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Original article

Spiranthinae (Orchidaceae - Cranichideae) from Uruguay: taxonomy and distribution

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ABSTRACT

Uruguay occupies an area of special relevance for species of terrestrial orchids of the subtribe Spiranthinae because it is located in one of the largest continuous grassland regions of the Americas. The aim of this study is to provide a taxonomic study of Spiranthinae species from Uruguay. A total of 22 species distributed in seven genera were confirmed to the country, representing almost half of the species of terrestrial orchids in Uruguay. *Cyclopogon* (8 spp.), *Skeptrostachys* (5 spp.) and *Brachystele* (4 spp.) were the most representative. Additionally, a new synonym in *Brachystele dilatata* (=*Brachystele waldemarii*) is proposed. The group was found in all departments and ecoregions of the country, mainly in the southeastern (Maldonado: 10 spp., Rocha: 12 spp. Lavalleja: 10 spp.) and northeastern (Rivera: 11 spp., Tacuarembó 9 spp.) regions. Among the ecoregions, the "*Serrano Forest*" (17 spp.) and "*Graben de la Laguna Merín*" (14 spp.) were the most species-rich. Descriptions, illustrations, an identification key, and comments on geographical distribution of the species are provided.

Keywords: southern cone, neotropics, monocots, Orchidoideae, systematics

Introduction

In Uruguay Orchidaceae comprises 18 genera and 59 spp. (Marín-Pérez *et al.* 2020), yet is represented by only Epidendroideae (8 genera, 15 spp.) and Orchidoideae (10 genera, 44 spp.) (Izaguirre 2010, 2013; Zuloaga 2015; Marín-Pérez *et al.* 2020). Taxonomic studies of terrestrial Orchidaceae, most of which are Orchidoideae, in the country and in the rest of the Southern Cone are scarce and fragmented (Pabst 1952; Correa 1955, 1969; Izaguirre 1972, 1973, 1985; Lombardo 1984).

Spiranthinae (member of Orchidoideae), with *ca.* 40 genera and 520 species, is the most diverse group of terrestrial orchids in the Neotropics (Garay 1982; Salazar 2003). It is currently considered monophyletic and included within the tribe Cranichideae (Cribb 1999; Salazar 2003; Salazar *et al.* 2018). It can be distinguished mainly by its tubular and resupinate flowers with lip margins adnate to the sides of the column (Dressler 1993; Pridgeon *et al.* 2003; Salazar *et al.* 2018). The subtribe includes *ca.* 33 %

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of the genera (6 genera) and *ca*. 41 % of the species (24 spp.) of Orchidaceae in Uruguay (Marín-Pérez *et al.* 2020). Regionally, its representatives comprise *ca*. 35 % of the orchids in the grassland region of the River Plate, which also includes portions of Argentina and Brazil, being the largest continuous grassland region of the Americas (Izaguirre 2010; Schinini 2010; Andrade *et al.* 2018).

The Southern Cone and Southeast region of Brazil constitute one of the centers of diversity of Spiranthinae (Balogh 1982; Dressler 1993). However, the region of the River Plate Grassland has been historically neglected for conservation mainly due to interest in the high agricultural productivity of the region (Foley *et al.* 2011; Andrade *et al.* 2018; Bilenca *et al.* 2018). In this area 35 species of Orchidaceae have been classified as a priority for conservation, of which 10 are members of Spiranthinae (Marchesi *et al.* 2013; Marín-Pérez *et al.* 2020).

Although a list of the species of Spiranthinae from Uruguay has recently been published (Marín-Pérez *et al.* 2020), identification of the species is still challenging for non-specialists due to the lack of taxonomic treatments. Thus, the aim of this study is to provide a detailed study of the Spiranthinae species from the country, including descriptions, illustrations, an identification key and comments on the geographical distribution of the species.

Materials and methods

Uruguay is located in the Southern Cone of South America. It is divided into 19 departments and it has coastlines along the River Plate and the Atlantic Ocean (MVOTMA 2020) (Fig. 1). The country occupies a transitional area, greatly influenced by the Paranaense and Chaqueña provinces (Cabrera & Willink 1973; Morrone 2001; Grela 2004), but it is fully within the River Plate Grassland ecosystem. It is mainly composed of grasslands (G), which occupy 88 % of the territory, and forests, representing 5.2 % of the territory (FAO *et al.* 2015). The territory has been divided into seven ecoregions with diverse environments, as shown in Figures 1, 2 (Evia & Gudynas 2000; Rivas 2010; Panario *et al.* 2011; Brazeiro *et al.* 2012).

The fieldwork was carried out in Uruguay from October 2018 to March 2019 and collections were made in all

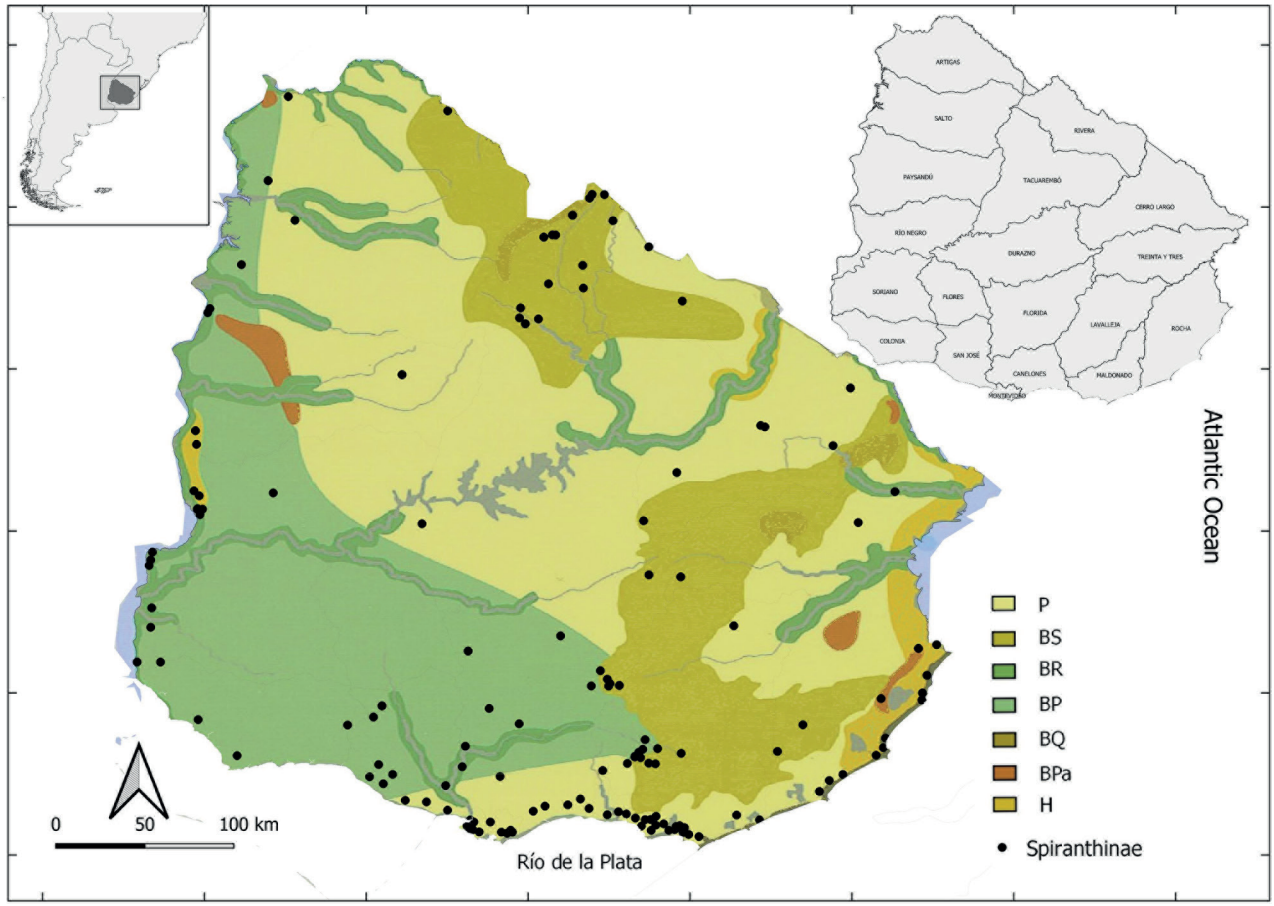

Figure 1. Map of the study area. Location in South America, environments of Uruguay (Grasslands (P), Riparian Forest (BR), Quebrada forest (BQ), Serrano Forest (BS), Parque Forest (BP), Palmares (BPa), and Wetlands (H)), and departments (Artigas (Art), Canelones (Can), Cerro Largo (Cer), Colonia (Col), Durazno (Dur), Flores (Fle), Florida (Fli), Lavalleja (Lav), Maldonado (Mal), Montevideo (Mon), Paysandú (Pay), Río Negro (Río), Rivera (Riv), Rocha (Roc), Salto (Sal), San José (San), Soriano (Sor), Tacuarembó (Tac), and Treinta y Tres (Tre)).

environments and ecoregions of the country (see Fig. 1). The samples were submitted to the usual taxonomic procedures (Mori *et al.* 1985) and deposited at the MVJB herbarium. Basionyms, whenever necessary, are provided after the accepted name as well as the synonyms. Herbaria relevant to the group in the region were visited (BAF, HBG*, ICN*, K*, MVFA, MVFQ, MVHC, MVJB, MVM, NY*, S*, SI, SP*, "*" online consultation) (Thiers 2019, continuously updated) and 302 specimens were analyzed, including historical and type collections. The main references on Spiranthinae for Uruguay and neighboring regions were analyzed and used for taxonomic identification, as well as the protologues of the species: Herter (1930), Correa (1996; 1955; 1969), Izaguirre (1972; 1973; 1985; 2010; 2013), Pabst (1954), Pabst & Dungs (1975; 1977), and Schinini (2010).

Species distribution was based on specimens from our fieldwork, herbarium records, the literature (Herter 1930; Correa 1996, 1955, 1975; Pabst & Dungs 1975, 1977; Izaguirre 1985, 2010, 2013; Schinini. 2010; Marchesi *et al.* 2013; Govaerts *et al.* 2020; Marín-Pérez *et al.* 2020), and online databases only when photographs were available: GBIF (https://www.gbif.org), The Specieslink (http://splink.cria.org.br/), and the Virtual Herbarium of the Flora and Fungi - Reflora (http://floradobrasil.jbrj.gov.br). In cases where the specimens examined were very numerous, a single record was placed for each department of occurrence in the country. The maps were created with the QGIS-Zanzibar 3.8.3 software.

The assessment of priority for conservation in the country follows the criteria for vascular plants of Marchesi *et al.* (2013) and is mentioned in the relevant species. The species considered rare follow criterion 2 of Marchesi *et al.* (2013): species with few (5) collections (< 5) in Uruguay and without population records. The morphology follows Dressler (1993), Harris & Harris (1994) and Gonçalves & Lorenzi (2007).

Results and Discussion

Spiranthinae is represented in Uruguay by 22 species and seven genera, which corresponds to 45 % of the species of terrestrial orchids in the country (based in Marín-Pérez *et al.* 2020). The genera *Cyclopogon* (8 spp.), *Skeptrostachys* (5 spp.), and *Brachystele* (4 spp.) were the most representative.

