PHORADENDRON ARGENTINUM (VISCACEAE), NEW MISTLETOE FOR THE BRAZILIAN FLORA AND ITS GENERAL DISTRIBUTION IN SOUTH AMERICA

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Abstract. Dettke, G. A.; L. F. P. Lima & J. L. Waechter. 2011. *Phoradendron argentinum* (Viscaceae), new mistletoe for the Brazilian flora and its general distribution in South America. *Darwiniana* 49(1): 86-89.

The first collection of the mistletoe *Phoradendron argentinum* (Viscaceae) for the Brazilian flora is reported. A brief description, a key including the taxonomically closest species, photographs and a distribution map of the species are given. Lectotype of *P. argentinum* is here designated.

Keywords. Brazil, flora, mistletoes, *Phoradendron*, Viscaceae.

Resumen. Dettke, G. A.; L. F. P. Lima & J. L. Waechter. 2011. *Phoradendron argentinum* (Viscaceae), una nueva hemiparásita para la flora del Brasil y su distribución en América del Sur. *Darwiniana* 49(1): 86-89.

Se cita por primera vez la especie hemiparásita *Phoradendron argentinum* (Viscaceae) para la flora de Brasil. Se presenta una descripción de la especie, una clave para diferenciarla de especies próximas, fotografías y mapa de distribución para América del Sur. Se designa un lectotipo para esta especie.

Palabras clave. Brasil, flora, hemiparásitas, *Phoradendron*, Viscaceae.

INTRODUCTION

Phoradendron Nutt. (Viscaceae) is a neotropical mistletoe genus with approximately 230 species (Kuijt, 2003, 2009; Caires & Proença, 2007). Brazil is one of the diversity centre of the genus, with about 65 species distributed in all major biome types of the country (Caires & Dettke, 2010) and occurring as hemiparasite on a great number of different host plant species.

During an ongoing inventory of Santalales in southern Brazil, *Phoradendron argentinum* Urb. was collected in the southern part of Rio Grande do Sul State. We present a botanical description and a map showing the expanded geographic distribution of this species in South America.

RESULTS

Phoradendron argentinum Urb., Bot. Jahrb. 23, Beibl. 57: 14. 1897. TYPE: Argentina, Catamarca, Chacarita de los Padres, XI-1872 (fr), *G. Hieronymus 419* (lectotype F! (F Neg 70633) here designated; duplicates B (destroyed), CORD, GOET, K!). Figs. 1-2.

For synonyms see Kuijt (2003: 93).

Plants percurrent, green, the young shoots often glaucous, erect, up to 40 cm, monoecious. Stem strongly quadrangular to keeled, intercalary cataphylls absent, internodes short, 2-4 cm; 1(-2) pairs of basal cataphylls. Leaves 3-nerved, nerves inconspicuous, 2-3 x 1-1.5 cm, lanceolate, apex acute and minutely apiculate, base acute. Inflorescences with 2 sterile basal articulations and 2(-3) floriferous segments, each flower area with one terminal staminate flower and two lateral pistilate flowers. Fruits globose-ovoid, white with a reddish tip, pericarp tuberculate at the apex, petals erect at fruit.

