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***Chiropetalum puntaloberense* (Euphorbiaceae) A New Species from Uruguay**

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ABSTRACT: An unknown species of *Chiropetalum* (Euphorbiaceae) has been found during a floristic survey on the Atlantic coast of Uruguay. This paper describes, illustrates and compares it with the related species *Chiropetalum ramboi* (Allem & Irgang) Radcl. Sm. & R. Govaerts and *Chiropetalum molle* Klotzsch. It differs from *Chiropetalum ramboi* in the number of inflorescences per foliar axilla, the lengths of the same, the number of staminate flowers; from *Chiropetalum molle*, by habit, indumentum of the leaves and the presence of a hairy style. The presence of gynoeious plants besides the already known monoecious plants of some species of this genus is remarked.

RESUMEN: Una especie desconocida de *Chiropetalum* (Euphorbiaceae) ha sido encontrada durante un relevamiento florístico en la costa atlántica del Uruguay. Se describe, ilustra y compara con las especies relacionadas *Chiropetalum ramboi* (Allem & Irgang) Radcl. Sm. & R. Govaerts y *Chiropetalum molle* Klotzsch. De *Chiropetalum ramboi* se diferencia por el número de inflorescencias por axila foliar, longitud de las mismas y número de flores. De *Chiropetalum molle* por el hábito, indumento de las hojas y por la presencia de pelos en los estilos. Se destaca la presencia de plantas ginoicas, además de las monoicas, en algunas especies del género.

KEY WORDS: Uruguay, Euphorbiaceae, *Chiropetalum*, Cerro Verde, Atlantic coast

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Introduction

Chiropetalum is a neotropical genus with 20 species, two of them in Mexico and the rest of them with a range from Peru and South Brazil to South Chile and Argentina (Radcliffe-Smith, 2001).

Although Ingram (1980), the most recent worker on this group, treated *Chiropetalum* as a subgenus of *Argythamnia*, and Müller Argoviensis (1866) considered it as a section, Pax (1912), Punt (1962) and Webster (1994) all keep it up at the generic level.

The latest described species of *Argythamnia* (Allem & Irgang, 1976) were included in *Chiropetalum* by Radcliffe-Smith & R. Govaerts (1997).

As a result of the survey of flora and vegetation along the Uruguayan Atlantic coast in Punta de los Loberos, Departament of Rocha (Alonso-Paz & Bassagoda, 2003) a new species was found, in a habitat characterized by a relictual vegetation.

Materials and Methods

Data are derived from herbarium specimens (MVM, MVFQ & MVFA) and field observations. For examination under light microscope, floral and vegetative parts of fresh material were cleared in chloral hydrate and lactophenol (Wallis, 1968) Measurements were taken from fresh material and mature seeds.

Drawings were made using an Olympus microscope CH with camera lucida. Digital photographs were taken through a stereomicroscope Bausch & Lomb StereoZoom 4 which were also used for the explanatory drawings.

Scanning photos were made in the Electron Microscopy Service of the Faculty of Science through a microscope model Jeol JSM-5900 LV.

The general description follows Stearn (1984) and the morphology of leaves is according to Hickey (1978) and Systematics Association Committee for Descriptive Terminology (1962). The terminology of trichomes is according to Theobald, W. L. J. L. Krahulik, & R. C. Rollins (1978). The modes of sexuality is according to Dellaporta & Calderon-Urrea (1993).

Chiropetalum puntaloberense E. Alonso-Paz & Bassagoda sp. nov.
TYPE: Uruguay, Rocha Departament, Parque de Santa Teresa, Punta de los Loberos, Cerro Verde, 33°56'42.8"S, 53°30'22.9"W, E. Alonso-Paz & M. J. Bassagoda 3659, 16 October 2003 (holotype, MVM; isotypes, MVFQ, MVFA, MVJB), Plates I, II.

Chiropetalum ramboi et *Chiropetalum molle* affine. A *Chiropetalum ramboi* inflorescentiarum in axillis foliorum numero, longitudine inflorescentiae et florum staminatum numero differt. *Chiropetalum molle* habito, foliis indumento et stylo pubescentis differt.

