

Southernmost record and distribution in Argentina of *Cotylidia aurantiaca* (Pat.) A.L. Welden (Stereales, Basidiomycota)

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Southernmost record and distribution in Argentina of *Cotylidia aurantiaca* (Pat.) A.L. Welden (Stereales, Basidiomycota). *Cotylidia aurantiaca* (Pat.) A.L. Welden is one of the most common stereoid stipitate fungi in the Neotropical region. Here, we report a noteworthy new record of this species from the Chaco Serrano ecosystem in central Argentina, marking its southernmost occurrence in the country. A brief morphological description and illustrations are provided. Additionally, we plotted the species from Argentina records on map, and the distribution of the species in the country is discussed. **Palabras clave:** smooth hymenophore, stereoid fungi, Neotropical fungi, wood-decaying fungi

Registro más austral y distribución en Argentina de *Cotylidia aurantiaca* (Pat.) A.L. Welden (Stereales, Basidiomycota). *Cotylidia aurantiaca* (Pat.) A.L. Welden es uno de los hongos estereoides estipitados más comunes de la región Neotropical. Aquí reportamos un nuevo y notable registro de esta especie realizado en el Chaco Serrano en el centro de Argentina, que constituye su ocurrencia más austral en el país. Se proporcionan una breve descripción morfológica e ilustraciones. Además, se presentan los registros de la especie en Argentina en un mapa y se discute su distribución en el país.

Keywords: himenóforo liso, hongos de la madera, hongos estereoides, hongos neotropicales

INTRODUCTION

Cotylidia aurantiaca (Pat.) A.L. Welden is a characteristic fungal species of neotropical forests (Ryvarden, 2010). It is easily distinguished by the particular stipitate yellow basidiomata with a smooth hymenophoral surface, occurring generally in large numbers in the forest floor (Figure 1A-B). The species is only known from Tro-

pical America (Reid, 1965; Ryvarden, 2010; Baltazar *et al.*, 2022) where is, perhaps, one of the most common stereoid stipitate fungi. The southern limit of distribution of the species known so far reaches Paraguay (Spegazzini, 1883; Campi *et al.*, 2021), Gallery Forests/Eastern Chaco Forests of North-Central Argentina (Spegazzini, 1898), Atlantic Forest of NE Argentina (Wright and Wright, 2005; Popoff *et al.*, 2014), Southern

Brazil (Baltazar *et al.*, 2022), reaching the southernmost point, 32°S, in NE Uruguay (Felippone, 1928; Martínez and Nakasone, 2010).

During the survey of wood-decaying fungi in Argentina conducted by the authors, several new species records were made, one of particular importance being located further south, at 32°S latitude, in the Chaco Serrano forests of Córdoba, Central Argentina (Figure 1E). The objective of this work is to report this record and understand the distribution of the species in Argentina.

MATERIALS AND METHODS

The specimens were studied following the general guidelines for macrofungi, for both macro

and microscopic analysis described, in Campi *et al.* (2021) and references therein. To understand the distribution of the species in Argentina, a search of bibliographic records and representative herbarium specimens was carried out (Table 1, Material studied section), and then they were plotted on a map (Figure 2).

RESULTS

Specimens were collected on the floor in humid microsites (Figure 1C). Specimens presented smaller and slightly paler basidiomata when fresh (Figure 1C-D) than those described from the tropical areas (*cfr.* Figure 1A-B), however when dry they have the same color. The speci-



Figure 1. *Cotyldia aurantiaca* specimens A, from NW Argentinean Yungas in PN Calilegua. B, From Paranaense forest of NE Argentina in Caayari reserve. C, From Central Argentina in the Chaco Forests *Robledo 2530*. D, detail of the specimen *Robledo 2531*. E, General view of the Chaco Serrano forests where specimens were collected

mens agree in all microscopical features with the concept of *Cotylidia aurantiaca*: Basidiomata stipitate, solitary or gregarious, spathulate, flabellate or infundibuliform, up to 35 mm high and 45 mm wide. Pileus bright yellow, margin usually fimbriate. Stipe up to 12 mm long, 1.5 mm wide, slightly swollen at the base. Hyphal system monomitic, clamps absent. Cystidia variable, cylindrical, capitate or pyriform, constricted, septate, 60-120 × 6-25 µm. Basidia cylindrical, 25-40 × 3-5 µm. Basidiospores ellipsoid, 5.5-9 × 3-4 µm, thin walled, hyaline.

