

## Ascomycetes from burnt places in the NW Patagonia, Argentina

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Two Pezizales and three Sordariales are described from burnt places in an indigenous forest of *Nothofagus* and patagonian steppe in Southern South America, about one year after a spontaneous fire occurred. A brief account of the vegetation is given, as well as methods employed. *Tricharina gilva* and *Ascobolus archeri* are described on the Pezizales; *Coniochaeta saccardoii*, *Strattonia carbonaria*, and *Jugulospora rotula* on the Sordariales.

**Key words:** Ascomycetes, burnt places, Patagonia, Argentina

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Dva zástupci řádu Pezizales a tři řádu Sordariales jsou popisovány ze spáleníšť v původních lesích s *Nothofagus* a z patagonské stepi v jižní části Jižní Ameriky. Houby byly zjištěny rok po vypuknutí spontánního požáru. Je podán stručný náčrt vegetace a metod, které byly použity. Byly zjištěny druhy z řádu Pezizales — *Tricharina gilva* a *Ascobolus archeri* a dále z řádu Sordariales — *Coniochaeta saccardoii*, *Strattonia carbonaria* a *Jugulospora rotula*. Popisy jmenovaných druhů jsou uvedeny.

### INTRODUCTION

The analysis of the mycobiota of natural burnt sites is part of a comprehensive project on Fungal Diversity in NW Patagonia.

There is no previous studies on the mycobiota of burnt sites in Argentina. Only sparse records of carbonicolous species can be found mainly in papers dealing with taxonomy as Gamundí (1964, 1975, 1986), Gamundí & Gaiotti (1998) and Singer (1969).

Studies approached here were performed in natural environments, forest and steppe, in the neighbourhood of San Carlos de Bariloche, Río Negro, Argentina, after fires occurred in summer 1999.

From the phytogeographical point of view, those places belong to the Subantarctic Province, and fall into the districts of the Pre-Andean Evergreen Forest (“Bosque Preandino Perennifolio”) and Preandean Steppe of *Festuca pallescens* (“Preandino de las Estepas de *Festuca pallescens*”) according to Roig (1998).

Vegetation of the forest before the burning was mainly composed by a canopy layer dominated by *Nothofagus dombeyi* and *Austrocedrus chilensis*, a shrub layer of *Nothofagus antarctica*, *Schinus patagonicus*, *Diostea juncea*, *Berberis darwinii*, *Chusquea culeou*, *Mutisia decurrens* and *M. spinosa*.

The original steppe vegetation was mainly herbaceous-shrubby. The herbaceous layer was dominated by "coirones" such as *Festuca pallescens* and *Stipa speciosa* associated with cushions of *Acaena splendens*. The shrubby layer was represented by *Mulinum spinosum*, *Escallonia virgata*, *Colletia hystrix* and *Discaria chacayae*, among other species.

In this first contribution species of Ascomycetes are recorded, which were collected recently on burnt sites. Only those insufficiently known are described and illustrated.

#### MATERIAL AND METHODS

Three sampling sites were chosen. Sites 1 and 2 in the burnt forest are located in the SW slopes of Cerro Catedral, at 1500 m alt. (41°10' S; 71°26' W) in the neighbourhood of the path "Los Eslovenos" to the Refugio Frey. The fire on Cerro Catedral burned from February 22-March 2, 1999.

Site 3 is located on the burnt steppe, Provincial Road No. 23 to Pilcaniyeu, about 50 m along the road, which is 6 km from Laguna de los Juncos, near railway station Perito Moreno, at 900 m alt. (41°10' S; 71° W). The fire occurred on February 22, 1999 and controlled approximately a week later.

The first sampling was performed in spring (September 1999). Sampling sites were visited monthly with the purpose to obtain fruitbodies in the field. Bimonthly burnt soil samples were collected, incubated in a moist chamber in the laboratory and observed periodically until fructification, mainly to detect small ascomata.