Subshrubs monoecious and gynoecious, rhizomatous, branching from the base, 45-80 cm tall, stems light green to dark green, ridged, 3-8 mm diameter, younger stems with fine appressed, malpighiaceus hairs, older stems glabrescent; leaves ovate, ovate to lanceolate, apex acute, base rounded, very prominently veined beneath, 1.8- 5.0 cm long, 1.0- 2.9 cm wide. Both sides with 2- 5 armed hairs (each arm a cell) , stellate hairs (more than 5 cells or arms), simple (unicellular unbranched) and malpighiaceus (unicellular two armed, some having one arm longer than the other) hairs; malpighiaceus and simple hairs mostly on the nerves; margins doubly serrate to crenate-serrate, with simple, 2-3 armed hairs mostly and gland tipped teeth; petioles 1.9-7.3 mm long, densely covered with malpighiaceus, 2 armed, scarce 3-5 armed, stellate and occasional simple hairs; stipule narrow triangular, 1.2-2.9 mm long x 0.6-1 mm wide; margins ciliate; upper surface: simple hairs scarce in the lower third; lower surface malpighiaceus and simple hairs, rare 2-4 armed hairs; base margins and apex gland.

Inflorescences racemose axillar: 1-3 in monoecious plants; solitary in gynoecious plants, 1.0- 7.0 cm long., axis densely covered with 2 armed, simples and malpighiaceus hairs; staminate raceme 25-48 flowers; raceme with staminate and pistillate flowers: below 1-3 (4) pistillate flowers, upper 12- 30 staminate flowers.

Gynoecious plant raceme 1-4 flowers; usually the shaft ends in a set of 15-30 sterile bracts.

Bracts: ovate to triangular 1.2-1.6 mm long. x 0.5-0.8 mm wide, margins ciliates, a pair of basal glands, scarce 2 armed hair at the base; exterior surface with simple and 2 armed hairs; interior surface with simple hairs, 2-3 armed (occasional 4 armed hairs).

Staminate flowers: (4.5-) 5- 6 mm diameter, 5 sepals, ovate to oblong, 1.3-2.4 mm long x 0.7-1 mm wide, margins ciliate; interior surface simple hairs and scarce hairs 2- armed and 3- armed, occasional malpighiaceus hairs; exterior surface 2-3 armed hairs and simple hairs. Petals white, 5.1-1.8 mm long, divided in 5-7 (8) linear lobes, usually 1 central and 2 or 3 sides (cilia rare at the ends of the lobes), unguiculates (nail 0.4-0.6 mm long); glands 5, glabrous; stamens 5 (4); filament 0.28-0.34 mm long; androfore 0.5-1 mm long; pedicel, 1.2-1.3 mm long., induments of simple and 2 armed hairs. Plate I, fig. b, c.

Pistillate flowers: (5) 6- 7 mm diameter, sepals 5, ovate, lanceolate or oblonge, 2- 2.9 mm long. x 0.8-1.9 mm wide (acrescents in the fruit 2.4-3.2 mm long.), apex acuminate, margins ciliate with simple hairs and 2 armed hairs. Interior surface simple hairs and 2 armed hairs, scarce 3-4 armed hairs. Exterior surface simple and 2 armed hairs, rare 3- 4 armed, malpighiaceus hairs very rare. Petals: absent (in a fruit found traces of petals); glands 5, glabrous; ovary densely covered by malpighiaceus hairs (some with a branch longer than the other) and simple hairs, scarce 2 armed hairs. Styles 1.6 mm long, parted about $\frac{1}{2}$ their length, with coarse, simple hairs. Pedicels 0.7-1.5 mm long, indumentum simple hairs and 2-3 armed hairs. Plate I, fig. d, e.

Pedicels of fruit 1.5-1.8 mm long. Capsules 4.5-5.4 mm diameter. Seeds globose to subglobose, 2 mm long. x 1.9 mm diameter, rough- verrucose surface. Plate I, fig. f; Plate II.

Habitat and distribution. Known only from the type locality.

Chiropetalum puntaloberense grows on a patch of thorny vegetation dominated by *Sideroxylon obtusifolium* (Sapotaceae) and also on another patch with *Ficus lushnathiana* and *Bromelia antiacantha*, both on the north- east slope of the hill, the base of which is bathed by the Atlantic Ocean. Its location is subjected to the changing strength of winds with their saline spray and to the abrasion by sand. It is located in two patches of vegetation with the same exposure. The habitat of *Chiropetalum puntaloberense* is similar to *C. ramboi* " Torres county (Torres do Sul), on slopes of the hill ..." (Allem & Irgang, 1976) but the nature of the geological substrate is different. Cerro Verde is a sand covered granite formation that has behaved like an island during eustatic changes in the Holocene (Bossi & Montaña, 1995).

Comment: This is a branchy subshrub. The inflorescence of staminate flowers are abundant and fall easily. In the mixed inflorescence the pistillate flowers are clustered at the base. The gynoecious plants have the same vegetative aspect as monoecious plants. We have counted up to 40 stems in the same individual with a coverage of 0.75 m².

