

## The genus *Rhizopogon* in Finland. I. *R. abietis* and *R. ochraceorubens*

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MARTÍN, M. P. 2001: The genus *Rhizopogon* in Finland. I. *R. abietis* and *R. ochraceorubens*. – *Karstenia* 41: 23–24. Helsinki. ISSN 0453-3402.

*Rhizopogon abietis* A. H. Smith and *R. ochraceorubens* A. H. Smith are recorded for the first time for Finland. Both species should be considered as threatened in Europe. New collections of *R. roseolus* (Corda) Th. Fr. have been studied.

Key words: Basidiomycotina, hypogeous, threatened fungi

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### Introduction

Twenty two *Rhizopogon* species have been accepted in Europe (Martín 1996a; Martín & Calonge 2000). According to our database (Martín 1996b), the 218 collections from Finland belong to four species: *R. luteolus* Fr. & Nordholm (26 collections), *R. marchii* (Bres.) Zeller & Dodge (1), *R. occidentalis* Zeller & Dodge (5) and *R. roseolus* (Corda) Th. Fr. (184). Two species described by Karsten (1886, 1889), *R. borealis* Karst. and *R. lapponicus* Karst. are synonymous with *R. roseolus* (Corda) Th. Fr. ss. Martín (1996 a). Additional materials studied revealed many more collections of *R. roseolus*, but three collections belong to two rare species in Europe: *R. abietis* A.H. Smith and *R. ochraceorubens* A.H. Smith.

### Material and methods

Voucher collections at the OULU Herbarium have been examined. The co-ordinates are given according to the Finnish national uniform grid system (Grid 27°E).

### Results

#### *Rhizopogon abietis* A. H. Smith

*Specimen examined*: Lapponia kemensis. Pelkosenniemi, Tiermaskaarrot S, Lauttalamminkumpu, dryish stand (*Vaccinium myrtillus*, pine), campfire site, 7433: 536, 7.VIII.1994 Ulla Nummela-Salo & Pertti Salo (OULU F66868).

This is the first Finnish record of *R. abietis*. This species can macroscopically be confused with *R. roseolus* (Corda) Th. Fr. However, two microscopic characters help to identify this species: the peridium with hyphae forming a loosely interwoven weft, and the truncate spores. The material studied shows that many spores have lost the perisporium, probably due to stress conditions.

Few collections of this species have been found in Europe (Martín 1996a): Austria (1), Denmark (1), France (1), Italy (1), Spain (6/3 localities) and Sweden (3/3 localities). The Finnish locality is situated in Vuotos area, which is in danger to become drowned because of the construction

plans of a reservoir. This species should be classified as threatened (rare) and its area conserved.

***Rhizopogon ochraceorubens* A. H. Smith**

*Specimens examined:* Regio kuusamoënsis. Posio, Livojärvi, lower S slope of hill Kiurusenvaara, paludified eutrophic mixed forest (*Picea*, *Pinus*, *Juniperus*, *Salix*), several large groups, 7324:555, alt. 275 m, 5.VIII.1979 Tauno Ulvinen (OULU F66867). Lapponia sompiensis. Pelkosenniemi, Suvanto SW, slope along the river Kitinen, 4 km W of the farm of Korpela, rich paludified mixed forest (*Betula*, *Picea*, *Pinus*), 7453: 506, 25.IX.1994 Esteri Ohenoja.

This is the first Finnish record of *R. ochraceorubens*. The microscopic characters that separate this species from others with *corsicus*-type peridium (hyphal packet arranged in two directions and mixed with globose cells) are the numerous patches of red pigments distributed along the peridium hyphae. The spores are truncate. Among the species mentioned in Martín (1996a), this is the only one with an atlantic distribution (Belgium, Netherlands, Norway, United Kingdom, Sweden). This species should be classified as threatened (rare) in Europe.

***Rhizopogon roseolus* (Corda) Th. Fr.**

*Specimens examined:* Nylandia. Helsinki, Kallahti, Rivelinniemi, margin of pine forest along sea shore, 6676:397, 26.IX.1994 Ulla Nummela-Salo & Pertti Salo. Ostrobothnia kajanensis. Kuhmo, Kellojärvi, Niitylahti N, on shore of a small bay, in the sand, 71318: 5995, 31.VII.1984 Kalevi Takala 14335. Ostrobothnia ouluensis. Oulu, Kuivasjärvi, Lopakkaselkä, along the road to Kalikkalampi, grassy and mossy path in a spruce forest of *Vaccinium vitis-idaea* site type with *Pinus sylvestris*, 72199: 4309, 21.VII.1970/1 Martti Ohenoja; Tyrväjä, 719:43, 1992 Leena Nevanperä. Ostrobothnia ultima. Kemi, Ajos, by the road side on sandy ground, 7289:388, alt. 5 m, 22-IX-1984, 19.X.1985 Marjatta Kamula. Lapponia sompiensis. Pelkosenniemi, Suvanto NW, N shore of the river Kitinen at Kalkkipahta, dry pine-dominated forest on calcareous ground, 74553:5039, alt. 163 m, 2.IX.1991 Esteri Ohenoja (OULU F66866); Pelkosenniemi, Syväjärvi W, Ahven-

lammet E, dry pine stand in sand, 7451: 524, 25.VIII.1994 Ulla Nummela-Salo & Pertti Salo; Pelkosenniemi, Sokanaapa, Syväjärvi W, Ahvenlampi SE, dry pine stand, 7450:524, 12.IX.1994 Ulla Nummela-Salo & Pertti Salo.

*R. roseolus* is a ubiquitous species and the most common one in Europe. Its shows a great variety of peridium colour: pure white when young, then yellow to rouge purple. When rubbed, the peridium even in white and yellow basidiomes becomes red to deep purple.

Smith and Zeller (1966) discussed whether the two *R. roseolus* (Corda) ss. A. H. Smith from Idaho (USA) belong to *R. roseolus* (Corda) Th. Fr. known from Europe. We studied the Smith collection 65485 and found it to be *R. roseolus* (Corda) Th. Fr. Currently, we have undertaken the molecular analysis based on comparison of sequences obtained from 18S, ITS regions and 28S of rDNA, which will reveal if there are differences between collections from Europe and from the United States.

**Acknowledgements:** Thanks to Esteri Ohenoja (OULU Herbarium) for sending the collections mentioned in this study and for translating the labels, and to Marian Glenn (New Jersey, USA) for English revision.

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