To understand this new record and the distribution of the species in Argentina, we plotted all records of the species based on the material collected and studied by us (Figure 2). The species is certainly present in both ecosystems of the Amazon Domain that reach Argentina, i.e. the Paranaense Forest in the NE and the Yungas Forests in the NW. Among them, there have been records of the species in the Eastern Chaco/Gallery Forest in the provinces of Chaco and Formosa (Spegazzini, 1898) and the province of Corrientes (this work). The species can probably reach further south through the gallery forest of the Paraná River.

Material studied: Argentina, Córdoba, San Alberto Department, Los Hornillos, Quebrada Rio de las Chacras, 1280 msnm, on the ground,

31°54'S 64°58'W, 28.IV.2012, Robledo 2530, 2531 (FCOS). Corrientes, Capital, Riachuelo, 30.IV.1988, Popoff 371; ib., 30.XI.1994, Popoff 2570 (CTES); Mburucuyá, Estancia Santa Teresa, 03.VI.1962, T. Pedersen s/n (BAFC 24997). Misiones, Colonia Belgrano, “monte al SE próximo a la estación forestal”, 29.X.1973, J. Wright et al. M-2455 (BAFC24984); Frontera, 19-20.IV.1957, R. Singer M1128, M1161 (LIL); El Soberbio, 28.IV.1966, C. Gómez s/n (BAFC 24993); 29.VIII.1964, C. Gómez s/n (BAFC 24994); Iguazú, Piray Guazú, 24.II.1960, R. Guerrero 69 (LIL); Puerto Iguazú, 11.IV.1957, R. Singer M915 (LIL).

DISCUSSION

The Chaco Serrano forests in Córdoba province constitutes an ecosystem quite different from the tropical forests where the species is common. However, this ecosystem follows the Yungas forests, the Nonwestern Argentinean Mountain rain forests. The Sierras Grandes de Córdoba have several elements in flora and fauna that goes down from Northwestern Yungas, as an example the *Polylepis australis* forests and its associated funga (Robledo et al., 2006). This record in the Chaco Serrano forests constitutes the southernmost record of the species in Argentina. Strikingly, the species has been reported at

Table1. Records of *Cotylidia aurantica* in Argentina

Locality	Ecosystem	Reference
Jujuy, Calilegua National Park	Yungas	OP and GR pers. obs., this work
Córdoba, Los Hornillos	Chaco Serrano	This work
Misiones, Iguazú National Park	Paranaense Forest	Wright and Wright, 2000
Corrientes, Riachuelo	Chaco Oriental / Gallery Forest	Popoff, 2000
Corrientes, Mburucuyá	Espinal	Popoff, 2000
Chaco, Resitencia	Chaco Oriental / Gallery Forest	Spegazzini, 1898
Formosa, Capital	Chaco Oriental / Gallery Forest	Spegazzini, 1898