The habit of plants changes in environments better protected from the wind and saline spray (in patches of vegetation with *Ficus luschnathiana*): the leaves are enlarged, are less succulent, nerves in the lower surfaces, are relatively less protruding and stems tend to be reclinate.

In the generic diagnoses *Chiropetalum* is traditionally regarded as monoecious. A careful study of samples with whole plants belonging to other species of *Chiropetalum* preserved in herbaria of Uruguay (MVM, MVFA, MVFQ), Argentina (Institute of Botany Darwinion, SI) reveals the presence of gynoecious plants in *C. tricocum*, *C. intermedium* and *C. argentinense*.

Another new species of *Chiropetalum*, still unpublished, collected in a woody habitat by the time of flowering (September 2001), previously to the knowledge of this peculiarity, several branches of the monoecious plant were collected. Later on, (November 2006), the gynoecious plant was found.

Phenology. Flowering from June through November; fruiting from October through November

Etymology. The specific epithet refers to the name of the type locality.

Additional specimens examined

URUGUAY. Rocha Department, Parque Santa Teresa, Punta de los Loberos, Cerro Verde (33°56'42.8"S, 53°30'22.9"W): "patch on the top and northeast hillside, monoecious plant between *Bromelia antiacantha*, plants protected from wind, abundant", E. Alonso-Paz & M. J. Bassagoda N°. 4109, 15 October 2004; pistillate plant, E. Alonso-Paz & M. J. Bassagoda N°. 4110, 15 October 2004 (MVM, MVFQ); "patch on the northeast hillside abundant along *Sideroxylon obtusifolium* and *Tournefortia breviflora*, pistillate plant, subshrubs 50 cm tall branched from the base (approximately 40 stems

corresponding to an individual, each plant covers 0.75 m²), roots and rhizomes almost superficial. Abundant flowering. Solitary axillary racemes with up to 4 flowers", E. Alonso-Paz & M. J. Bassagoda N°. 4107, 8 October 2006 (MVM, MVFQ); pistillate plant, E. Alonso-Paz & M. J. Bassagoda N°. 4108, 15 October 2003 (MVM, MVFQ).

Key of the uruguayan species of *Chiropetalum* A. Juss (modified after Ingram 1980)

1. Indument of leaves composed of malpighiaceus hairs only. Glands hairy in flowers staminate and pistillate..... *C. tricoccum* Vell.
1. Indument of leaves composed of stellate, 2-5 armed, malpighiaceus or simples hairs.
 - Glands glabrous in flowers staminate and pistillate.
 2. Ovary with mixture of stellate and malpighiaceus hairs.... *C. intermedium* Pax & K. Hoffm.
 2. Ovary with simple and malpighiaceus hairs
 3. Styles glabrous..... *C. molle* (Mull. Arg.) Pax & K. Hoffm.
 3. Styles pubescent..... *Chiropetalum puntaloberense* E. Alonso-Paz & M. J. Bassagoda

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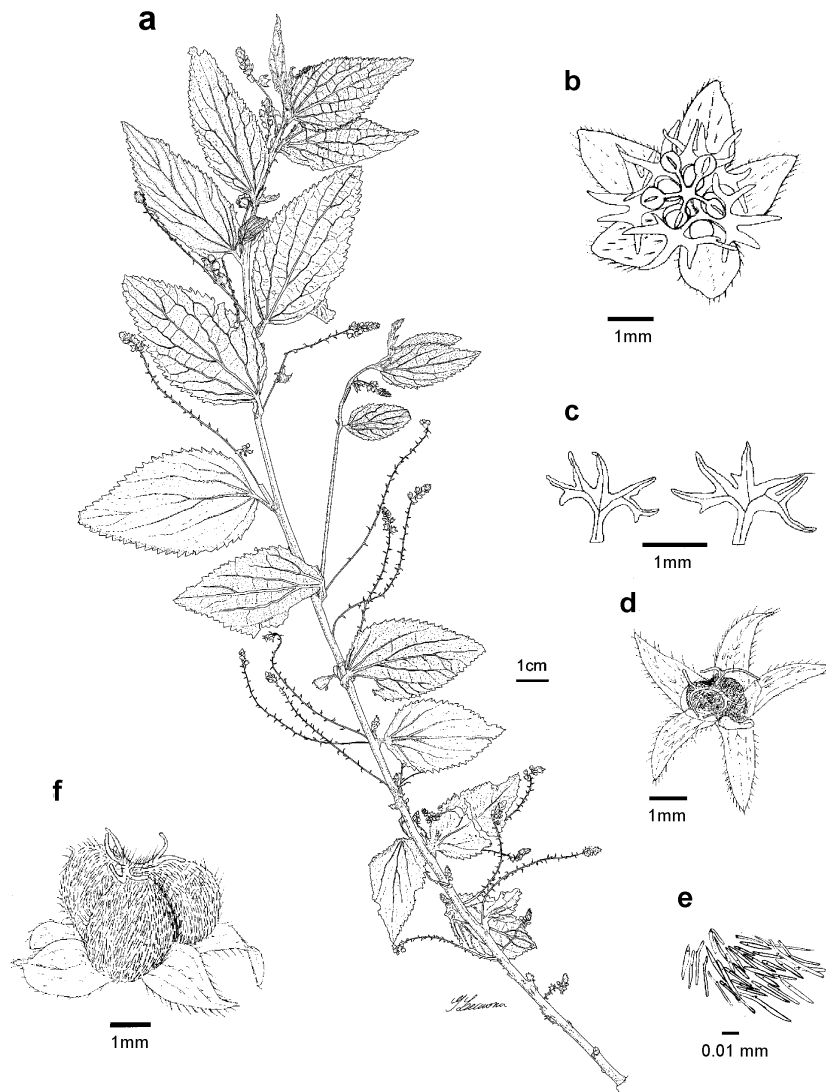
Plates