The greatest species richness was found in the *"Graben de la Laguna Merín"* (14 spp.) (mainly in the departments along the Atlantic Ocean coast), which is one of the regions with the greatest richness of woody and epiphytic species in the country (Brazeiro 2015; Mai 2014). High species richness, though with less significant representation, was also found in the *"Sierras del Este"* (11 spp.) (Maldonado, Rocha and Lavalleja) and *"Cuenca Sedimentaria Gondwánica"* (11 spp.) (mainly in Cerro Largo, Rivera and Tacuarembo) (Fig. 2). Among the environments, Spiranthinae was found mainly in the "*Serrano* forests" (17 spp., 5 genera) and in the coastal

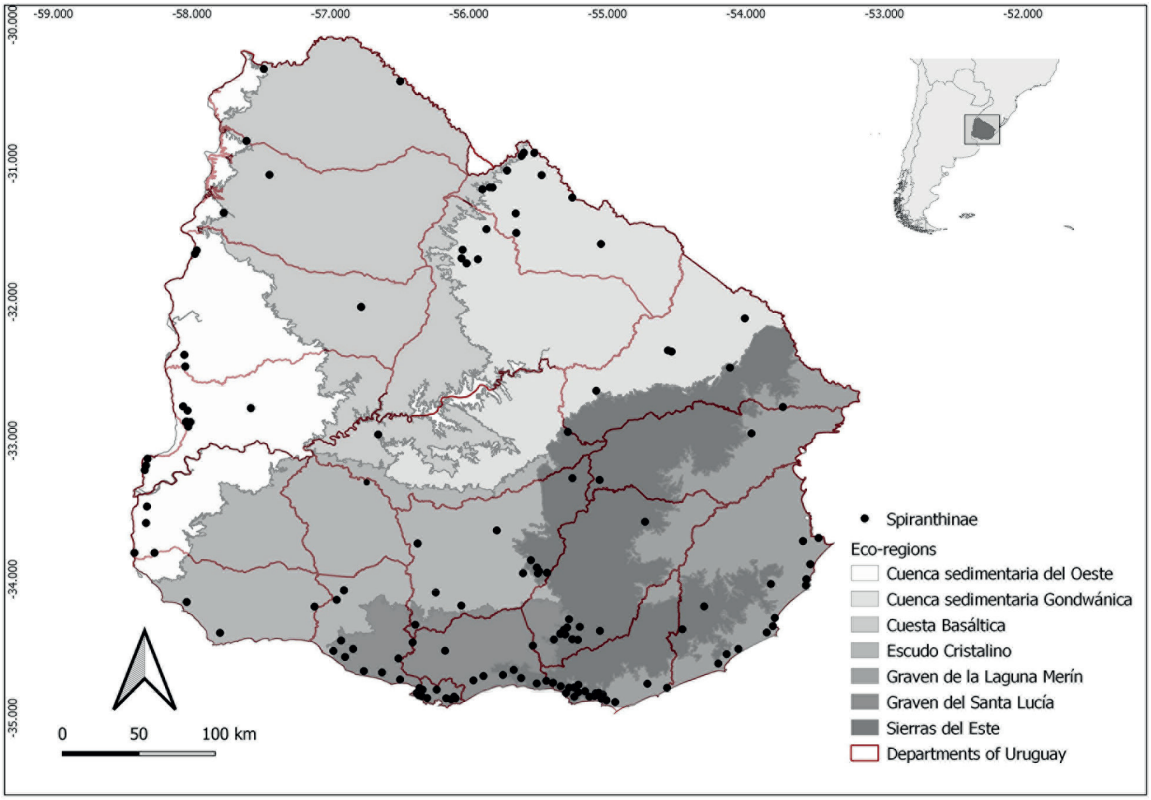

Figure 2. Map of the study area. Ecoregions (*Cuesta Basáltica* (CuBa), *Cuenca Sedimentaria Gondwánica* (CuSeGo), *Cuenca Sedimentaria del Oeste* (CuSeOe), *Escudo Cristalino* (EsCr), *Graben de Santa Lucía* (GrSaLu), *Sierras del Este* (SiEs), *Graben de la Laguna Merín* (GrLaMe)) and departments with occurrence points of Spiranthinae in Uruguay.

forests (12 spp.). Its species occupy the highest altitude areas in the Southeast (Lavalleja, 10 spp.) and Northeast (Rivera, 11 spp., Tacuarembó, 9 spp.) regions of Uruguay. It was also found, with less widespread distribution, along the Atlantic Ocean coast in the Southeast (Maldonado, 10 spp., Rocha, 12 spp.). This higher richness found in the "*Serrano* forests" of the *"Sierras del Este"* (Fig. 1) may be in part a result of dispersal of species from the neighboring provinces (Paranaense and Chaco) (Grela & Brussa 2003). The altitude and constant humidity (due to high temperatures and fog banks) favor the presence of biological corridors and the expansion of the distributional range of groups (Grela & Brussa 2003; Mai 2014).

Grasslands (10 spp., 5 genera), Riparian forests (10 spp.) and "*Quebradas* forests" (9 spp., 4 genera) also have considerable species richness. The grasslands of the North region may be favored by the practice of grazing and seasonal agriculture. These activities are considered less harmful to the maintenance of diversity (García *et al.* 2019; Gonçalves 2016; Dostálek & Frantik 2008). The "*Quebradas* forests" stand out for their peculiar characteristic of forming different microclimates between the top and bottom of ravines (Rivas 2010).

The environments with less species richness and diversity were the following: "*parque* forests" (6 spp.), wetlands (3 spp.) and "*palmares*" (1 sp.). These occupy restricted areas in the country (Evia & Gudynas 2000) and are threatened by rice cultivation and overgrazing (Rivas 2010). In "*parque* forests" in the West and Southwest (Fig. 1) regions, urban expansion associated with the capital of the country and productive activities (agriculture and timber afforestation) were possible causes of the lower species richness (Mai 2014; Achkar *et al.* 2015; Haretche *et al.* 2012). Agricultural activities characterized by seasonal crop rotations use herbicides and fertilizers. These strongly impact populations of endemic species in the region (Achkar *et al.* 2015; MGAP 2015; Schrag *et al.* 2009).

Two species are endemic to the country, *Pachygenium arechavaletae* and *Skeptrostachys berroana* (Batista *et al.* 2011a, 2011b; Schinini 2010; Govaerts *et al.* 2020), and 15 species have distributions restricted to the Southern Cone (Argentina, southern Brazil, Paraguay and Uruguay), highlighting the importance of the group in the region (Schinini 2010; Batista *et al.* 2011a, 2011b; Govaerts *et al.* 2020).

For the country, eight species were newly classified as conservation priorities according to criteria 1, 2 and 3 of Marchesi *et al.* (2013). Together with the other previously listed species (Marchesi *et al.* 2013; Marín-Pérez *et al.* 2020) 82 % are included, and only four Spiranthinae species (*Brachytele camporum, B. dilatata, Cyclopogon apricus* and *C. elegans*) are not conservation priorities in Uruguay because of their wider distribution.

Some species are known from only a few old records and have not been collected recently (*Cyclopogon apricus* (1986), *C. congestus* (1987), *Cyclopogon taquaremboensis* (1933), *Skeptrostachys berroana* (1972)). Most of these old collections were carried out in environments which are currently urbanized (South region of the country) during a period of intensive collection effort (Mai 2014). It is possible that some of these have become extinct in the country. Nevertheless, the border region with Brazil has habitats suitable for *Cyclopogon* species, yet this area remains poorly collected.

Although *Cyclopogon taquaremboensis* and *Pachygenium arechavaletae* are considered native species in the country, they were not described due to insufficient data (no records in herbaria) for the analysis. For these two species we included the original diagnosis provided by the authors in the protologue.

Taxonomic Treatment

Artificial key to species of Spiranthinae from Uruguay

1. Leaves absent at anthesis 2
    2. Flowers red to orangish-red, forming a mentum, lip ≥ 1.5 cm long ..... *Sacoila lanceolata*
    2'. Flowers white, greenish-white or greenish-yellow, not forming a mentum, lip ≤ 0.5 cm long 3
        3. Peduncle ≥ 45 cm long; lip ≤ 0.25 cm long ..... *Brachystele arechavaletae*
        3'. Peduncle ≤ 40 cm long; lip ≥ 0.3 cm long 4
            4. Petals glabrous at margin ..... *Brachystele camporum*
            4'. Petals ciliate at margin 5
                5. Floral bracts ≥ 1.3 cm long; epichile ≤ 0.05 cm long ..... *Brachystele cyclochila*
                5'. Floral bracts ≤ 1.1 cm long; epichile ≥ 0.1 cm long ..... *Brachystele dilatata*
1'. Leaves present at anthesis 6
    6. Inflorescence with up to 25 flowers 7
        7. Flowers with a spur; lip ≥ 1.5 cm long; lateral sepals ≤ 1.5 cm long ..... *Pachygenium bonariensis*
        7'. Flowers without a spur; lip ≤ 1.0 cm long; lateral sepals ≤ 1.5 cm long 9
            8. Epichile rounded, quadrate or obcordate 9
                9. Hypochile with auricles at the base; epichile ≤ 0.1 long 10

10. Inflorescence 6-10-flowered; epichile quadrate ..... *Cyclopogon apricus*
10'. Inflorescence 3-5-flowered; epichile obcordate ..... *Cyclopogon oliganthus*
9'. Hypochile without auricles at the base; epichile ≥ 0.2 long 11
11. Floral bracts ≥ 1.1 cm long; hypochile ≥ 0.4 cm long ..... *Cyclopogon elegans*
11'. Floral bracts ≤ 0.8 cm long; hypochile < 0.3 cm long ..... *Cyclopogon chloroleucus*
8'. Epichile obtriangular or obtriangular-oblate 12
12. Hypochile wide elliptical ..... *Cyclopogon longibracteatus*
12'. Hypochile oblong or ovate-oblong 13
13. Epichile 3-lobulate at apex ..... *Cyclopogon taquaremboensis*
13'. Epichile truncate at apex 14
14. Leaves 4.0-5.0 cm long; floral bracts ≤ 1.5 cm long ..... *Cyclopogon micranthus*
14'. Leaves 8.0-15 cm long; floral bracts ≥ 1.8 cm long ..... *Cyclopogon congestus*
6'. Inflorescence with at least 30 flowers 15
15. Ovary ≥ 1.1 cm long; epichile ovate, oblate or elliptical 16
16. Lip ≤ 1.5 cm long; petals falcate-spatulate ..... *Pachygenium arechavalaetae*
16'. Lip ≥ 2.5 cm long; petals linear-oblanceolate ..... *Pelexia lindmanii*
15'. Ovary ≤ 1.0 cm long; epichile triangular or narrow triangular 17
17. Flowers white-pinkish or white-greenish; lateral sepals ≤ 0.9 cm long 18
18. Flowers white-pinkish; epichile triangular, apex obtuse ..... *Skeptrostachys paraguayensis*
18'. Flower white-greenish; epichile narrow triangular, apex acute ..... *Skeptrostachys balanophorostachya*
17'. Flowers red-orangish, yellow-greenish or yellow-orangish; lateral sepals ≥ 1.0 cm long 19
19. Peduncle > 80 cm long; dorsal sepal ≥ 1.2 cm long; epichile ≥ 0.5 cm long ..... *Skeptrostachys gigantea*
19'. Peduncle < 70 cm long; dorsal sepal ≤ 1.1 cm long; epichile ≤ 0.4 cm long 20
20. Flowers yellow-greenish; floral bracts ≤ 1.8 cm long ..... *Skeptrostachys berroana*
20'. Flowers red-orangish; floral bracts ≥ 2.0 cm long ..... *Skeptrostachys arechavaletanii*

1. *Brachystele arechavaletae* (Kraenzl.) Schltr., Beih. Bot. Centralbl. 37: 372. 1920. *Spiranthes arechavaletae* Kraenzl., Beibl. Bot. Jahrb. Syst. 80: 9. 1905. *Diskyphogyne arechavaletae* (Kraenzl.) Szlach. & R.González, Fragm. Florist. Geobot. 41: 495. 1996.

Type: URUGUAY. Tacuarembó: November 1898, *J. Arechavaleta 6* (HBG Image!). (Fig. 3A).

Leaves absent at anthesis. Inflorescence 40-80-flowered; peduncle 45-70 cm long; floral bracts 1.0-1.2 × 0.3-0.4 cm, lanceolate, apex acute. Flowers white-greenish; dorsal sepal 0.3-0.4 × 0.1-0.2 cm, lanceolate-oblong, apex attenuate-obtuse; lateral sepals 0.2-0.3 × 0.1-0.2 cm, triangular-oblong, apex obtuse; petals, 0.2-0.4 × 0.05-0.1 cm, linear, margin glabrous, apex obtuse; lip 0.2-0.25 × 0.4-0.5 cm, oblate; column *ca.* 0.2 cm long, ovary *ca.* 0.4 cm long.