The material is kept in the Herbarium of Centro Regional Universitario Bariloche, Universidad Nacional del Comahue (BCRU).

Hawksworth et al. (1995) is used for the taxonomic position of species. Author's names are abbreviated according Brummit & Powell (1992).

#### Pezizales

##### Otideaaceae

*Tricharina gilva* (Boud. in Cooke) Eckbl., Nytt. Mag. Bot. 15: 60. 1968.

≡ *Peziza gilva* Boud. in Cooke, Mycographia: 240, fig. 406. 1879.

Measures of our collections are given here:

Apothecia diameter: 5-7 mm; asci: 180-205 × 10-15 μm; paraphyses: 4-5 μm diam at the apex; ascospores: 14-15.5 (17.5) × 9.5-10 μm, l:w = 1.5:1;

marginal hairs (type I): 110–230 × 5–7.5 µm; ectal excipulum: 60–75 µm thick, globose cells 15–50 µm diam.; medullar excipulum: 35–60 µm thick, hyphae 3.4–5 µm diam.

Although congruent in some aspects to Yang & Korf (1985) description, we found some differences: a) the disc colour is consistently more brilliant in our collections, "aurantiacus" in fresh specimens; b) hairs are shorter, up to 400 µm in Yang & Korf's description; c) our collections are strictly carbonicolous. These authors stated that *Ascorhizoctonia* Yang & Korf is the anamorph.

The material agrees in apothecial colour, shape, micromorphology (excipulum, hypothecium, hairs, asci, ascospores and paraphyses) to the description and magnificent illustrations given by van Brummelen (1983). We accept this description of the species, more ample than the one given by Yang & Korf (1985).

There are two other pyrophilous species of *Tricharina*: *T. praecox* (Karst.) Dennis and *T. cretea* (Cooke) Boud., both reduced to varieties of *T. praecox* by Yang & Korf (1985). Our collections differs from the first one in having smooth epispore, without any trace of cyanophilic ornamentation nor polar granules in the spores; from *T. cretea* in shape of ascospores, more elongated in this species and with disc colour paler.

We accept the emendation of *Tricharina* given by Yang & Korf (1985) who place species which have hairs upon the entire excipulum, forming mycorrhiza and possessing anamorphs in *Complexipes* under *Wilcoxina* Yang & Korf. Molecular studies (Egger 1996) support the segregation of the both genera.

This is the first record of *Tricharina gilva* for Argentina.

Collections. ARGENTINA, Río Negro, Nahuel Huapi Nat. Park, Cerro Catedral, path "Los Eslovenos", to Refugio Frey, leg. L. Lorenzo, M. Havrylenko & E. Bernasconi, 14-II-2000. Site 2. On burnt soil, 12 month after fire, BCRU. 4180, Ibidem, 3-V-2000, site 2., BCRU 4182, Ibidem, leg. L. Lorenzo, M. I. Messuti, M. Havrylenko & E. Bernasconi, 3-V-2000, site 1, BCRU 418. Additional material studied. France, Caen, leg. R. Maire, III-1911, "in caldariis", det. J. L. E. Boudier, Herbarium Boudier (P), under *Tricharia gilva* Boud.

Habitat. On burnt soil, 15 month after fire.

Illustrations. Boudier, J. L. E., *Icones Mycologicae* III, Pl. 347. 1904 as *Tricharia gilva*; Svrček, M. *České Druhy Podčeledi Lachneoideae*, Tab. I, fig. 10–11, 1948 as *Lachnea gilva*; Dennis, R. W. G., *British Ascomycetes*, Pl. IX. 1981; Breitenbach, J. & Kränzlin, F. *Pilze der Schweiz*, I, Pl. 71, 1981. Brummelen v., J. Observations on the variability of *Tricharina gilva*, *Crypt.*, *Mycol.* 4. figs. 1–2. 1983.

