *Populus*, close to a brook, on dead *Petasites* sp., 3.X.2007 Shiryaev (SVER(F) 67438).

**Discussion**

Altogether twenty-four species of clavarioid fungi were collected in the provinces Åland (Alandia) and Varsinais-Suomi (Regio aboënsis) including common species *Clavulinopsis kunzei* (Fr.) Corner, *Ramaria gracilis* (Pers. : Fr.) Quéél., *Typhula erythropus* (Pers. : Fr.) Fr., *T. graminum* P. Karst., *T. phacorrhiza* (Reichard : Fr.) Fr., *T. setipes* (Grev.) Berthier, *T. variabilis* Riessi in Åland, and *Clavaria fumosa* Pers. : Fr., *T. erythropus* (Pers. : Fr.) Fr., *T. phacorrhiza* (Reichard : Fr.) Fr., *T. quisquiliaris* (Fr. : Fr.) Henn., *T. setipes* (Grev.) Berthier, *T. variabilis* Riess. in Varsinais-Suomi, as well as according recent studies (Shiryaev & Kotiranta 2007) in Åland two new species for the country, viz. *T. abietina* (Fuckel) Corner and *T. sphaeroidea* Remsberg.

**Notes on some species**

*Typhula abietina* is an uncommon boreal species, known only in Eurasia with the ecological optimum in the southern boreal regions (Shiryaev 2004, 2007). It is widely but sparsely distributed from temperate zone to northern boreal areas, where it has been found on decaying needles of *Abies alba*, *A. nordmanniana*, *A. sibirica*, *Picea abies*, *P. orientalis*, *Pinus sylvestris* and *P. sibirica*. In boreal areas it grows from August to October in wet localities on decaying needles or leaves buried in mosses. In hemiboreal areas it fruits only in a short wet period in autumn in coniferous forests. In the temperate areas it is rare on dead needles on sandy soils or moist hill slopes, and the fruiting period is very short, from second part of October to November.

*Typhula olivascens* is a common boreal species, known only in Eurasia with the ecological optimum in the southern boreal and hemiboreal

regions (Shiryaev 2004, 2007). It is widely distributed from temperate zone to middle boreal zone, where it has been found only on decaying petioles of *Athyrium filix-femina* and *Dryopteris filix-mas*. In the middle boreal zone it is rare and mostly mal-formed specimens are found close to brooks or lakes in early August. In southern boreal and hemiboreal zones it fruits from August to October in all kinds of localities with *A. filix-femina* or *D. filix-mas*. In temperate zone the species prefers northern shady wet slopes, where it is recorded in October–November and collected from *Athyrium* spp. and *Dryopteris* spp.

*Typhula sphaeroidea* seems to have a temperate distribution in Holarctic and is fairly common with ecological optimum in mixed- and broad-leaved forests (Shiryaev 2006, 2007). It is widely distributed from south taiga to subtropical zone but also on mountains up to the tree line and prefers decayed hardwood (*Quercus*, *Fraxinus*, *Acer*, *Juglans*, *Pterocarya*, *Maackia*, *Sorbus*, *Cerasus*) twigs as well as decaying herbs (*Artemisia*, *Filipendula*), bushes (*Rosa*, *Rubus*); rarely on *Alnus* and *Betula*, and not collected from coniferous debris. Fruiting period is short, in late autumn. In the hemiboreal zone it fruits in October, in temperate- and subtropical zones in October–November.

*Typhula uncialis* is one of the most common *Typhula* species in Holarctic, but, unexpectedly, rare in temperate- and hemiboreal zones, especially on areas close to the sea. During the fieldwork only two specimens were collected – for the first time in Åland (Shiryaev & Kotiranta 2007).

*Ramariopsis crocea* and *R. fennica* grew in the same forest, but in different habitats: the first one on southern slope of a hill on calcareous soil and humus and with a rich herb- and shrub vegetation, whereas the second one was collected under canopy of hardwoods in more moist conditions on rich soil (mull) on northern slope of the hill. Short-living fruitbodies of *Multiclavula mucida* were collected twice on large, moist *Populus* trunk covered with algae, and once on moist *Quercus* in shaded forest.

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