Material examined- URUGUAY. Canelones, Guazubira, 15 December 1994, *Rabaiotti et al. s.n.* (MVFA 24314). Colonia, Conchillas, 01 November 1969, *Del Puerto & Marchesi s.n* (MVFA 9098). Florida, Timote, April 1937, *Gallinal et al. B1638* (MVFA). Rocha, Estación Biológica Potrerillo de Santa Teresa, 18 December 2003, *Beyhaut & Bayse s.n.* (MVFA 32957). Tacuarembó, November 1898, *Arechavaleta 10* (HBG).

Distribution- Brazil, Uruguay (Canelones, Colonia, Florida, Rocha, Tacuarembó).

Habitat- In Uruguay it is rare and occurs in wetlands of grasslands and riparian forest. Present in *"Cuenca Sedimentaria del Oeste", "Escudo Cristalino", "Graben de Santa Lucía"* and *"Graben de la Laguna Merín"* (Fig. 4).

Phenology- Observed in flower and fruit from November to April.

Notes- This species could be confused with *B. dilatata* but it differs by the color of the flowers (white-greenish *vs.* yellow-greenish), shape and length of the lip (oblate, 0.2-0.25 long *vs*. sub-orbicular to reniform, 0.45-0.5 long). It is considered a priority species for conservation for the country according to the criteria of Marchesi *et al.* (2013), as it is an endemic species of the Uruguay river basin and has a restricted distribution in Uruguay (criteria 1 and 3).

2. *Brachystele camporum* (Lindl.) Schltr., Beih. Bot. Centralbl. 37: 372. 1920. *Spiranthes camporum* Lindl., Gen. Sp. Orchid. Pl.: 473. 1840. *Gyrostachys camporum* (Lindl.) Kuntze, Revis. Gen. Pl. 2: 664. 1891. Type: URUGUAY. Montevideo: Santa Lucía, September 1840, *J. Tweedie 536* (K Image!). (Figs. 3B, 6A-C).

= *Brachystele pappulosa* Szlach., Fragm. Florist. Geobot. 41: 848. 1996. Type: URUGUAY. Banda Oriental, 1816-1821, *Hilaire St. C22406* (P Image!).

Leaves absent at anthesis. Inflorescence 40-90-flowered; peduncle 10-35 cm long; floral bracts 0.8-1.3 × 0.2-0.5 cm, lanceolate, apex attenuate. Flowers white-greenish; dorsal sepal 0.3-0.4 × 0.2-0.3 cm, lanceolate, apex acute; lateral sepals 0.3-0.5 × 0.15-0.2 cm, triangular-lanceolate, apex acute; petals, 0.3-0.4 × 0.1 cm, linear-oblanceolate, margin glabrous, apex obtuse; lip 0.3-0.4 × 0.2-0.4 cm; hypochile 0.2-0.3 × 0.2-0.4 cm, obovate; epichile 0.08-0.1 × 0.15-0.2

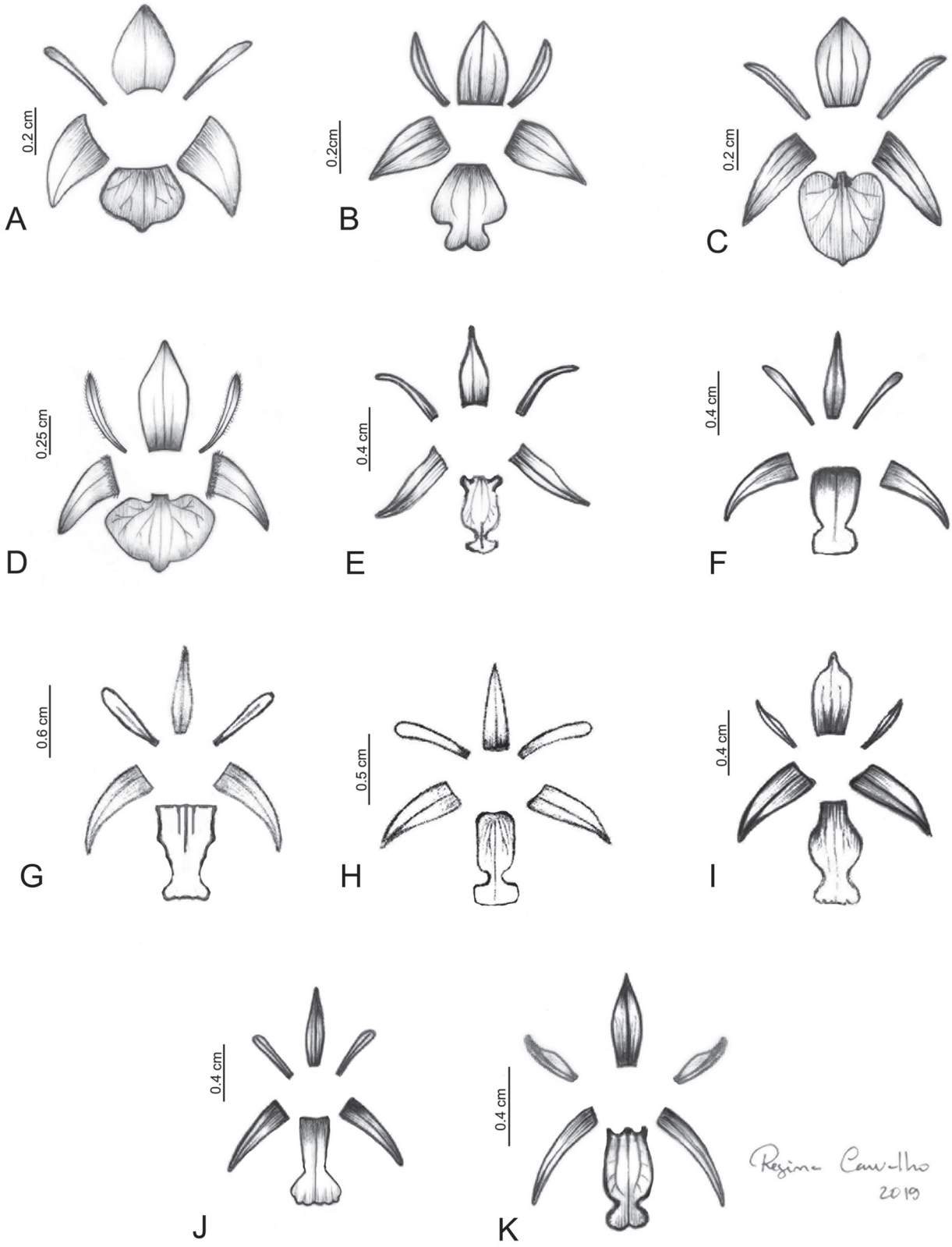

Figure 3. Dissected perianths. **A**. *Brachystele arechavaletae* (*Beyhaut & Bayse s.n.*), **B**. *Brachystele camporum* (*Marín et al. OR2*), **C**. *Brachystele cyclochila* (*Cirillo s.n.*), **D**. *Brachystele dilatata* (*Marín et al. OR22*), **E**. *Cyclopogon apricus* (*Izaguirre et al. s.n.*), **F**. *Cyclopogon chloroleucus* (*Brussa & Grela 1212*), **G**. *Cyclopogon congestus* (*Izaguirre et al. s.n.*), **H**. *Cyclopogon elegans* (*Haretche 28*), **I**. *Cyclopogon longibracteatus* (*Izaguirre et al.*), **J**. *Cyclopogon micranthus* (*Haretche 27*), **K**. *Cyclopogon oliganthus* (*Cirillo s.n.*).

cm, rhomboid or reniform, apex acute, rounded or clearly 2-lobed; column *ca.* 0.1 cm long, ovary 0.4-0.5 cm long.

Material examined- URUGUAY. Canelones, Santa Lucía, n.d, *s. coll 536* (K 000573844). Maldonado, Punta Ballena, 30 December 2018, *Marin et al. OR2* (MVJB). Montevideo, Parque Rivera, 10 February 2005, *Aretche 18* (MVJB). Lavalleja, Aigua, 20 April 1935, *Legrand 590* (MVM). Paysandú, Estación Experimental 16 March 1988, *Cassinoni. s.n.* (MVFA 19499). Río Negro, Fray Bentos, 22 November 1913, *Berro 7171* (MVFA). Rivera, Gruta de Piria, Cuchilla Negra, 15 November 1996, *Bonifacino. et al. s.n.* (MVFA 26018). Rocha, Valizas, 03 February 2004, *Callero s.n.* (MVJB 22462). San José, Sierra de Mahoma, 04 December 2012, *Sanguinetti 66* (SI). Soriano, Vera, 10 October 1900, *Berro 1316* (MVFA). Treinta y Tres, Río Tacuarí, Paso del Dragón, 08 January 1980, *Brescia et al. s.n.* (MVFA 16313).

Distribution- Argentina, Brazil, Paraguay, Uruguay (Canelones, Lavalleja, Maldonado, Montevideo, Rivera, Río Negro, Rocha, San José, Soriano, Treinta y Tres).

Habitat- In Uruguay it is common and occurs in stony soils of grasslands, the "*Serrano* forest", and riparian forests. Specimens were also collected in *"Cuenca Sedimentaria del Oeste", "Cuenca Sedimentaria Gondwánica", "Graben de Santa Lucía", "Graben de la Laguna Merín", "Escudo Cristalino"* and *"Sierras del Este"* (Fig. 4).

Phenology- Observed in flower and fruit between November and June.

Notes- The shape of the lip and especially the epichile is fairly variable in this species, which, especially when it is rounded at the apex, can generate confusion when compared to *B. dilatate*. However, these two species can be distinguished by the length and shape of the hypochile (obovate, 0.2-0.3 *vs.* sub-orbicular to reniform, 0.4-0.7 cm long).

3. *Brachystele cyclochila* (Kraenzl.) Schltr., Beih. Bot. Centralbl. 37: 373. 1920. *Spiranthes cyclochila* Kraenzl., Kongl. Svenska Vetensk. Acad. Handl., n.s., 46(10): 36. 1911. Type: BRAZIL. Paraná: Capão Grande, in campo, November 1905, *V. Dusén 7295* (HBG Image!). (Fig. 3C).

Leaves absent at anthesis. Inflorescence 10-15-flowered; peduncle 25-35 cm long; floral bracts 1.3-1.5 × 0.4-0.5 cm, ovate, apex attenuate. Flowers yellow-greenish; dorsal sepal 0.3-0.4 × 0.1-0.2 cm, obovate-oblong, apex obtuse; lateral sepals 0.5-0.6 × 0.2-0.3 cm, triangular-lanceolate, apex acute; petals 0.35-0.4 × 0.1-0.15 cm, linear, margin ciliate, apex obtuse; lip 0.4-0.5 × 0.4-0.6 cm; hypochile 0.45-0.5 × 0.4-0.6 cm, sub-orbicular to ovate; epichile 0.05 × 0.05 cm, triangular, apex acute; column *ca.* 0.4 cm long, ovary 0.6-0.8 cm long.