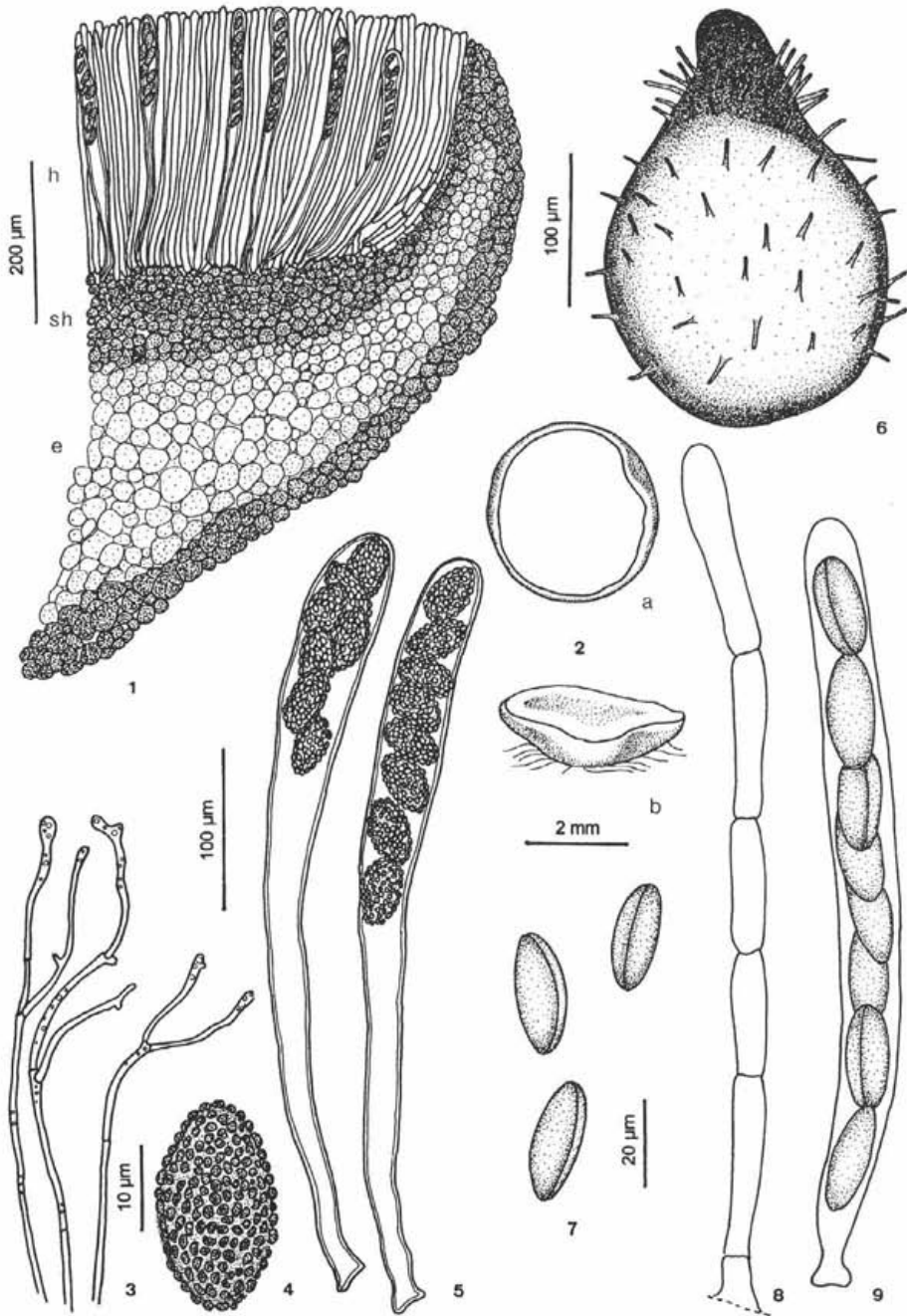


Fig. 1. *Ascobolus archeri* 1-5, *Coniochaeta saccardoi* 6-9

Ascobolaceae

*Ascobolus archeri* Berk. in Hooker f., Botany Antarctic voyage III, 2: 276. 1860.

(Fig. 1: 1-5).

Apothecia discoid to patelliform, 3-5 mm diam.; disc "umbrinus" to "fuliginous" in fresh, due to the mature asci, hymenial mucus greenish; margin entire, thin, inflexed when drying; receptaculum glabrous, pale brownish with a greenish tinge, brown at the base. Asci cylindrical, 8-spored with walls slightly amyloid, immature asci dextrinoid, (145-) 190-225 × (17-) 20-25 μm. Paraphyses filiform, hyaline, flexuous, branched in the upper part, embedded in the hymenial mucus, 2-5 μm diam. Ascospores 1-seriate to 2-seriate, dark brown, ellipsoidal, eguttulate, verrucose, with coarse verrucae uniform in diameter, 18.4-21 × 11.7-14.5 μm. Immature ascospores slightly amyloid.

Excipulum of a textura globulosa, homogeneous, the 2-3 external layers brownish, cells with brown walls, 12.5-50 μm diam., the colour diluting to become hyaline in the inner part. Subhymenium brownish, of a textura globulosa, the cells smaller than in the excipulum.

Collections. Argentina, Río Negro, Nahuel Huapi Nat. Park, Cerro Catedral, path Los Eslovenos to Refugio Frey, leg. L. Lorenzo, M. Havrylenko & E. Bernasconi, Site 1 & 2, 14-II-2000, BCRU 4183; Ibidem, 22-VI-2000. Appeared in moist chamber at the laboratory after 45 days of incubation, BCRU 4174.

Habitat on burnt soil among mosses.

*Ascobolus archeri* is similar to *Ascobolus carbonarius* P. Karst., from which is distinguished by the smaller and elliptical ascospores without truncate ends and more uniform verrucae. The collections agree with van Brummelen's description (1967:146).

Initially described for Tasmania, Australia, this is the first record for South America. Figs. 1-5 illustrate this peculiar carbonicolous species.

Sordariales

Coniochaetaceae

*Coniochaeta saccardoi* (Marchal) Cain, R. F. University of Toronto Studies, Biol. Ser., 38: 65. 1934.

≡ *Hypocopa saccardoi* Marchal, Bull. Soc. Roy. Bot. Belgique 24: 59. 1885.  
(Fig. 1: 6-9)

Perithecia scattered, superficial, dark brown to nearly black and opaque, ostiolate, globose to pyriform,  $220\text{--}308 \times 148\text{--}220 \mu\text{m}$ ; with a short papillate neck; covered with sparse dark brown setae, septated, swollen at the base, rounded apically, straight to slightly undulate,  $16\text{--}80 \times 3\text{--}4 \mu\text{m}$  at the base; peridium pseudoparenchymatous, outer peridial cells isodiametric and angular. Asci 8-spored,  $97\text{--}110 \times 7\text{--}9 \mu\text{m}$ , cylindrical, rounded apically, without apical ring, shortly estipitate. Paraphyses filiform, longer than asci, septate, ca.  $4 \mu\text{m}$  wide. Ascospores uniseriate, unicellular, dark brown, narrowly ellipsoid, smooth,  $12\text{--}15 \times 4\text{--}5.5 \times 4\text{--}5 \mu\text{m}$ , germ slit longitudinal, running full-length.

Collections. ARGENTINA, Prov. Río Negro, Dpto. Pilcaniyeu, Ruta Provincial N° 23, Estación Perito Moreno, on burnt soil incubated in moist chamber, 3-VII-2000, Lorenzo, BCRU 4177.

Habitat: on burnt soil.

This species has been reported on dung, soil, stems and decaying leaves (Cain, 1934; Kobayashi et. al., 1969; Furuya & Udagawa, 1973, Mahoney & LaFavre, 1981; Spooner, 1984 and Checa et al. 1988, Ellis & Ellis, 1988). *C. saccardoii* has not been registered to date growing on burnt soil and is the first recorded from Argentina.

*C. saccardoii* appeared on steppe burnt soil (site 3) in a moist chamber at the laboratory after two months of incubation.

#### Lasiosphaeriaceae

*Strattonia carbonaria* (Phill. et Plowr.) Lundq. Symb. Bot. Upsal 20: 269. 1972.

≡ *Sphaeria carbonaria* Phill. et Plowr. Grevillea 2:188. 1874.

Illustration: Lundqvist, 1972: 269.

Measures of our collections are given here:

Perithecia  $366\text{--}430 \times 220\text{--}310 \mu\text{m}$ ; asci  $180\text{--}220 \times 11\text{--}12 \mu\text{m}$ ; ascospores upper cell  $18\text{--}22 \times 8\text{--}9 \mu\text{m}$ ; pedicel  $2.5\text{--}5 \mu\text{m}$  as long as broad.

The material coincides in perithecial shape and size, micromorphology (peridium, hairs, asci, ascospores and paraphyses) with the description given by Lundqvist (1972). The author (op. cit.) established that *Strattonia carbonaria* is a purely terricolous species, perhaps restricted to burnt soil, and is probably

overlooked and more common than appears from the records. *Strattonia carbonaria* is first recorded from Argentina.

Collections. ARGENTINA, Río Negro, Nahuel Huapi Nat. Park, Cerro Catedral, path "Los Eslovenos", to Refugio Frey, leg. L. Lorenzo, 1-VI-2000. Site 1. On burnt soil and plant debris incubated in moist chamber at the laboratory, BCRU 4175.

Habitat: This species appeared on forest burnt soil in a moist chamber at the laboratory after one month of incubation.

Illustrations: Phillips & Plowright 1897, pl. 25:3; Boudier 1878, pl. 4:8, as *Sphaeria sepulta*; Mouton 1897, pl. A: 2; 1900, pl. 2: 1, as *Bombardia bracyura*; Chenantais 1919, pl. 1:15; Cain 1934, fig.42; Lundqvist 1972 figs. 62:a,b,e-j, pl. 53: a-c; Dennis 1981, fig.12 E; Ellis & Ellis 1988, fig.170.

*Jugulospora rotula* (Cooke) Lundq. Symb. Bot. Upsal. 20: 260. 1972.  
≡ *Sphaeria rotula* Cooke, Handbook of British fungi 2: 868. 1871.

Measures of our collections are given here:

Perithecia 293-420 × 220-280 μm; asci 150-180 × 14-15 μm; ascospores upper cell 14-20 × 14-16 μm; pedicel 2.5-3.2 μm, isodiametric.

The material corresponds in perithecial shape and size, micromorphology (peridium, hairs, asci, ascospores and paraphyses) with the description given by Lundqvist (1972), except in the ascospores size. Our specimens deviate however from the original description by larger subglobose spores. This species seems to be strictly totally carbonicolous.

Collections. Argentina, Prov. Río Negro, San Carlos de Bariloche, Cerro Catedral, picada Los Eslovenos al refugio Frey, on burnt soil and plant debris incubated in moist chamber, 3-VII-2000, Lorenzo, BCRU 4178; Dpto. Pilcaniyeu, Ruta Provincial N° 23, Estación Perito Moreno, on burnt soil incubated in moist chamber, 22-VI-2000, Lorenzo, BCRU 4176.

Illustrations: Mouton 1897, pl. A: 3. Lundqvist 1967, figs. 26-28, 32, 33. Lundqvist 1972, fig. 59, pl.49; Dennis 1981, fig.12 D, Ellis & Ellis 1988, fig. 169.

Habitat. On burnt soil.



This species appeared on forest burnt soil (site 1) in a moist chamber at the laboratory after two months of incubation, and on steppe burnt soil (site 3) after one month and a half of incubation.

This brief contribution is dedicated to Dr. Mirko Svrček, a distinguished scholar dedicated for many years to study Czechoslovakian discomycetes, by colleagues in a distant part of the world.

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