

New or interesting *Chapsa* and *Topeliopsis* species (Ascomycota: Ostropales) from Argentina

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Abstract: *Chapsa rubropruinosa* Messuti & Codesal collected in Argentina is described as new to science. The species is characterized by a thin thallus, apothecia with a pigmented disc, and transversely septate, hyaline, non-amyloid to faintly amyloid ascospores with thin cell walls. *Chapsa minor* is recorded for the first time from South America. The new combination *Topeliopsis lomataiae* (Messuti, Lumbsch & Vězda) Messuti & Mangold is proposed.

Key words: *Graphidaceae*, hygrophilous forest, Patagonia, taxonomy, *Thelotremataceae*

Introduction

The hygrophilous forests dominated by *Nothofagus* spp. in south-western Argentina are an easterly extension of the Valdivian rainforests. They are rich in temperate rainforest elements, otherwise rare in Argentina (Cabrera 1976). During recent investigations on the lichen flora in these forests, the first two authors found some interesting thelotremoid lichens. Although this group of lichens is most diverse in tropical and subtropical rainforests, some genera, such as *Chapsa* or *Thelotrema* extend into temperate regions, while others, such as *Melanotopelia* and *Topeliopsis* (Kalb 2001; Frisch 2006; Frisch & Kalb 2006; Frisch *et al.* 2006; Mangold *et al.* 2008a) are actually most diverse in temperate regions. At present, about 18 species of thelotremoid lichens are known from Argentina, and of these, seven

are distributed in the south-western cool temperate forest of this country (Calvelo & Liberatore 2002). In this contribution we focus on species of the genus *Chapsa* in Argentina, including the description of a new taxon and a new record for South America.

The genus *Chapsa* was recently resurrected (Frisch *et al.* 2006) to accommodate a group of thelotremoid lichens with a trentepohlioid photobiont, chroodiscoid ascomata, an exciple with lateral paraphyses, and almost thin- to thick-walled ascospores. Species of this genus were previously classified in *Chroodiscus* (Kantvilas & Vězda 2000) or groups within *Thelotrema*, such as the *Thelotrema platycarpum* group (Salisbury 1972) or *Thelotrema* subgen. *Asteristion* (Matsumoto 2000). Similar genera include *Acanthotrema*, *Chroodiscus* and *Topeliopsis*. The genus *Acanthotrema* differs from *Chapsa* in having completely thin-walled ascospores and spiny paraphyses and lateral paraphyses, while the foliicolous genus *Chroodiscus* lacks lateral paraphyses and also has completely thin-walled ascospores. *Topeliopsis* is morphologically very similar to *Chapsa*, although apparently not closely related (Mangold *et al.* 2008a; Mangold *et al.* 2008b). *Topeliopsis* differs from *Chapsa* in non-chroodiscoid ascomata with denticulate rather than lobulate margins, usually thicker proper exciples

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with often exfoliating thalline margins and indistinctly separated lateral paraphyses.

Materials and Methods

This study is mainly based on new collections made by the first two authors and deposited in BCRU. For comparison, material from HO was also studied. Thalli and apothecia were sectioned using a razor blade and a freezing microtome, and examined in water and lactophenol cotton blue. Routine chemical analyses were carried out by standardized thin-layer chromatography (TLC) (Culbertson 1972) using solvent systems A and B'.

The Species

Chapsa rubropruinosa Messuti & Codesal sp. nov.

Mycobank no. 513056

Chapsae waasii similis sed ab hac specie apothecii fusco-rubris et ascosporis majoribus et acido stictico continens differt.

Typus: Argentina, Provincia de Chubut, Dpto. Futaleufú, Parque Nacional Los Alerces, Lago Menéndez, Puerto Sagrario, 2 May 2007, P. L. Codesal 50 (BCRU 4925—holotypus).

Thallus epiperidermal, thin, rimose, pale yellowish to yellowish grey. Surface dull, smooth, continuous, fissured to rugose or verrucose. Thallus covered by a continuous protocortex, up to 15 µm thick. *Photobiont* trentepohlioid; algal layer continuous. Calcium oxalate crystals sparse and scattered. Vegetative propagules not seen.