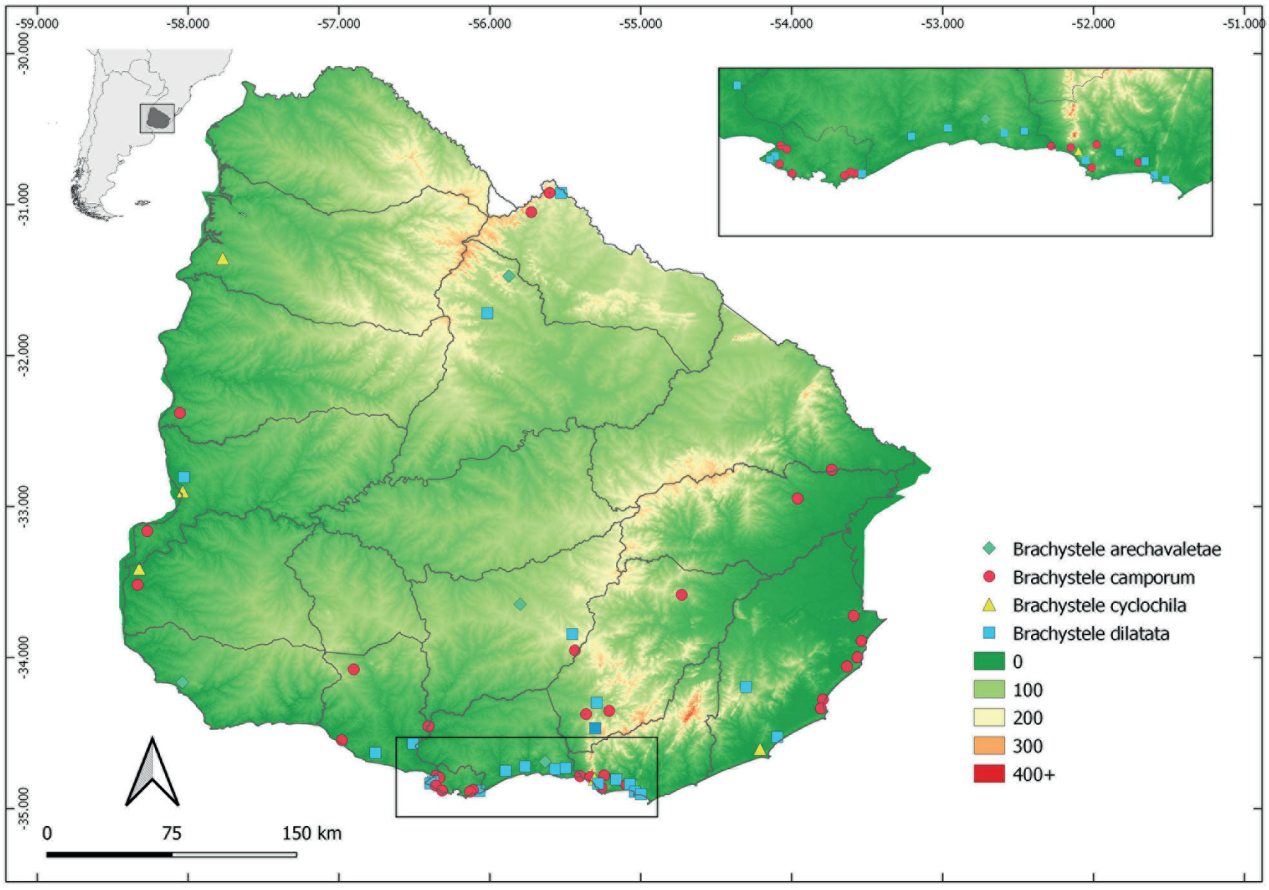

Figure 4. Distribution of species of *Brachystele* in relation to the relief of the country.

Material examined- URUGUAY. Salto, San Antonio, 08 December 1905, *Berro 3453* (MVFA).

Distribution- Argentina, Brazil, Paraguay, Uruguay (Salto).

Habitat- In Uruguay it is rare and occurs in stony soils of "*Serrano* forest". Present in *"Cuenca Sedimentaria del Oeste"* (Fig. 4).

Phenology- Observed in flower and fruit from December to February.

Notes- This species could be confused with *B. dilatata* due to the yellow-greenish flowers, but it differs in the number of number of flowers in the inflorescences (10-15-flowered *vs*. 50-80-flowered) and in the size of the epichile (0.05 × 0.05 *vs*. 0.1 × 0.1 cm). It has a restricted distribution in Uruguay meeting criterion 3 of Marchesi *et al*. (2013), thus it is considered a priority species for conservation for the country.

4. *Brachystele dilatata* (Lindl.) Schltr., Beih. Bot. Centralbl. 37: 373. 1920. *Spiranthes dilatata* Lindl., Gen. Sp. Orchid. Pl.: 474. 1840. *Gyrostachys dilatata* (Lindl.) Kuntze, Revis. Gen. Pl. 2: 664. 1891. Type: URUGUAY. Montevideo: Montevideo, *s.d*, *J. Tweedie 533* (K Image!). (Figs. 3D, 6D-F).

= *Brachystele waldemarii* Szlach., Fragm. Florist. Geobot. 41: 850. 1996. ***syn nov.*** Type: URUGUAY. Lavalleja, March 1894, *J. Arechavaleta s.n.* (HBG Image!).

Leaves absent at anthesis. Inflorescence 50-80-flowered; peduncle 18-50 cm long; floral bracts 0.8-1.1 × 0.4-0.6 cm, ovate, apex attenuate. Flowers yellow-greenish; dorsal sepal 0.5-0.7 × 0.2-0.4 cm, obovate-oblong, apex acute; lateral sepals 0.5-0.7 × 0.2-0.3 cm, triangular-lanceolate, apex acute, base pubescent; petals 0.4-0.8 × 0.1 cm, linear to linear-oblanceolate, margin ciliate, apex obtuse; lip 0.45-0.55 × 0.35-0.4 cm; hypochile 0.4-0.45 × 0.35-0.4 cm, sub-orbicular to reniform, sometimes with 2 auricles at the base; epichile 0.1 × 0.1 cm, triangular to transversely elliptical, apex obtuse; column *ca*. 0.2 cm long, pubescent base, ovary 0.6-0.9 cm long.

Material examined- URUGUAY. Canelones, Cuchilla Alta, 08 December 2013, *Haretche 700* (MVJB). Lavalleja, Cerro Guazubirá, 30 December 1951, *Teague s.n.* (MVM 15235). Maldonado, Pueblo Eden, 25 January 2019, *Marin et al. OR22* (MVJB). Montevideo, Punta Espinillo, 04 February 1981, *Izaguirre & Marchesi s.n.* (MVFA 16808). Río Negro, Estancia La Tuna Blanca (Echevarne), 27 January 1999, *Marchesi & Vignale s.n.* (MVFA 28738). Rivera, Camino Minuano, Masolles, 02 February 1958 *Rosengurtt B7154* (MVFA). Rocha, Cerro del Indio, 15 January 1958, *Zorrón 6* (MVHC 1292). San José, Kiyú, 15 January 1970, *Izaguirre 2761* (MVFA). Tacuarembó, Estancia La California, 30 January 1962, *Millot & Del Puerto 1128* (MVFA).

Distribution- Argentina, Brazil, Paraguay, Perú, Uruguay (Canelones, Lavalleja, Maldonado, Montevideo, Río Negro, Rivera, Rocha San José, Tacuarembó).

Habitat - In Uruguay it is common and occurs in stony soils of grasslands, "*Serrano* forest" and riparian forest. Also in *"Cuenca Sedimentaria del Oeste", "Cuenca Sedimentaria Gondwánica", "Graben de Santa Lucía", "Graben de la Laguna Merín", "Escudo Cristalino"* and *"Sierras del Este"* (Fig. 4).

Phenology - Observed in flower and fruit between December and February.

Notes - It can be distinguished from the other species of the genus in the country by the larger sub-orbicular to the reniform hypochile (0.4-0.45 × 0.35-0.4 cm). After analysis of the protolog, photo of the holotype and illustration of *B. waldemarii* (Szlachetko 1996) we propose its synonymization under *B. dilatata*. *Brachystele waldemarii* is known only by the type specimen collected in 1918. The characters used to support it as distinct from *B. dilatata* (non-auriculate, rhomboid and sessile lip, transversely elliptical epichile, petals linear and falcate, lateral sepals falcate and 3-nerved) can be observed in specimens of *B. dilatata*, thus these characters are understood as part of its morphological variation.

5. *Cyclopogon apricus* (Lindl.) Schltr., Beih. Bot. Centralbl. 37: 384. 1920. *Spiranthes aprica* Lindl., Gen. Sp. Orchid. Pl.: 469. 1840. *Gyrostachys aprica* (Lindl.) Kuntze, Revis. Gen. Pl. 2: 664. 1891. *Beadlea aprica* (Lindl.) Garay, Bot. Mus. Leafl. 28: 299. 1980 publ. 1982. *Warscaea aprica* (Lindl.) Szlach., Fragm. Florist. Geobot. 39: 561. 1994. Type: BRAZIL. Rio Grande do Sul: Porto Alegre, *s.d.*, *J. Tweedie* 545 (K Image!). (Figs. 3E, 6G).

Leaves 3-5, 1.6-2.5 × 0.5-1.5 cm, ovate-lanceolate, apex obtuse. Inflorescence 6-10-flowered; peduncle 8-15 cm long; floral bracts 1.0-1.1 × 0.35-0.4 cm, lanceolate, apex attenuate. Flowers white-greenish; dorsal sepal, 0.4-0.5 × 0.2 cm, lanceolate, apex acute; lateral sepals, 0.6-0.7 × 0.1-0.15 cm, linear-lanceolate, apex acute; petals, 0.5-0.6 × 0.1 cm, linear-lanceolate, margin glabrous, apex retuse; lip 0.4-0.6 × 0.2-0.3 cm; hypochile 0.3-0.45 × 0.2-0.3 cm, oblong, 2 auricles at the base; epichile 0.1 × 0.05-0.1 cm, quadrate, apex obtuse to emarginated; column 0.3 cm long, ovary 0.4-0.6 cm long.

Material examined- URUGUAY. Artigas, Cuareim, 18 September 1902, *Berro 2859* (MVFA). Canelones, Pedrera Ruta 11, 06 October 1957, *Rosengurtt B6632* (MVFA). Durazno, Establecimiento La Paz, Arroyo Cordobal, 03 October 1961, *Izaguirre 1992* (MVFA). Flores, Río Yí y Arroyo Marincho, 10 April 1937, *Rosengurtt B1512* (MVFA). Florida, Campo experimental Los Olivos, 03 September 1984, *May s.n.* (MVFA 17385). Lavalleja, Salto del Penitente, 01 April 1985, *Fenis s.n.* (MVFA 17497). Maldonado, Piriápolis, 31 March 1911, *Osten 5521* (MVM). Montevideo, Colón, 20 April 1902, *Osten 4308* (MVM). Rivera, Cerro Mirriñaque, 20 November 1986, *Izaguirre et al. s.n.* (MVFA 18433). Rocha, Parque San Miguel, 06 October 1965, *Del Puerto & Marchesi 5266* (MVFA). Tacuarembó, Ruta 31, 02 October 1959, *Rosengurtt B7725* (MVFA).

Distribution- Argentina, Bolivia, Brazil and Uruguay (Artigas, Canelones, Durazno, Flores, Florida, Lavalleja, Maldonado, Montevideo, Rivera, Rocha, Tacuarembó).

Habitat- In Uruguay it is common and occurs in wetlands, stony and sandy soil of grasslands, "*Serrano* forest", "*Parque* forest", "*Quebradas* forest", and riparian forest. Present in *"Cuenca Sedimentaria Gondwánica", "Cuesta Basáltica", "Escudo Cristalino", "Graben de Santa Lucía", "Graben de la Laguna Merín"* and *"Sierras del Este"* (Fig. 5).

Phenology- Observed in flower and fruit from September to March.

Notes- This species could be confused with *C. oliganthus* but differs by having petals retuse at apex (*vs*. obtuse).

6. *Cyclopogon chloroleucus* Barb. Rodr., Gen. Sp. Orchid. 1: III. 1877. *Spiranthes chloroleuca* Barb. Rodr., Gen. Sp. Orchid. 1: 181. 1877. Lectotype (designated by Buzatto *et al*., 2013): plate 368 in Barbosa Rodrigues (1877: 181) reproduced in Sprunger *et al*. (1996) (RB Illustration!). (Figs. 3F, 6H).

Leaves 4-5, 8.0-5.3 × 2.3-3.0 cm, elliptical to ovate, apex obtuse. Inflorescence 8-10-flowered; peduncle 30-45 cm long; floral bracts 0.8-0.9 × 0.3-0.35 cm, linear-lanceolate, apex acute. Flowers white-greenish; dorsal sepal 0.5-0.6 × 0.2-0.25 cm, lanceolate, apex acute; lateral sepals 0.6-0.7 × 0.2-0.25 cm, linear-lanceolate, apex acute; petals 0.4-0.5 × 0.1 cm, linear-oblanceolate, margin glabrous, apex rounded; lip 0.5-0.6 × 0.3-0.4 cm; hypochile 0.25-0.3 × 0.3 cm, ovate-oblong; epichile 0.2-0.25 × 0.3-0.35 cm, quadrate, apex truncate; column 0.3-0.4 cm long, ovary *ca.* 0.7 cm long.