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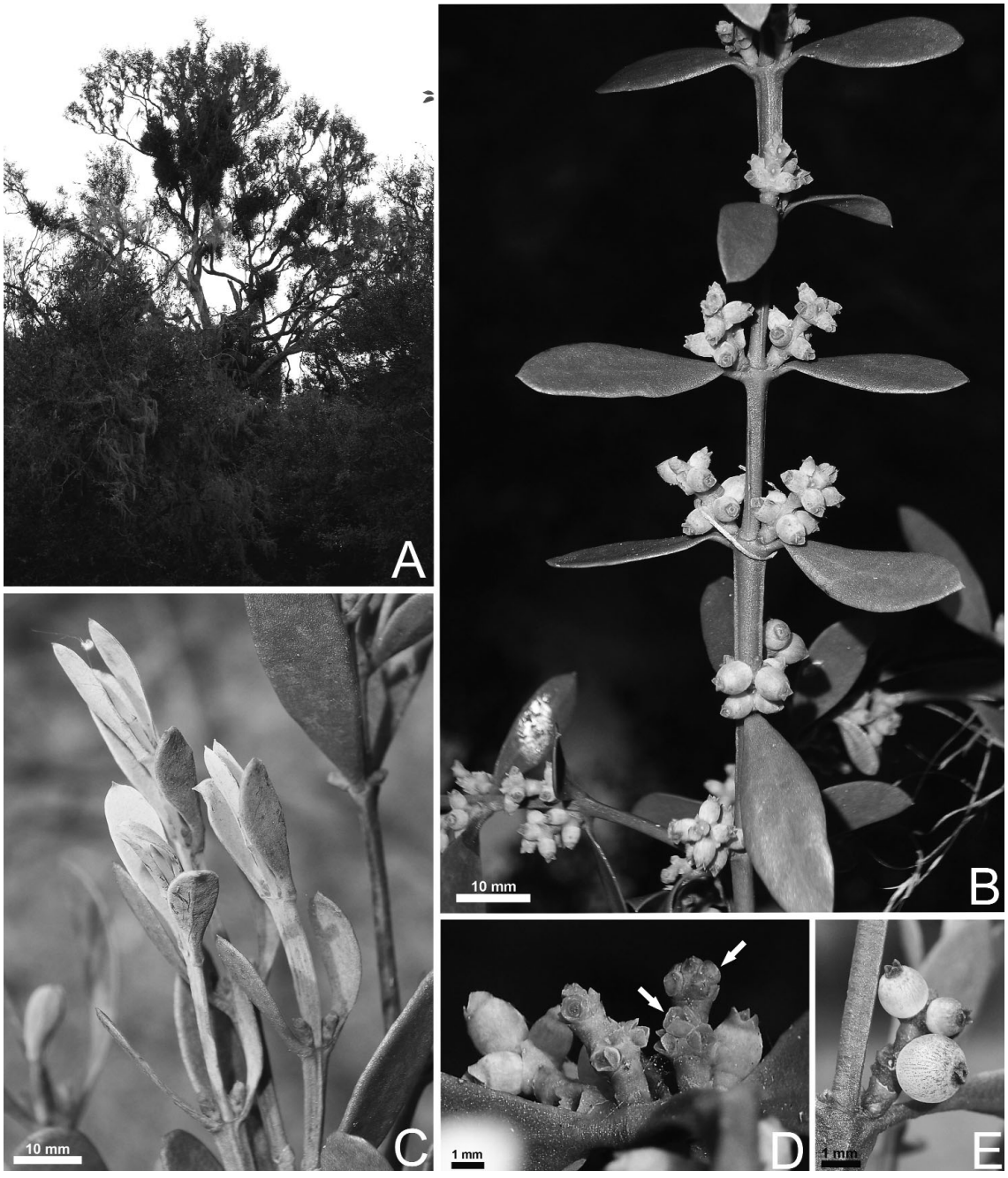

Fig. 1. *Phoradendron argentinum*. **A,** a mistletoe infestation on an emergent tree of *Ruprechtia laxiflora* Meisn. (Polygonaceae). **B,** branch with immature fruits. **C,** glaucous young shoots. **D,** detail of inflorescences with staminate (arrows) and pistillate flowers. **E,** detail of fruits. B and D, *Dettke & Lima 181* (ICN); C and E, *Dettke et al. 496* (ICN).

Notes. Urban (1897) described *Phoradendron argentinum* and *P. pruinosum* in the same publication, calling attention to the high degree of affinity between the two taxa. Later, Trelease (1916) recognized *P. meliae* as a distinct species, which was later treated as a synonym of *P. argentinum* by Abbiatti (1946). This author also called the attention to the close affinity and the problematic