Plate I. a: monoecious plant; b, estaminate flower; c, petals; d, pistillate flower; e, ovarian trichomes; f, fruit (*E. Alonso-Paz & Bassagoda 3659*).

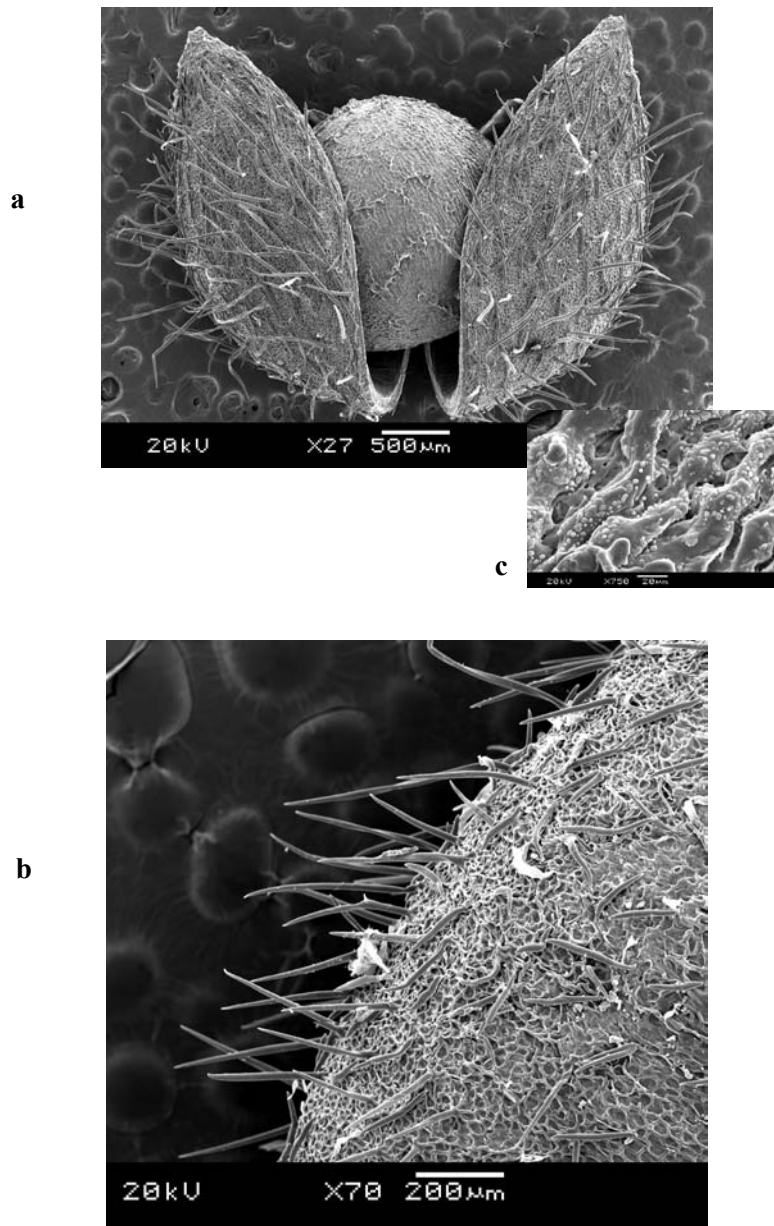


Plate II. Scanning electron photomicrographs. a) Fruitlet with a mature seed, b) Exocarp indument with simple, malpighiaceus and two armed hairs, and c) Rough-verrucose surface seed.

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