Material examined- URUGUAY. Cerro Largo, Sierra de Ríos, 10 October 1999, *Brussa & Grela s.n.* (MVFA 29362). Rivera, Arroyo La Aurora, Establecimiento San Juan, 25 September 2004, *Brussa & Grela 1212* (MVJB 22023). Tacuarembó, November 1905, *Arechavaleta s.n.* (MVFQ 178).

Distribution- Argentina, Brazil, Paraguay, Uruguay (Cerro Largo, Rivera, Tacuarembó).

Habitat- In Uruguay it is rare and occurs in "*Quebradas* forest" and riparian forest. Present in *"Cuenca Sedimentaria Gondwánica"* and *"Cuesta Basáltica"* (Fig. 5).

Phenology- Observed in flower and fruit in September and October.

Notes- It could be confused with *C. elegans* but differs by the shape and length of the hypochile (ovate-oblong, 0.25-0.3 cm *vs*. oblong, 0.4-0.5 cm long). It is considered a priority species for conservation for the country according to the criteria of Marchesi *et al.* (2013), due to its restricted distribution in Uruguay (criterion 3).

7. *Cyclopogon congestus* (Vell.) Hoehne, Fl. Brasílica 8: 209. 1945. *Serapias congesta* Vell., Fl. Flumin. 9: t. 54. 1831.

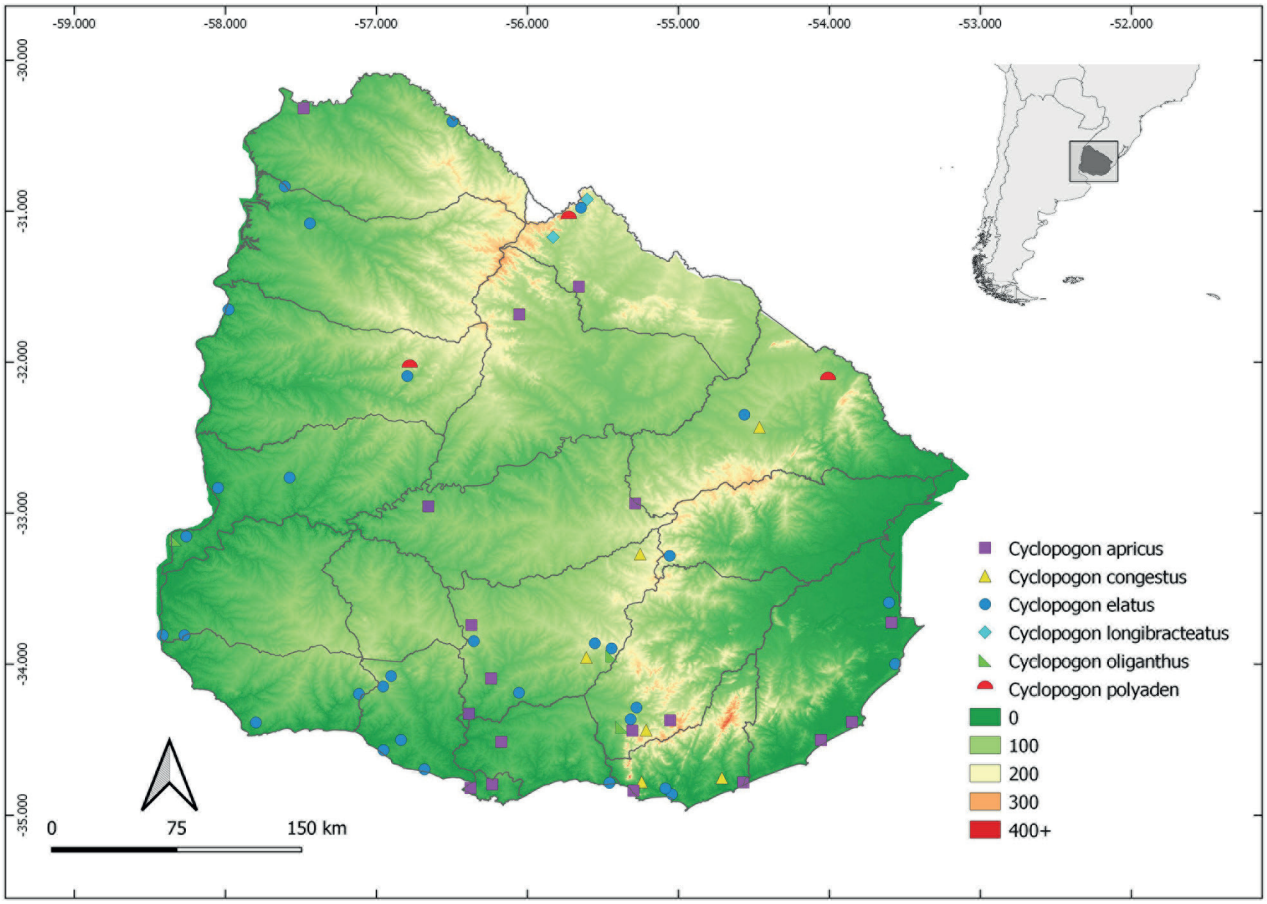

Figure 5. Distribution of species of *Cyclopogon* in relation to the relief of the country.

Beadlea congesta (Vell) Garay, Bot. Mus. Leafl. 28 (4): 300. 1980. Lectotype (designated by Buzatto *et al.* 2013)**:** plate 54 in Velloso (1831: 54) (RB Illustration!). (Fig. 3G).

Leaves 5-6, 8-15 × 1.8-3.0 cm, linear-lanceolate, apex cuneate to acute. Inflorescence 10-25-flowered; peduncle 20-35 cm long with cauline leaves; floral bracts 1.8-2.0 × 0.25-0.3 cm, linear-lanceolate, apex acute. Flowers white-greenish; dorsal sepal, 0.5-0.6 × 0.15-0.2 cm, lanceolate, apex rounded; lateral sepals, 0.7-1.0 × 0.1-0.2 cm, linear-lanceolate, apex acute; petals 0.6-0.7 × 0.1 cm, linear-lanceolate, margin glabrous, apex obtuse; lip 0.7-0.85 × 0.3-0.4 cm; hypochile 0.4-0.5 × 0.3-0.4 cm, oblong; epichile 0.3-0.35 × 0.3-0.4 cm, obtriangular, apex truncate; column 0.3-0.4 cm long, ovary 0.6-0.8 cm long.

Material examined- URUGUAY. Cerro Largo, Ruta 26 km 48,5, 17 November 1987, *Izaguirre et al. s.n.* (MVFA 191136). Florida, Arroyo Casupá, 27 October 1968, *Del Puerto & Marchesi 7638* (MVFA). Lavalleja, Sierra de Carajé Ruta 60, 26 October 1958, *Rosengurtt B7436* (MVFA). Maldonado, Cerro Pan de Azúcar, 01 November 1968, *Del Puerto & Marchesi 7730* (MVFA). Salto, Arroyo Valentín

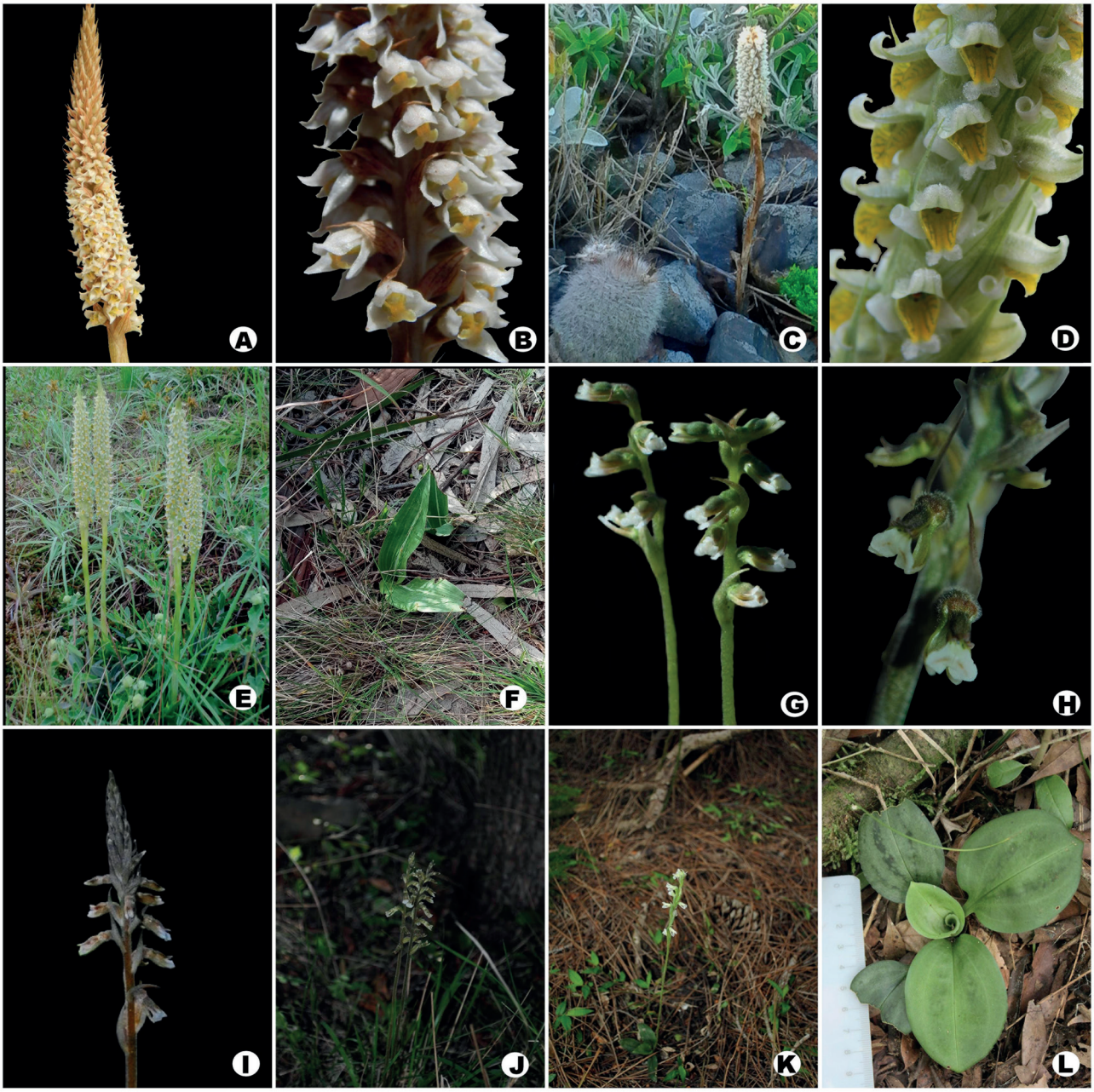

Figure 6. Spiranthinae from Uruguay. **A-C.** *Brachystele camporum*. **A.** Inflorescence**, B**. Detail of the flowers, C. Specimen in the habitat. **D-F:** *Brachystele dilatata*. **D**. Detail of the Flowers, **E.** Specimens in the habitat, **F.** Rosette. **G.** *Cyclopogon apricus*. **H.** *Cyclopogon chloroleucus*. **I-J.** *Cyclopogon elatus*. **I.** Inflorescence **J.** Specimen in the habitat, **K-L**. *Cyclopogon micranthus*. **K.** Specimen in the habitat. **L.** Rosette.

Grande y Ruta 31, 30 August 1969, *Del Puerto & Marchesi 8607* (MVFA).

Distribution- Argentina, Brazil, Paraguay, Uruguay (Cerro Largo, Florida, Lavalleja, Maldonado, Salto).

Habitat- In Uruguay it is rare and occurs in wetlands and shady and stony soils of "*Serrano* forest", "*Parque* forest" and "*Quebradas* forest". Present in *"Cuenca Sedimentaria Gondwánica", "Cuesta Basáltica", "Escudo Cristalino"* and *"Sierras del Este"* (Fig. 5).

Phenology- Observed in flower and fruit between August and November.