Ascomata inconspicuous to conspicuous, 0.3–0.6 mm diam., immersed to erumpent, roundish to irregular, becoming chroodiscoid at maturity, solitary. *Disc* usually visible from above, grey with a thick reddish brown pruina. *Thalline margin* incurved to erect, outer layer concolourous with the thallus to brownish orange. *Proper exciple* fused to indistinctly free apically. *Hymenium* hyaline, slightly interspersed, up to 120 µm high; paraphyses straight, simple, unbranched, slightly thickened apically. Lateral paraphyses c. 20 µm long, conspicuous, clearly separated from the exciple; columellar structures absent. *Epihymenium* reddish brown, granulose. *Asci* 6–8-spored, cylindrical-

clavate to clavate, tholus thin. *Ascospores* transversely septate, hyaline, non-amyloid to faintly amyloid, oblong-ellipsoid to ovoid, distoseptate with lentiform loculi, cell walls thick, sometimes constricted at the septa, rarely halonate, 17.0–24.5 × 5.0–7.0 µm with 4–6(–7) loculi.

Conidiomata not seen.

(Fig. 1A)

Chemistry. Thallus: K+ yellowish, C–, KC–, P+ yellowish; apothecia: K+ bluish, KC+ reddish brown, P+ orange; containing stictic acid (major), unknown pigment (major) and constictic acid (minor).

Etymology. The specific epithet refers to the reddish brown pruina on the ascomata.

Notes. This new species is characterized by a thin thallus, a reddish brown pruina on the apothecial discs, transversely septate, hyaline, non-amyloid to faintly amyloid ascospores and by the presence of the stictic acid chemosyndrome. *Chapsa* species with pigmented pruina on the apothecial discs include *C. magnifica* (Berk. & Broome) Rivas Plata & Mangold and *C. waasii* (Hale) Sipman & Lücking. The former has bright orange discs and larger, 15–27-septate ascospores, while *C. waasii* has purple discs (anthraquinone, reacting KOH+ dark purple), smaller ascospores (up to 18 µm long) and lacks depsidones (Hale 1981). Another similar species is *C. phlyctidioides* (Müll. Arg.) Mangold that lacks a thalline cortex and apothecial pigment. *Chapsa subpatens* (Hale) Mangold is readily distinguished by the endoperidermal thallus, lack of secondary metabolites, strongly amyloid ascospores and brownish apothecial discs.

Habitat and distribution. The new species was collected in southern Argentina, Chubut province, in a hygrophilous temperate forest growing on bark of trunks of the native evergreen gymnosperm tree *Fitzroya cupressoides* (Mol.) I. M. Johnst. The area where

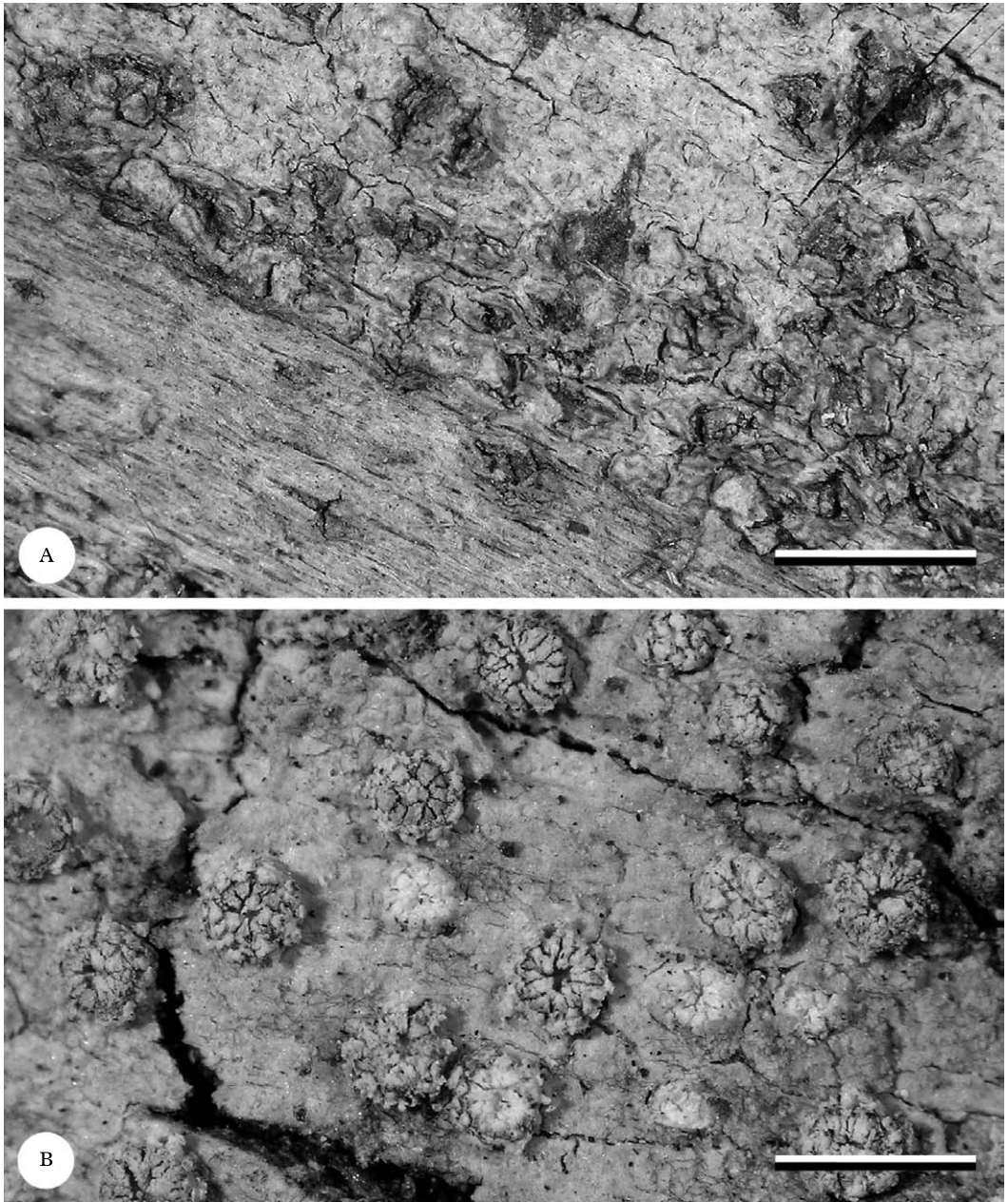


FIG. 1. Morphology of *Chapsa* and *Topeliopsis* species from Argentina. A, *C. rubropruinosa* (BCRU 4440—holotype); B, *T. lomatae* (BCRU 4755). Scale: A = 1.5 mm; B = 3 mm

the species occurs is an ingression of the Valdivian rainforest on the oriental side of the Andean range. The new species is rare and known only from the type locality.

Other specimen examined. Argentina: Provincia de Chubut: Dpto. Futaleufú, Parque Nacional Los Alerces, Lago Menéndez, Puerto Sagrario, 2 May 2007, *P. L. Codesal* 56.1 (BCRU 4924).

Chapsa minor (Kantvilas & Vězda)
Mangold & Lumbsch

In *Fl. Australia* 57: 654 (2009).—*Chroodiscus minor* Kantvilas & Vězda, *Lichenologist* 32: 341 (2000); type: Australia, Tasmania, Weindorfers Forest, 9 ii 1998, G. Kantvilas 161/88 (HO—holotype!).

Thallus endo- to epiperidermal thin, up to *c.* 80 µm high, greyish green. Surface dull to slightly shiny, smooth, continuous, unfissured to slightly cracked. Thallus covered by a protocortex, up to *c.* 10 µm high. Algal layer discontinuous and poorly developed, calcium oxalate crystals absent. Vegetative propagules not seen.