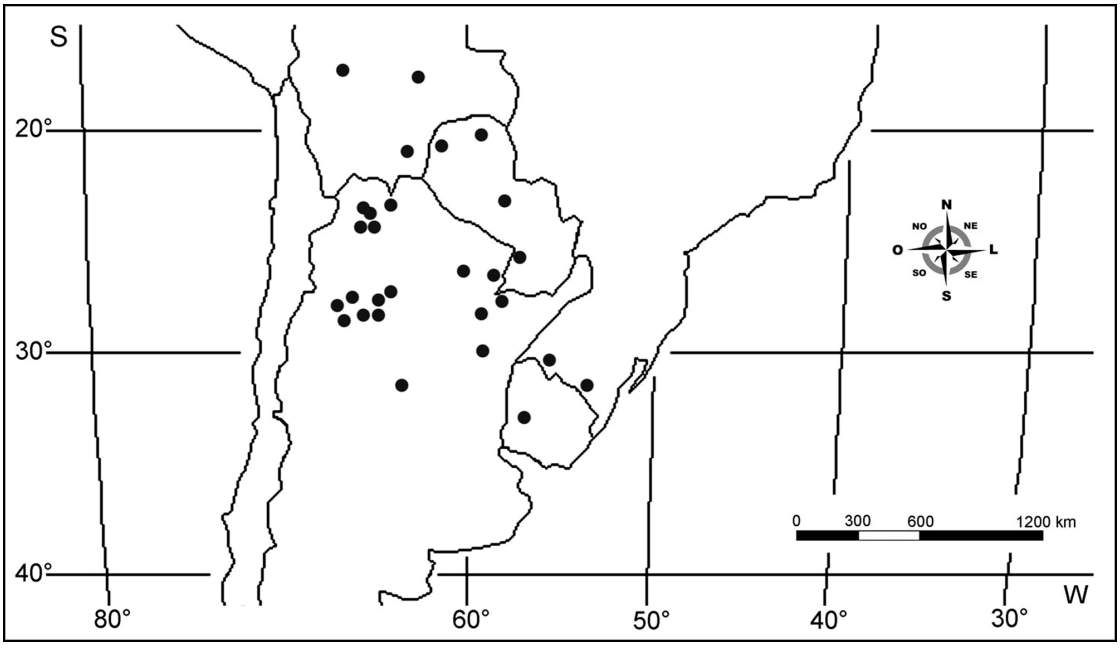

Fig. 2. Geographic distribution of *Phoradendron argentinum* in South America.

distinction between *P. argentinum* and *P. pruinosum*, based mostly on the size and shape of the leaves. Kuijt (2003) recognized *P. argentinum* as a valid name for a single species, thus considering *P. meliae* and *P. pruinosum* as synonyms of the former.

A lectotype of *P. argentinum* at B herbarium was designated by Trelease (1916). This material was destroyed; consequently, a new lectotype is here designated.

Distribution and habitat. The species occurs in north-western to south-eastern South America, from southern Bolivia, Paraguay and northern Argentina (Kuijt, 2003). Rizzini (1956) cited *P. argentinum* for Uruguay (Rio Negro, Rincón de Pomia, J. Chebataroff. s.n., MVM 15.359); however, Kuijt (2008) considered this occurrence doubtful for the country. We could not examine the material cited by Rizzini (1956), but we believe the occurrence in Uruguay is highly probable owing to the proximity of the international border and the continuity of similar environments.

In Brazil, the species is now known from narrow strips of gallery forests which are typical in the Pampas biome or biogeographic province. In these forests the species was observed only on large emergent (20-25 m) trees of *Ruprechtia laxiflora* (Polygonaceae). The mistletoes can be seen in the landscape as more or less dense rounded clumps along the smaller branches of the host plants (Fig. 1A). Like several other species of *Phoradendron*, the haustorial system has a single point of contact with the host (Kuijt, 1969), this causing a hypertrophy of the branches up to 30 cm in diameter.

Abbiatti (1946) reported 18 species of host plants for *Phoradendron argentinum* (including *P. pruinosum*) in Argentina, comprising species of Anacardiaceae (*Schinopsis* Engl.), Fabaceae (*Anadenanthera* Speg. (=*Piptadenia* Benth.)), *Geoffroea* Jacq. (=*Gourliea* Gill. ex Hook.), *Mimozyganthus* Burkart, *Prosopis* L., *Vachellia* Wight & Arn. spp. (=*Acacia* Mill.), Nyctaginaceae (*Bougainvillea* Comm. ex Juss., *Pisonia* Plum. ex L.), Achatocarpaceae (*Achatocarpus* Triana), Polygonaceae (*Ruprechtia* C. A. Mey. spp.), Rhamnaceae (*Ziziphus* Mill.), Cannabaceae (*Celtis* L. sp.), and Zygophyllaceae (*Porlieria* Ruiz & Pav.) and the exotic *Melia azedarach* L. (Meliaceae). Based on this extensive list, the species can be indicated as a generalist in relation to host plants.

Examined material from Brazil

BRAZIL. **Rio Grande do Sul.** Bagé, Estância Mato do Recreio, Arroio Piraí, 31° 33' 9.69" S, 54° 24' 41.86" W, 21-III-2009 (fl, fr), on *Ruprechtia laxiflora* Meisn. (Polygonaceae), *Dettke & Lima 181* (ICN); Quaraí, 30° 23' 5.37" S, 56° 7' 21.17" W, 4-XII-2010 (fl, fr), on *Ruprechtia laxiflora* Meisn. (Polygonaceae), *Dettke et al. 496* (ICN, MBM, PACA).