Notes- It could be confused with *C. elegans* but differs by the length and shape of the epichile (obtriangular, 0.3-0.35 *vs*. quadrate, 0.15-0.2 cm long).

8. *Cyclopogon elegans* Hoehne, Arq. Bot. Estado São Paulo, n.s., f.m., 1: 132. 1944. *Beadlea elegans* (Hoehne) Garay, Bot. Mus. Leafl. 28: 300. 1980 publ. 1982. Type: BRAZIL. São Paulo: Monte Alegre, 6 August 1943, *M. Kuhlmann 275* (SP!). (Figs. 3H, 6I-J).

Leaves 3-6, 4.0-9.0 × 1.0-4.0 cm, elliptical to oblong, apex acute. Inflorescence 15-25-flowered; peduncle 15-40 cm long; floral bracts 1.1-1.2 × 0.2-0.3 cm, lanceolate, apex acute. Flowers white-greenish; dorsal sepal 0.4-0.6 × 0.1-0.2 cm, lanceolate, apex acute; lateral sepals 0.6-0.7 × 0.1-0.15 cm, linear, apex acute; petals 0.4-0.5 × 0.1 cm, linear-oblanceolate, margin glabrous, apex rounded; lip 0.55-0.7 × 0.2-0.3 cm; hypochile 0.4-0.5 × 0.2 cm, oblong; epichile 0.15-0.2 × 0.2-0.3 cm, quadrate, apex truncate; column *ca.* 0.3 cm long, ovary 0.6-0.8 cm long.

Material examined- URUGUAY. Artigas, Estancia Silva y Rosa, Arroyo Mandiyú, 16 September 1976, *Marchesi s.n.* (MVFA 12793). Canelones, Balneario Argentino, 27 October 2005, *Haretche 28* (MVJB 23429). Cerro Largo, Camino de Sierra de Río, Asperesas, 10 October 1999, *Brussa & Grela s.n.* (MVFA 29357). Colonia, Playa Agraciada, 31 October 1969, *Del Puerto s.n.* (MVFA 9099). Florida, Ruta 12 y Arroyo Arias, 18 October 1998, *Bonifacino s.n.* (MVFA 28752). Lavalleja, Cerro Arequita, 17 December 1953, *Rosengurtt & Del Puerto 8346* (MVFA). Maldonado, Ruta 12 entre Pan de Azúcar y Minas, 10 October 1963, *Arrillaga et al. 1618* (MVFA). Río Negro, Balneario Las Cañas, October 2003, *Cirillo s.n.* (MVFA 32851). Rivera, Arroyo del Potrero, Campos de FYMNSA, 30 October 1997, *Marchesi et al. s.n.* (MVFA 27417). Rocha, Estación Biológica Potrerillo de Santa Teresa, 28 November 2002, *Pérez s.n.* (MVFA 32859). Salto, Arroyo Yacuí y Ruta 3, 09 September 1978, *Marchesi s.n.* (MVFA 15746). San José, Sierra de Mahoma, October 2003, *Cirillo s.n.* (MVFA 32863). Soriano, Playa Agraciada, 26 November 1972, *Izaguirre & Laguardia s.n.* (MVFA 11882). Tacuarembó, Estancia La Loma, October 2002, *Izaguirre s.n.* (MVFA 32141). Treinta y Tres, Ruta 98, 10 July 2003, *Izaguirre & Bayce s.n.* (MVFA 32845).

Distribution- Argentina, Bolivia, Brazil, Peru and Uruguay (Artigas, Canelones, Cerro Largo, Colonia, Florida, Lavalleja, Maldonado, Rivera, Rocha, Salto, San josé, Soriano, Tacuarembó, Treinta y Tres).

Habitat- In Uruguay it is common and occurs in shady and wetland soils (Correa 1955) of "*Serrano* forest", "*Parque* forest", "*Quebradas* forest", and riparian forest. It is found in *"Cuenca Sedimentaria Gondwánica", "Cuenca Sedimentaria del Oeste", "Cuesta Basáltica", "Escudo Cristalino", "Graben de Santa Lucía", "Graben de la Laguna Merín"* and *"Sierras del Este"* (Fig. 5).

Phenology- Observed in flower and fruit between September and March.

Notes- It could be confused with *C. longibtacteatus* but differs by the shape of the hypochile (oblong *vs*. wide elliptical) and shape of epichile (quadrate *vs*. obtriangular).

9. *Cyclopogon longibracteatus* (Barb. Rodr.) Schltr., Beih. Bot. Centralbl. 37(2): 390. 1920. *Spiranthes longibracteata* Barb. Rodr., Gen. Spec. Orchid. 1: 185. 1877. *Beadlea longibracteata* (Barb.Rodr.) Garay, Bot. Mus. Leafl. 28: 301. 1980 publ. 1982.

Lectotype (designated by Buzatto *et al.* 2013): BRAZIL. Minas Gerais: plate 311a in Barbosa Rodrigues (1877: 185) reproduced in Sprunger *et al.* (1996) (RB Illustration!). (Fig. 3I).

Leaves 8, 16-17 cm long, linear-lanceolate, apex acute. Inflorescence 15-25-flowered; peduncle 26-40 cm long; floral bracts 1.6-1.7 × 0.15-0.2 cm, linear-lanceolate, apex attenuate. Flowers white-greenish; dorsal sepal 0.55-0.6 × 0.1-0.15 cm, lanceolate, apex acuminate-rounded; lateral sepals 0.55-0.6 × 0.15-0.2 cm, linear-lanceolate, apex acute; petals 0.3-0.4 × 0.1 cm, linear-lanceolate, margin glabrous, apex acute; lip 0.55-0.6 × 0.3 cm; hypochile 0.35-0.4 × 0.3 cm, wide elliptical; epichile 0.2-0.25 × 0.25-0.3 cm, obtriangular, apex truncate; column *ca.* 0.4 cm long, ovary 0.6-0.6 cm long.

Material examined- URUGUAY. Rivera, Bajada de Pena, 19 November 1985, *Marchesi s.n.* (MVFA 17976); cultivada, origen Bajada de Pena, October 2003, *Izaguirre s.n.* (MVFA 32849).

Distribution- Argentina, Brazil, Paraguay, Uruguay (Rivera).

Habitat- In Uruguay it is rare and occurs in wetlands and shady forest of "*Quebrada forest*". Present in *"Cuesta Basáltica"* (Fig. 5).

Phenology- Observed in flower and fruit in November.

Notes- This species could be confused with *C. congestus* but differs by the longer leaves (16-17 *vs*. 8-15 cm long), the length of the lip (0.55-0.6 *vs*. 0.7-0.85 cm long), and the shape of hypochile (wide elliptical *vs*. oblong). It is considered a priority species for conservation for the country according to the criteria of Marchesi *et al.* (2013), because it is a rare species and has a restricted distribution in Uruguay (criteria 2 and 3).

10. *Cyclopogon micranthus* (Barb. Rodr.) Barb. Rodr., Gen. Spec. Orchid. 1: iii. 1877. *Spiranthes micrantha* Barb. Rodr., Gen. Sp. Orchid. 1: 183. 1877. *Hapalorchis micrantha* (Barb. Rodr.) Hoehne, Fl. Brasílica 8(12; 2): 291. 1945. Lectotype (designated by Buzatto *et al*., 2013): BRAZIL. Tab 57 in Barbosa Rodrigues (1877: 183) reproduced in Sprunger *et al*. (1996) (RB Illustration!). (Figs. 3J, 6K-L).

Leaves 5-8, 4.0-5.0 × 1.0-2.0 cm, oblate-lanceolate, apex acute. Inflorescence 5-7-flowered; peduncle 23-31 cm long; floral bracts 1.4-1.5 × 0.25-0.3 cm, lanceolate, apex acute. Flowers white-greenish; dorsal sepal 0.55-0.6 × 0.1-0.2 cm, lanceolate, apex acute; lateral sepals 0.6-0.7 × 0.1-0.2 cm, linear-lanceolate, apex acute; petals 0.4-0.5 × 0.1 cm, linear-oblanceolate, margin glabrous, apex rounded; lip 0.65-0.7 × 0.4 cm; hypochile 0.35-0.4 × 0.35-0.4 cm, ovate-oblong; epichile 0.25-0.3 × 0.35-0.4 cm, obtriangular-oblate, apex truncate; column *ca.* 0.4 cm long, ovary *ca.* 0.6 cm long.

Material examined- URUGUAY. Canelones, Balneario Argentino, 27 October 2005, *Haretche 27* (MVJB 23428). Cerro Largo, Sierra de Ríos, 04 October 2002, *Brussa & Grela s.n.* (MVFA 32744). Durazno, Cuchilla de Pereira, 14 October 2006, *Brussa & Grela s.n.* (MVJB 25281). Rocha, Cerro Rocha, 1998, *Baez s.n.* (MVFA 32154).

Distribution- Argentina, Bolivia, Brazil, French Guiana, Suriname, Uruguay (Canelones, Cerro Largo, Durazno, Rocha), Venezuela.

Habitat- In Uruguay it is rare and occurs in sandy and stony soil of "*Serrano* forest", and riparian forest. Specimens have been collected in *"Graben de Santa Lucía"* and *"Sierras del Este"* (Fig. 5).

Phenology- Observed in flower and fruit in October.

Notes- This species could be confused with *C. congestus* but differs by the length of the petals (0.4-0.5 *vs*. 0.6-0.7 cm long). According to Buzatto *et al.* (2013) *C. micranthus* displays characteristic fasciculate roots, rostellar structure, and wedge-like viscidium that are typical of *Cyclopogon*. Therefore, despite being treated under *Hapalorchis* (Pabst & Dungs 1975; Govaerts *et al*. 2020), it is better placed under *Cyclopogon*.

11. *Cyclopogon oliganthus* (Hoehne) Hoehne & Schltr., Arch. Bot. São Paulo 1: 189. 1926. *Spiranthes oligantha* Hoehne, Revista Mus. Paul. Univ. São Paulo 10: 442. 1918. *Beadlea oligantha* (Hoehne) Garay, Bot. Mus. Leafl. 28: 301. 1980 publ. 1982. *Warscaea oligantha* (Hoehne) Szlach., Fragm. Florist. Geobot. 39: 562. 1994. Type: BRAZIL. São Paulo: Butantan, September 1917, F.C. *Hoehne s.n* (SP!). (Fig. 3K).

Leaves 2-3, 1.0-1.5 × 0.6-0.8 cm, elliptical to oblong, apex acute. Inflorescence 3-5-flowered; peduncle 9-16 cm long; floral bracts 0.5-0.8 × 0.2-0.3 cm, lanceolate, apex acute. Flowers white-greenish; dorsal sepal 0.45-0.5 × 0.15-0.2 cm, lanceolate, apex acute; lateral sepals 0.55-0.6 × 0.1-0.15 cm, linear-lanceolate, apex acute; petals 0.45-0.5 × 0.1 cm, linear-lanceolate, margin glabrous, apex obtuse; lip 0.4-0.45 × 0.2-0.3 cm; hypochile 0.3-0.35 × 0.2-0.3 cm, oblong, 2 auricles at the base; epichile 0.1 × 0.1 cm, obcordate, apex 2-lobate; column *ca.* 0.2 cm long, ovary *ca.* 0.4 cm long.

Material examined- URUGUAY. Lavalleja, Arroyo Gutierrez Ruta 8, 248,5 km, 15 April 2010, *Denhman 293* (SI). Río Negro, Balneario Las Cañas, October 2003, *Cirillo s.n.* (MVFA 32851).

Distribution- Argentina, Brazil, Paraguay, Uruguay (Lavalleja, Río Negro).

Habitat- In Uruguay it is rare and occurs in stony soil of "*Parque* forest" and riparian forest. Present in *"Cuenca Sedimentaria del Oeste" and "Sierras del Este"* (Fig. 5).

Phenology- Observed in flower and fruit from October to April.

Notes- This species could be confused with *C. apricus* but differs by the length of the lip (0.35-0.45 *vs*. 0.5-0.6 cm long), and the shape of the epichile (obcordate *vs*. quadrate). It is a rare species and presents a restricted distribution in Uruguay, meeting criteria 2 and 3 of Marchesi *et al.* (2013).