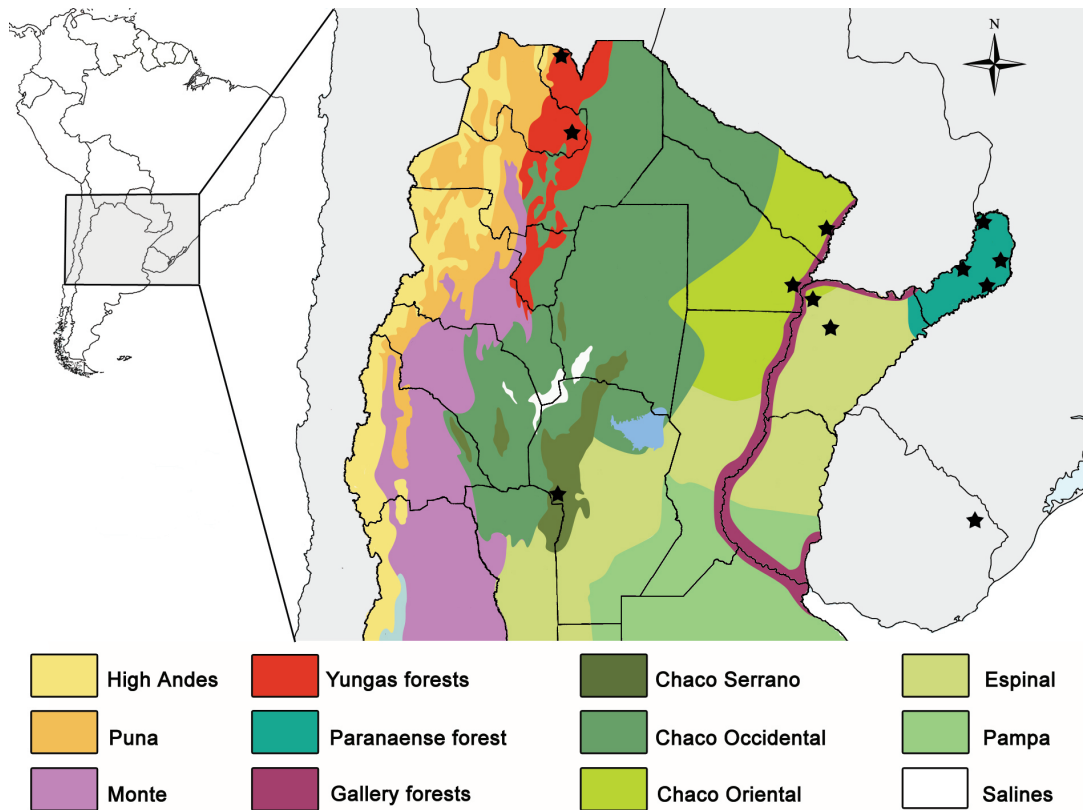


Figure 2. *Cotylidia aurantiaca* records (black stars) in Argentina. The point in Uruguay was reported by Felippone (1928). Map modified from Robledo and Urcelay 2009, based on Cabrera 1971, Brown and Pacheco 2006, and Oyarzabal *et al.*, 2018

approximately the same latitude in northeastern Uruguay (Felippone, 1928) (Figure 2). We began compiling records in the literature and to look for representing herbaria specimens of those records; unfortunately, we found that there is much material misidentified. Consequently, as some literature reports of *C. aurantiaca* may represent different species, we refrain to generate a species distribution map based on literature records. We found several herbaria specimens identified as *C. aurantiaca* that correspond to *Podoscypha* species. Both genera are easily distinguished by the hyphal system, being dimitic with clamps and skeletal hypha in *Podoscypha* and monomitic with simple septa in *Cotylidia* (Ryvarden, 2010). The purported easiness to identify *C. aurantiaca*

macroscopically and the lack of confirmation by microscopical analyses, is reflected in the misidentification of herbarium collections.

The concept of *Cotylidia aurantiaca* as a tropical species should now be understood as tropical to subtropical. There are numerous records of the species south of the Tropic of Capricorn, and particularly the discovery of *C. aurantiaca* in the Chaco Serrano forests of the province of Córdoba clearly shows that the species reaches a subtropical distribution at its southern limit. This record, being so far south that it seems disconnected, would not be unusual. There are previous records of other species of macrofungi with a tropical or neotropical distribution and/or that descend through the gallery forests of the

Paraná River, which have been recorded in different ecosystems at latitudes of 30-32 in central Argentina. For example, *Haploporus papyraceus* (Cooke) Y.C. Dai & Niemelä, *Echinoporia aculeifera* (Berk. & M.A. Curtis) Ryvarden in northeastern Córdoba or *Ceriporia spissa* (Schwein. ex Fr.) Rajchenb. (Robledo & Urcelay 2009). The finding reported here underscores the need for studies of the diversity of steroid fungi in Argentina.

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AUTHOR CONTRIBUTIONS

Data collection: C. Urcelay and G. Robledo, Conceptualization: G. Robledo, C. Urcelay and O. Popoff. Funding acquisition: C. Urcelay. Morphological analysis of Specimens: G. Robledo and O. Popoff. Writing, review and editing of the manuscript: G. Robledo, O. Popoff and C. Urcelay.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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