Ascomata conspicuous, up to *c.* 1 mm diam., roundish, chroodiscoid, sessile, solitary. *Disc* partly to rarely entirely visible from above, pale dark blue to brownish blue, slightly white pruinose. *Thalline margin* up to 0.5 mm wide, radially split, rugged and lobed, off-white, incurved, outer layers becoming erect to recurved. *Proper exciple* not visible from the surface, fused with the thalline margin, hyaline to yellowish-brown marginally, amyloid basally. *Hymenium* non-inspersed, paraphyses slightly bent, parallel to slightly interwoven, unbranched, tips slightly thickened, lateral paraphyses present, up to *c.* 20 µm long. *Epihymenium* bluish brown, granulose. *Asci* 8-spored, cylindrical to cylindrical-clavate, tholus moderately thick, not visible at maturity. *Ascospores* transversely septate, cell walls thin, endospore moderately thin to slightly thickened, with thin halo in young stages, hyaline, faintly amyloid to amyloid, fusiform to clavate with narrowed-rounded ends, loci roundish to angular, subglobose to rectangular or irregular, end cells hemispherical to conical, septae thick, regular, 17–29 × 5–7 µm with 5–7 loci.

Conidiomata not seen.

Chemistry. Thallus K+ yellowish to orange, C–, PD+ orange; containing stictic, hypostictic (majors to minors), constictic (minor to trace), and cryptostictic (traces) acids.

Notes. This species is characterized by a thin thallus, transversely septate, hyaline, faintly amyloid ascospores with thin cell walls

and the presence of the stictic acid chemo-syndrome. The South American collection differs from the Australian specimens in some morphological details and subsequent studies with more material will be necessary to determine whether a similar, but distinct taxon is involved or whether this is due to intraspecific variation. While the Australian specimens have epruinose discs and hyaline, egranulose epihymenia (Mangold *et al.* 2009), the collection from Argentina has bluish pruinose discs and granulose epihymenia. Furthermore, the ascospores of the South American material are slightly shorter and with less loci than the Australian material.

The similar *Chapsa lamellifera* (Kantvilas & Vězda) Mangold can be readily distinguished by its larger ascomata with layered margins and larger, muriform ascospores (Kantvilas & Vězda 2000; Mangold *et al.* 2009). *Chapsa subpatens* (Hale) Mangold is another similar species. It differs from *C. minor* in lacking secondary metabolites and strongly amyloid, thick-walled ascospores (Hale 1981; Mangold *et al.* 2009). Another similar species is *Topeliopsis lomataiae* (Messuti, Lumbsch & Vězda) Messuti & Mangold comb. nov., see below.

Habitat and distribution. *Chapsa minor* is recorded here for the first time from South America. It has previously been recorded from Victoria and Tasmania in Australia. In Argentina it was collected in a hygrophilous forest growing on tree trunks of *Fitzroya cupressoides*. In Australia the species occurs in cool temperate rainforests at altitudes ranging from 300 to 1000 m in Tasmania and southern Victoria.

Specimens examined. **Argentina:** Provincia de Chubut. Dpto. Futaleufú, Parque Nacional Los Alerces, Lago Menéndez, Puerto Sagrario, 2007, P. L. Codesal 126 (BCRU 04926); *ibid.*, 2 May 2007, P. L. Codesal 55-56 (BCRU 04927).

Topeliopsis lomataiae (Messuti,
Lumbsch & Vězda) Messuti & Mangold
comb. nov.

Mycobank no. 513057.

Basionym: *Chroodiscus lomataiae* Messuti, Lumbsch & Vězda, *Lichenologist* 35: 242 (2003); type: Argentina,

Patagonia, Provincia de Neuquén, Lago Nahuel Huapi, at the coast near Brazo Tristeza, on *Lomatia hirsuta*, 3 May 1994, M. I. Messuti 0312 (BCRU 4440—holotype!).

(Fig. 1B).

Notes. This species can be distinguished from *C. minor* by its shorter (13.0–21.0 × 2.5–5.5 µm), non-amyloid ascospores with acute ends and 3(–5) septa and apothecial margins consisting of numerous, incurved teeth. Further, *T. lomatiae* contains lecanoric acid (Messuti et al. 2003), a substance otherwise known only from the genera *Diploschistes* and *Dyplolabia* within the family. *Topeliopsis lomatiae* is only known from Patagonia, where it occurs in rainforests on bark.

Additional specimen examined. **Argentina:** Provincia de Neuquén: Istmo de Quetrihué, 2003, M. I. Messuti & I. N. de la Rosa (BCRU 4755, 4756).

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