Key to monoecious species of *Phoradendron* with 3 flowers per fertile bract in Southern Brazil

1. Plants dichotomous branched . . . . . *P. craspedophyllum*
1. Plants percurrent 2
2(1). Leaves obovate, the apex obtuse; fruit globose, pericarp tuberculate . . . . . *P. mucronatum*
2. Leaves lanceolate, the apex acute or rounded, minutely apiculate; fruit ovoid, smooth or with a tuberculate pericarp only at the apex 3
3(2). Stems terete; leaves up to 4 x 1.5 cm; fruit always smooth throughout . . . . . *P. reductum*
3. Stems strongly quadrangular to keeled; leaves up to 3 x 1.5 cm; fruit with pericarp tuberculate at the apex..... . . . . .*P. argentinum*

Representative specimens examined of *Phoradendron argentinum*

ARGENTINA. **Catamarca**. Andalgalá, 26-XI-1972, *Cantino 510* (CORD); Capital, 04-X-1973, *Hunziker 22330* (CORD); Santa Rosa, 16-XI-1984, *Subils 3640* (CORD). **Chaco.** 1915, *Jörgensen 2227* (MO). **Córdoba.** Cólon, 11-V-1957, *Ariza Espinar 958* (CORD). **Corrientes.** Esquina, 14-III-1975, *Krapovickas et al. 27742* (MO); San Cosme, 16-VI-1967, *Krapovickas & Cristóbal 12999* (MO). **Formosa.** Laishi, 18-II-2000, *Di Giácomo 453* (CTES). **Jujuy.** Capital, 16-XI-1980, *Cabrera et al. 32082* (MO); Ledesma, 16-IX-1976, *Cabrera et al. 27893* (MO); San Pedro, 04-X-1929, *Venturi 9711* (MO); Santa Bárbara, 13-XI-2002, *Zuloaga et al. 7575* (SI). **La Rioja.** Capital, 04-III-1944, *Hunziker 5050* (CORD). **Salta.** Orán, 23-XI-1927, *Venturi 5600* (MO). **Santa Fe.** General Obligado, 30-XII-1972, *Quarín 759* (MO). **Santiago del Estero.** Choya, 11-VI-1982, *Hunziker et al. 24345* (CORD); Guasayán, 11-VI-1982, *Hunziker et al. 24279* (CORD); Pellegrini, 31-XII-1927, *Venturi 5736* (MO).

BOLIVIA. **Chuquisaca.** Luis Calvo, 18-V-1992, *Killeen et al. 4178* (MO). **Cochamamba.** Campero, 19-III-1999, *Antezana 1161* (BOLV). **Santa Cruz.** Andres Ibáñez, 30-X-1998, *Mani 38* (USZ); Cordillera, 16-VII-1998, *Fuentes & Navarro 2566* (MO).

PARAGUAY. **Alto Paraguay.** 14-II-1999, *Zardini & Godoy 50338* (MO). **Boquerón.** 12-XII-1998, *Zardini & Duarte 49612* (MO). **Central.** 04-III-1993, *Zardini & Guerrero 35347* (MO). **Presidente Hayes.** 18-VII-1995, *Mereles & Degen 6070* (MO).

URUGUAY. **Río Negro.** Rincón de Pomia, *Chebataroff s.n.* (Herb.Osten 15359).

BIBLIOGRAPHY

Abbiatti, D. 1946. Las Lorantáceas argentinas. *Revista del Museo de La Plata, Botánica* 28: 1-110.

Caires, C. S. & C. E. B. Proença. 2007. Two new synonyms and a species reinstated in *Phoradendron* Nuttall (Viscaceae). *Acta Botanica Brasilica* 21: 379-382.

Caires, C. S. & G. A. Dettke. 2010. Santalaceae, in R. C. Forzza et al. (eds.), *Catálago de Plantas e Fungos do Brasil*, vol. 2, pp. 1603-1606. Rio de Janeiro: Instituto de Pesquisas Jardim Botânico do Rio de Janeiro.

Kuijt, J. 1969. *The biology of parasitic flowering plants*. Berkeley: University of California Press.

Kuijt, J. 2003. Monograph of *Phoradendron*. *Systematic Botany Monographs* 66: 1-643.

Kuijt, J. 2008. Viscaceae, in F. O. Zuloaga, O. Morrone & M. J. Belgrano (eds.), *Catálogo de las plantas vasculares del Cono Sur (Argentina, Sur de Brasil, Chile, Paraguay y Uruguay)*, vol. 3, pp. 3169-3172. Missouri: Missouri Botanical Garden Press.

Kuijt, J. 2009. Miscellaneous mistletoe notes, 48-60: Descriptions of twelve new species of Loranthaceae and Viscaceae. *Brittonia* 61: 144-162.

Rizzini, C. T. 1956. Pars specialis prodromi monographie Loranthacerum Brasilie terrarumque finitimarum. *Rodriguésia* 31: 87-234.

Trelease, W. 1916. *The genus* Phoradendron. *A monographic revision*. Urbana: University of Illinois.

Urban, I. 1897. Loranthaceae. *Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie* 23: 1-16.