12. *Cyclopogon taquaremboensis* (Barb. Rodr.) Schltr. in Bot. Centralbl. 37: 394. 1920. *Stenorrhynchos taquaremboensis* Barb. Rodr. in Contr. Jard. Bot. Rio de Janeiro 3: 68. 1902. *Beadlea taquaremboensis* (Barb.Rodr.) Garay, Bot. Mus. Leafl. 28: 301. 1980 publ. 1982.

Lectotype (designated by Buzatto *et al.*, 2013): BRAZIL. Tab XI in Barbosa Rodrigues (1902: 68) reproduced in Sprunger *et al*. (1996) (RB Illustration!).

Caule longiuscule, satis robusto, aphyllo, ad basin vaginato, pubescente; foliis redicalibus, rosulates, erectis, subsessilis, lanceolatis, acutis, inferne attenuates, erectis ad basin pubescentibus, trinervatis, floribus paulo superantibus; ovario subsessile, oblong a basi attenuato, dense puberulo; sepalis puberulis, obtusis, dorsali lanceolato, convavo, basi gibbosis; sacco parvo, globoso, puberulo; petalis lineari-spathulatis, inferne atteniatis, sepalo dorsali paulo minoribus; labello erecto, apice recurve, sepalos majore, oblong, intus ad medium puberulo, laeviter tribolo, lobo medio reflex, lateralibus erectis, rotundatis, basi sacciformi, bicorniculato; columna elongate, rostello obtuso, longe rostrato.

Distribution- Brazil and Uruguay (Lavalleja).

Phenology- Observed in flower and fruit in November.

Notes- It is not described here because we did not find specimens in the visited herbaria. Two specimens cited by Pabst (1952), *Legrand 2285* and *R. Mato 234,* were not found. Based on the protolog, it could be confused with *C. micranthus* but differs by the shape of the hypochile (oblong *vs*. oblate) and shape of the epichile apex (3-lobulate *vs*. truncate). It is a rare species, endemic in Uruguay and presents a restricted distribution in Uruguay, meeting criteria 1, 2 and 3 of Marchesi *et al.* (2013).

13. *Pachygenium arechavaletae* Mytnik, Szlachetko & Górniak, Ann. Bot. Fenn. 47: 218. 2010. *Pelexia arechavaletae* (Mytnik, Szlach. & Górniak) J.M.H.Shaw, Orchid Rev. 122: 76. 2014. Type: URUGUAY. Montevideo: Barra de

Santa Lucía, *s.d.*, *J. Arechavaleta s.n.* (P Image!).*Species haec Pachygenio oestrifero similis est, sed auriculis onguiculo articulatus differt. Pachygenio bonariense similis est, sed labello ecalloso differ. Duabus speciebus foliis margis differ.*

Distribution- Uruguay (Montevideo).

Habitat- In Uruguay it is rare and occurs in sandy soil of marine coastal environments.

Phenology- No data.

Notes- It is not described here because it is known only from the type specimen. Based on the protolog, it is similar to *P. bonariensis* but can be distinguished by the size of the leaves (25-28 × 3.5-5.0 *vs*. 15-20 × 0.3-0.4 cm) and length of the lip (*ca*. 1.4 *vs*. 1.5-1.8 cm long). It is an endemic species in Uruguay and presents a restricted distribution in Uruguay, meeting criteria 2 and 3 of Marchesi *et al.* (2013).

14. *Pachygenium bonariense* (Lindl.) Szlachetko, R. González & Rutk, Polish Botanical Journal 46: 4. 2001. *Pelexia bonariensis* (Lindl.) Schltr., Beih. Bot. Centralbl. 37: 400. 1920. *Spiranthes bonariensis* Lindl., Gen. Sp. Orchid. Pl.: 475. 1840. *Gyrostachys bonariensis* (Lindl.) Kuntze, Revis. Gen. Pl. 2: 664. 1891. *Stenorrhynchos bonariense* (Lindl.) Cogn. in C.F.P.von Martius & auct. suc. (eds.), Fl. Bras. 3(4): 164. 1895. Type: ARGENTINA. Buenos Aires: *s.d., J. Tweedie s.n*. (K Image!). (Figs. 7A, 10A-B).

Leaves 2-3, 15-20 × 0.3-0.4 cm, linear-lanceolate, apex acute. Inflorescence 10-12-flowered; peduncle 30-40 cm long; floral bracts 2.5-2.8 × 0.2-0.3 cm, lanceolate, apex acute. Flower white-greenish; dorsal sepal 1.0-1.3 × 0.4-0.5 cm, lanceolate, apex acute; lateral sepals 1.5-1.6 × 0.5-0.55 cm, linear-lanceolate, apex acute, spur at base rounded; petals 1.0-1.1 × 0.25-0.3 cm, linear-oblanceolate, margin glabrous, apex obtuse; lip 1.5-1.8 × 0.45-0.5 cm; hypochile 1.0-1.2 × 0.3-0.35 cm, oblong, 2 auricles at the base; epichile 0.3-0.4 × 0.45-0.5 cm, triangular, apex rounded; column *ca*. 0.2 cm long, ovary *ca*. 1.0 cm long.

Material examined- URUGUAY. Montevideo, Barra de Santa Lucía, *s.d., Arechavaleta s.n*. (P). Rocha, Fortaleza de Santa Teresa, 20 February 1938, *Rosengurtt B2628* (MVM). Tacuarembó, Cerro de Tacuarembó, April 1924, *Osten 17119* (MVM).

Distribution- Argentina, Bolivia, Paraguay, Peru, Uruguay (Canelones, Rocha, Rivera).

Habitat- In Uruguay it is rare and occurs in wetlands and sandy soil of "*Serrano* Forest" and grasslands. *"Cuesta Basáltica"* and *"Graben de la Laguna Merín"* (Fig. 8).

Phenology- Observed in flower and fruit between February and April.

Notes- The species is easy to distinguish from *P. lindmanii* by the shape of the epichile (triangular *vs*. oblate) and length of the lip (1.5-1.8 *vs*. 2.5-2.7 cm long).

15. *Pelexia lindmanii* Kraenzl., Kongl. Svenska Vetensk. Acad. Handl., n.s., 46: 18. 1911. Type: BRAZIL. Rio Grande do Sul: Ex Colonia Santo Angelo, 04 February 1893, *N.A. Lindman 1041* (S Image!). (Fig. 7B).

Leaves 25-30 × 3.5-5.0 cm, spatulate, apex acute. Inflorescence 40-50-flowered; peduncle 0.38-40 cm long; floral bracts 1.5-1.7 × 0.4-0.2 cm, linear-lanceolate, apex acute. Flower white-greenish; dorsal sepal 1.0-1.2 × 0.3-0.4 cm, obovate, apex attenuate; lateral sepals 2.4-2.5 × 0.2-25 cm, linear-falcate, apex acute, spur cuneiform at base; petals 1.2-1.3 × 0.2-0.25 cm, linear-oblanceolate, margin glabrous, acute; lip 2.5-2.7 × 0.3-0.4 cm; hypochile 2.2-2.3 × 0.25-0.3 cm, oblong-oblanceolate, 2 auricles at the base; epichile 0.3-0.4 × 0.25-0.4 cm, oblate, apex truncate to 2-lobed; column 0.6 cm long, ovary 1.3-1.5 cm long.

Material examined- URUGUAY. Río Negro, Arroyo Zanja Honda, November 1997, Marchesi s.n. (MVFA 32958). Rocha, Santa Teresa, I-2003, *Beyhaut s.n.* (MVFA 32839).

Distribution- Argentina, Brazil, Paraguay, Uruguay (Río Negro, Rocha).

Habitat- In Uruguay it is rare and occurs in stony and sandy soil of the Riparian Forest. Present in *"Graben de la Laguna Merín"* (Fig. 8).

Phenology-Observed in flower and fruit from November to January.

Notes- It is easy to recognize, if compared with *Pachygenium* species, by the leaf shape (spatulate) and length of its lip (2.5-2.7 cm long). It is considered a priority species for conservation for the country according to the criteria of Marchesi *et al.* (2013), because it has a restricted distribution in Uruguay (criterion 3).

17. *Sacoila lanceolata* (Aubl.) Garay, Bot. Mus. Leafl. 28: 352. 1980 publ. 1982. *Limodorum lanceolatum* Aubl., Hist. Pl. Guiane 2: 821. 1775. *Neottia lanceolata* (Aubl.) Willd., Sp. Pl., ed. 4, 4: 73. 1805. *Stenorrhynchos lanceolatum* (Aubl.) Rich., De Orchid. Eur.: 37. 1817. *Gyrostachys lanceolata* (Aubl.) Kuntze, Revis. Gen. Pl. 2: 664. 1891. *Spiranthes lanceolata* (Aubl.) León, Contr. Ocas. Mus. Hist. Nat. Colegio "De La Salle" 8: 358. 1946. Type: DOMINICAN REPUBLIC. *sine loco accurato*, *s.d.*, *Plumier 1758: t. 181, fig. 2* (original illustration in Plumier 1758: t. 181!). (Figs. 7C, 10C-D).

Leaves absent at anthesis. Inflorescence 15-25-flowered, peduncle *ca*. 30-40 cm long; floral bracts 1.5-2.0 × 0.45-0.5 cm, lanceolate, apex acute. Flowers red to red-orangish; dorsal sepal 1.4-1.5 × 0.3-0.5 cm, lanceolate, apex acute; lateral sepals 2.0-2.3 × 0.3-0.4 cm, linear-lanceolate, apex acute, forming a mentum at base; petals 1.5-2.0 × 0.2-0.3 mm, falcate-oblanceolate, margin glabrous, apex acute; lip 1.7-2.1 × 0.4-0.6 cm, entire, elliptical, apex acute; column 0.6-0.7 cm long, ovary 2.0-2.5 cm long.

Material examined- URUGUAY. Río Negro, Estancia El Rosario, 19 November 1998, *Marchesi & Vignale s.n.* (MVFA 28581). Rivera, Ruta 30, 228 km, 22 October 2005, *Delfino s.n.* (MVJB 23508). Tacuarembó, Establecimiento El Cerro, 22 October 2005 *Brussa s.n* (MVJB23752).

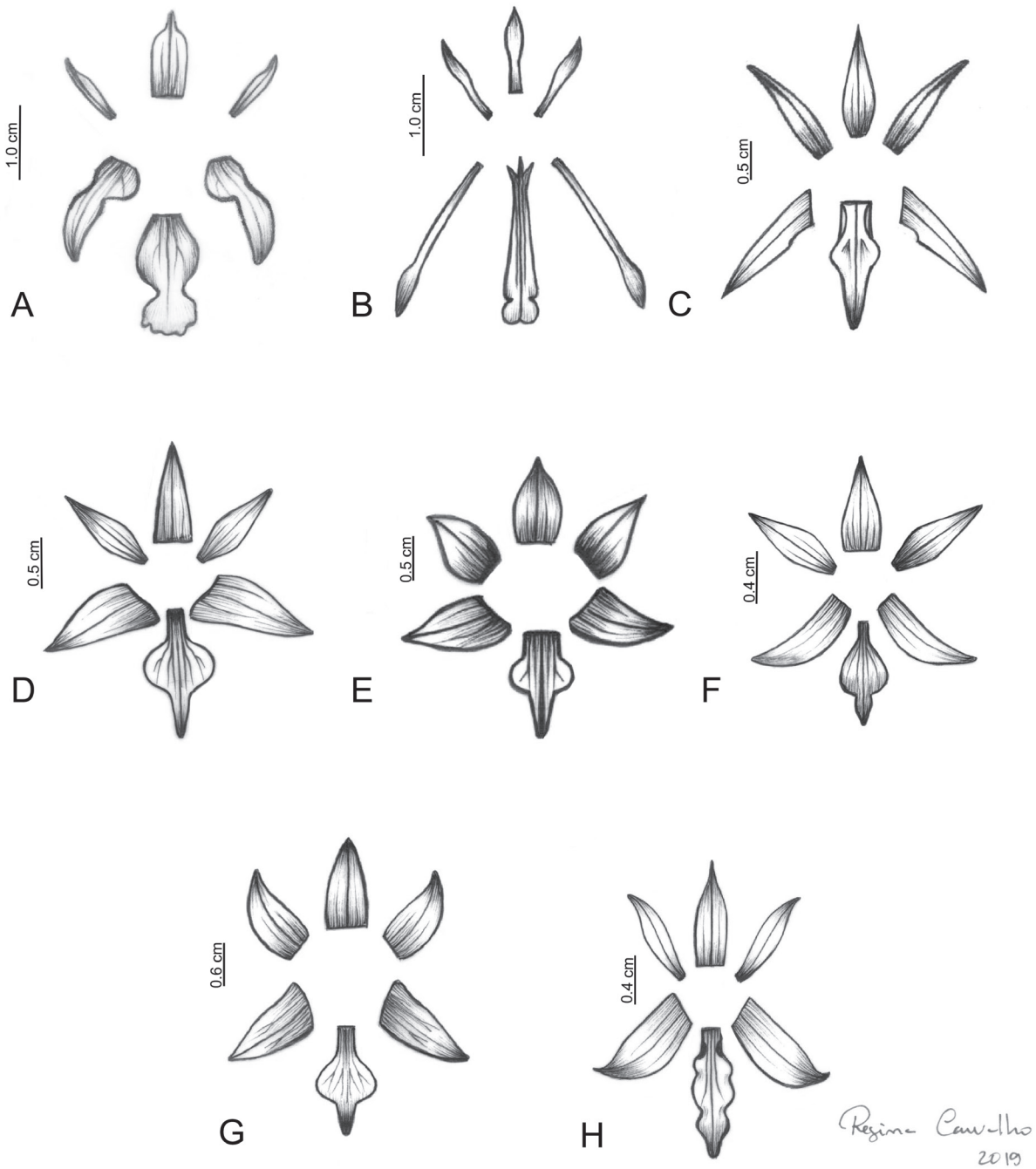

Figure 7. Dissected perianths: **A**. *Pachygenium bonariensis* (*Rosengurtt B2628*), **B**. *Pelexia lindmanii* (*Bayhaut s.n.*), **C**. *Sacoila lanceolata* (*Brussa s.n.*), **D**. *Skeptrostachys arechavaletanii* (*Marin & Marin OR17*), **E**. *Skeptrostachys balanophorostachya* (*Muñoz & Díaz s.n.*), **F**. *Skeptrostachys berroana* (*Izaguirre s.n.*), **G**. *Skeptrostachys gigantea* (*Marin OR15*), **H**. *Skeptrostachys paraguayensis* (*Báez s.n.*).

Distribution- Argentina, Bahamas, Belize, Bolivia, Brazil, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, French Guiana, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Dominican Republic, Suriname, Trinidad & Tobago, United States, Uruguay (Río Negro, Rivera, Tacuarembó), Venezuela.

Habitat- In Uruguay it is rare and occurs in stony soil of grasslands, "*Serrano* forest" and "*Quebradas* forest". In *"Cuenca Sedimentaria Gondwánica"* (Fig. 8).

Phenology- Observed in flower and fruit in October and November.

Notes- It differs from the other Spiranthinae of Uruguay by the linear-oblong shape and the larger size (1.7-2.1 × 0.4-0.6 cm) of the lip and the red to red-orangish flowers. It has a restricted distribution in Uruguay, meeting criterion 3 of Marchesi *et al.* (2013), thus it is considered a priority species for conservation for the country.

18. *Skeptrostachys arechavaletanii* **(**Barb. Rodr.) Garay, Bot. Mus. Leafl. 28: 359. 1980 publ. 1982. *Stenorrhynchos arechavaletanii* Barb. Rodr., Contr. Jard. Bot. Rio de Janeiro 4: 99. 1907. Type: URUGUAY. *sine loco accurato*, 1905, *J.*

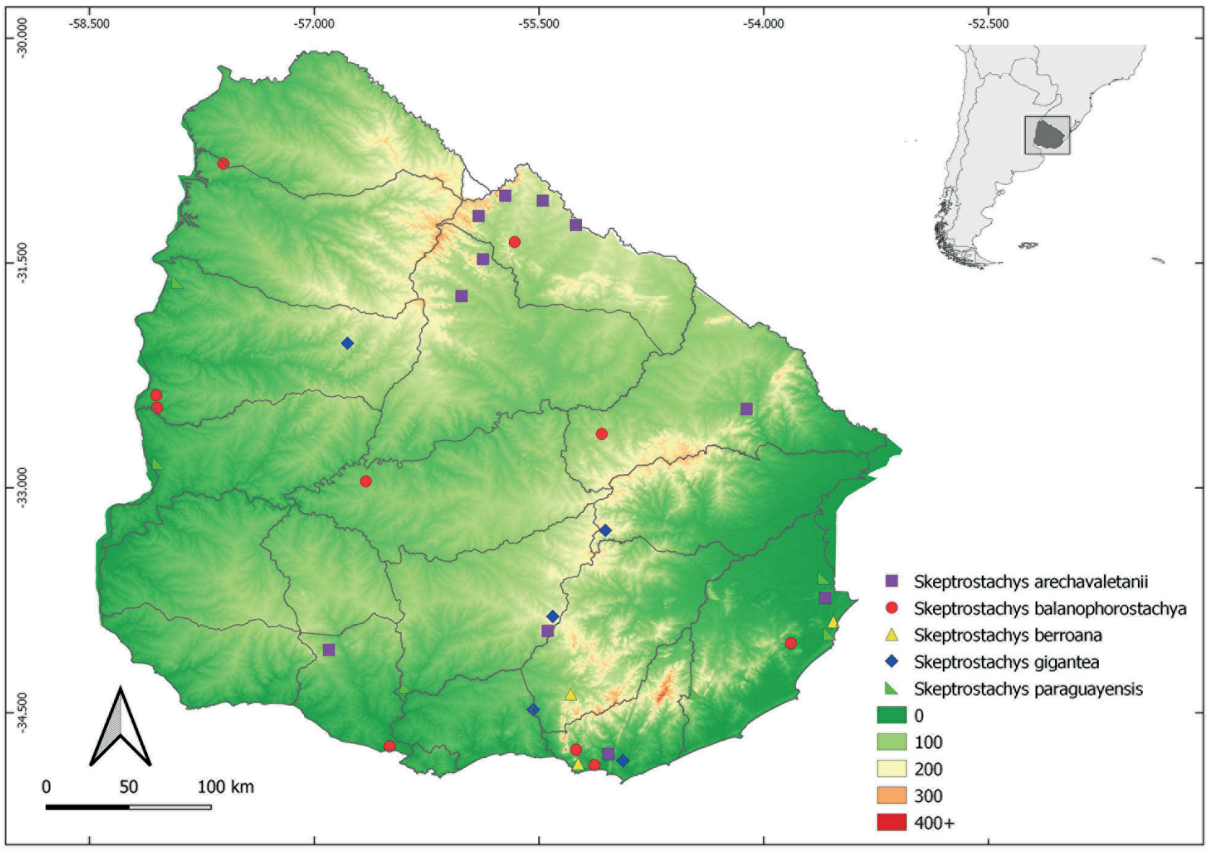

Figure 8. Distribution of species of *Pachygenium*, *Pelexia* and *Sacoila* in relation to the relief of the country.

Arechavaleta s.n. Lectotype (designated by Buzatto *et al.* 2013): Tab 21 in Barbosa Rodrigues (1907: 99). (RB illustration!). (Figs. 7D, 10E-F).

Leaves 7-10, 17-23 × 3.8-4.5 cm, linear-lanceolate, apex acute. Inflorescence 30-40-flowered, peduncle 46.5-65 cm long; floral bracts 2.0-2.3 × 0.4-0.5 cm, lanceolate, apex acute. Flowers red-orangish; dorsal sepal 0.8-1.1 × 0.3-0.6 cm, triangular-lanceolate, apex acute; lateral sepals 1.0-1.1 × 0.6-0.7 cm, lanceolate, apex acute, forming a mentum at base; petals 0.7-1.0 × 0.3-0.4 cm, ovate-elliptical, margin glabrous, apex acute; lip 1.0-1.2 × 0.4-0.6 cm; hypochile 0.3-0.4 × 0.2-0.4 cm, oblong-linear; mesochile 0.35-0.4 × 0.6-0.7 cm, oblate; epichile 0.3-0.4 × 0.2 cm, narrow-triangular, apex acute; column 0.5-0.6 cm long, ovary 0.8-1.0 cm long.

Material examined- URUGUAY. Cerro Largo, Ruta 8 377,5 km, 12 December 1986, *Armand et al. s.n.* (MVFA 18919). Lavalleja, Estancia Los Ceibos, 03 January 2018, *Brussa & Brussa s.n.* (MVJB 31038). Maldonado, Punta Ballena, 21 January 2019, *Marin & Marin OR17* (MVJB). Rivera, Camino de Curticeira a paso Ataques, COFUSA, 15 February 2001, *Brussa & Grela s.n.* (MVFA 32750). San José, Sierra de Mahoma, 29 April 1993, *Marchesi et al s.n.* (MVFA 21962). Tacuarembó, Sierra del Infiernillo, 04 February 1994, *Bayce et al. s.n.* (MVFA 23931).

Distribution- Brazil, Uruguay (Lavalleja, Maldonado, Tacuarembó, Treinta y Tres).

Habitat- In Uruguay it is rare and occurs in stony and sandy soils of grasslands, "*Serrano* Forest", and "*Quebradas* forest". Present in *"Cuenca Sedimentaria Gondwánica", "Sierras del Este"* and *"Cuesta Basáltica"* (Fig. 9).

Phenology- Observed in flower and fruit from January to March.

Notes- The species could be confused with *S. gigantea* but differs by the length and shape of the petals (ovate-elliptical, 0.7-1.0 *vs.* lanceolate, 1.1-1.2 cm long), and the length of the epichile (0.3-0.4 *vs.* 0.5-0.6 cm long).

19. *Skeptrostachys balanophorostachya* (Rchb.f. & Warm.) Garay, Bot. Mus. Leafl. 28: 359. 1980 publ. 1982. *Spiranthes balanophorostachya* Rchb.f. & Warm. in H.G. Reichenbach, Otia Bot. Hamburg.: 84. 1881. *Stenorrhynchos balanophorostachyum* (Rchb.f. & Warm.) Cogn. in C.F.P.von Martius & auct. suc. (eds.), Fl. Bras. 3(4): 161. 1895. Lectotype (designated by Rutkowski *et al.* 2008): BRAZIL. Minas Gerais: Lagoa Santa, *s.d.*, *J.E. Warming s.n.* (P Image!). (Figs. 7E, 10G-H).

Leaves 6-8, 14-28 × 2.1-3.5 cm, linear-lanceolate, apex acute. Inflorescence 50-60-flowered; peduncle 30-36 cm long; floral bracts 1.0-1.5 × 0.4-0.5 cm, lanceolate, apex acute. Flowers white-greenish; dorsal sepal 0.6-0.7 × 0.2-0.4 cm, triangular-lanceolate, apex acute; lateral sepals 0.6-0.9 × 0.2-0.3 cm, linear-lanceolate, apex acute; forming a mentum at base; petals 0.7-0.9 × 0.3-0.4 cm, ovate, falcate, margin

glabrous, apex acute; lip 0.6-0.9 × 0.3-0.4 cm; hypochile 0.1-0.2 × 0.1-0.2 cm, linear-oblong; mesochile 0.3-0.4 × 0.3-0.4 cm, oblate; epichile 0.2-0.3 × 0.1 cm, narrow-triangular, apex acute; column 0.3-0.4 cm long, ovary 0.6-0.6 cm long.

Material examined- URUGUAY. Cerro Largo, Arevalo, 13 March 2015, *Muñoz & Díaz s.n.* (MVJB 29677). Durazno, Arroyo Sarandí del Yi, 23 March 1971, *Calero et al. s.n.* (MVFA 16826). Maldonado, Pan de Azúcar, 09 April 2016, *Brussa & Muñoz s.n.* (MVJB 30113). Paysandú, en vía férrea, 12 March 1971, *Del Puerto & Marchesi s.n.* (MVFA 10401). