Rhynchomeliola Speg., an old genus new to Argentina

María V. Bianchinotti 1,2,*, Romina M. Sánchez 2 & Mario Rajchenberg 3

* Corresponding authors: vbianchi@uns.edu.ar

Summary

During a survey of the micromycetes growing on native plants from the Patagonian Andean forests, two species of Rhynchomeliola Speg. were found: R. lomatiae S. Lee & Joanne E. Taylor growing on leaves of Lomatia ferruginea (Proteaceae), and R. usteriana (Speg.) Arx & Müller growing on bark of Nothofagus pumilio (Nothofagaceae). Rhynchomeliola is a small genus of long-necked, non stromatic, perithecial fungi which comprises nine species that are mostly tropical and foliicolous. In South America this genus was known only from Brazil. Rhynchomeliola lomatiae is recorded for the first time since its original description from herbarium material of Lomatia polymorpha in Australia. The finding of R. usteriana growing on bark is the first record of a Rhynchomeliola species on a lignified substrate and supports the rejection of the habit as a useful character to distinguish the genus from the morphologically akin Rhynchostoma P. Karst. Full descriptions and illustrations of the recorded species are provided along with those of the type materials of the species described by Spegazzini.

Key words: Ascomycota, perithecial fungi, Lomatia, Nothofagus, Patagonia.

Resumen

Al estudiar los micromicetes asociados a plantas nativas de los bosques andinopatagónicos, se coleccionaron ejemplares de dos especies de Rhynchomeliola Speg.: R. lomatiae S. Lee & Joanne E. Taylor creciendo sobre hojas de Lomatia ferruginea (Proteaceae), y R. usteriana (Speg.) Arx & Müller asociado a corteza de Nothofagus pumilio (Nothofagaceae). Rhynchomeliola es un género de posición incierta que reúne pocas especies, mayormente folícolas y tropicales, caracterizadas por poseer ascos peritéceos no estromáticos, de cuellos largos y delgados. En Sudamérica este género solo se conocía en Brasil, siendo esta la primera cita del mismo para Argentina. Asimismo este es el primer hallazgo de R. lomatiae desde su descripción original de material herborizado de Lomatia polymorpha proveniente de Australia. El descubrimiento de R. usteriana sobre corteza representa la primera descripción de una especie del género sobre un sustrato lignificado, y sustentaria el rechazo del hábito como carácter válido para distinguir Rhynchomeliola respecto del género afin Rhynchostoma P. Karst. Se proveyen descripciones e ilustraciones completas de las especies encontradas, así como de los tipos de las especies descriptas por Spegazzini.

Palabras clave: Ascomycota, peritecios, Lomatia, Nothofagus, Patagonia.
Introduction

While studying microfungi growing on selected native plants from the Patagonian Andes forests of southern Argentina and Chile, two small ascomycetes were found. They were identified as species of *Rhynchomeliola*, a genus introduced by Spegazzini in 1884 for a small fungus with long-necked perithecia, cylindrical asci and two-celled, light brown ascospores. Nowadays the genus comprises nine species, mostly foliicolous and of tropical distribution. They have been reported from Australia, Brazil, Canada, Costa Rica and Papua New Guinea (Marincowitz & Barr, 2007), and this is the first report of the genus from Argentina and Chile. Ascospores features like shape, size and surface are the main characters used to differentiate species. We noticed that descriptions of ascospores provided in the literature were ambiguous for the type species, so herein we provide full descriptions and illustrations of the recently collected materials and also of the type species described by Spegazzini.

Material and methods

Fresh materials were air dried. Sections were hand-made with a razor blade and were mounted in tap water or in 5% KOH with phloxine. Herbarium materials were rehydrated in tap water. All measurements were made in water. Herbaria abbreviations follow Holmgren et al. (1990).

Results


**Rhynchomeliola pulchella** Speg., *An. Soc. Cient. Argent.* 18: 284. 1884. TYPUS: Paraguay, Caa-guazú, Spegazzini 147 (holotype, LPS!). *Figs. 1-7.*

Ascomata non-stromatic, perithecioid, superficial among trichomes, with the base slightly immersed, separate, gregarious, venter globose to subglobose, 180 x 200 µm, with an ostiolar neck. Neck formed by longitudinally angular cells, central, single, cylindrical, up 800 µm long, ca. 30 µm wide at the base, tapering toward the apex so it is narrower in the median part (ca. 22 µm) and then enlarging again, up to ca. 33 µm wide. Peridium thin, cells disposed in *textura angularis*. Paraphyses not seen. Ascii unitunicate, 8-spored, cylindrical claviform, wall simple, thin. Ascospores hyaline when young, then olive brown, 1-septate, minutely echinulate, 7-8 x 2.5-3 µm.

**Studied material**: PARAGUAY. Caa-guazú.


**Habitat and geographical distribution**: On leaves of *Acca sellowiana* (O. Berg.) Burret (Myrtaceae). South America, Paraguay. Known only from the type locality.

**Comments**: In the original description, Spegazzini (1884) did not mention anything on the ascospores ornamentation but illustrated them as smooth on the original envelope (ornamented spores drawn on this envelope do not pertain to this taxon but to an unrelated anamorph). Müller and Arx (1962) reexamined the type material and also described them as smooth, and Marincowitz and Barr (2007) considered them to be striated. We did not observe striations in ascospores from the holotype, instead we noted small spines, irregularly arranged (Fig. 7, insert).


Ascomata non-stromatic, perithecioid, superficial among trichomes, with the base slightly immersed, separate, gregarious, venter globose to subglobose, up to 100 µm high and 85 µm wide, with an ostiolar neck. Neck central, single, cylindrical, tapering toward the apex, up 800 µm long, 25-40 µm wide at the base and up to 15 µm wide at the apex, formed by longitudinally angular cells. Peridium thin, cells disposed in *textura angularis*. Paraphyses not seen. Ascii not seen. Ascospores light brown to brown, 0-1 septate, ellipsoidal, tapered to the ends, constricted at the septum, verruculose, 8-11 x 2-3 µm.
RHYNCHOMELIOLE, M. V. et al. Rhynchomeliola, an old genus new to Argentina


Habitat and geographical distribution: On leaves of Lomatia polymorpha R. Br. and L. ferruginea (Cav.) R. Br. (Proteaceae). Australia (Tasmania) and South America (Argentina).

Comments: We could not find immature asci in our materials. This is the first record of the species since its description by Lee et al. (2003). Previously it was known only from herbarium material. Rhynchomeliola australiensis (Petr.) E. Müll., another species described on a Proteaceae plant, differs by wider, obliquely striated ascospores (Lee et al., 2003).


Habitat and geographical distribution: On coriaceous leaves of an unidentified Myrtaceae and on bark of Nothofagus pumilio. Argentina, Brazil.

Comments: The material on Nothofagus agrees well with the type collection, only differing in longer ascomatal necks and darker and slightly wider ascospores when compared with the original description (up to 400 µm and up to 5.5 µm, respectively). From the species described in Rhynchomeliola, R. usteriana possess the longest ascospores, i.e. up to 18 µm long.

Discussion

Rhynchomeliola species are regarded as southern, tropical fungi, with just one species described from temperate zones of the Northern Hemisphere (Marincowitz & Barr, 2007). Our records expand the known geographical distribution of the genus. Rhynchomeliola shares several morphological features with Rhynchosoma P. Karst., whose species are described as lignicolous or corticolous. In fact, both genera were erected independently for ascomycetes with long-neck perithecia, unistomatum, persistent asci and bicalcaratus brown ascospores, and besides the habit, they were segregated on the basis of the presence or absence of stromata. The habit seems to be
a poor character to distinguish both genera, because of the description of *Rhynchomeliola quercina* Marinc. & M.E. Barron on bud scales (Marincowitz & Barr, 2007) and our finding of *R. usteriana* on *Nothofagus* bark. Both genera are almost identical morphologically, so the stroma seems to be the only useful character to separate them, being *Rhynchostoma* species superficial or immersed in stromatic tissue (Lee et al., 2003). The hierarchical placement of both genera is still uncertain (Lee et al., 2003). Through phylogenetic analyses, Lee et al. (2003) placed *Rhynchostoma* as a sister clade to the Chaetothyriales but all the attempts, including ours, to culture any *Rhynchomeliola* species have failed, so its phylogenetic status based on molecular methods could not be investigated and it is difficult to ascertain the familiar placement of *Rhynchomeliola* and its relationship with *Rhynchostoma*. Few observations have been done regarding the biology of the species of both genera. Lee et al. (2003) described a putative mechanism of insect-mediated ascospores dispersion in *Rhynchostoma proteae* S. Lee & Crous, a species that grows on flowerheads. We observed a similar behavior for the first time in a *Rhynchomeliola* species; the ascospores of *R. lomatiae* are extruded and then joined together at the tip or around the ostiolar neck (Figs. 10-11). Although we have examined a great number of collections, we never observed intact asci in this species, so we speculate (it is possible) that asci are early evanescent; the loss of forcible spore discharge, along with sticky ascospores and long-necked perithecia are features shared by ascomycetes with spore dispersal mediated by insects (Cassar & Blackwell, 1996).

**Acknowledgements**

The partial funding by PIP-CONICET 80101000 is warmly acknowledged. Curators of LPS are kindly thanked for providing type materials. MVB and MR are researchers and RS was fellow (2006-2011) of the National Research Council of Argentina (CONICET).

**References**


Original recibido el 5 de Noviembre de 2011; primera decisión: 21 de Noviembre de 2011; aceptado el 30 de Noviembre de 2011.

Editor responsable: Andrea Romero.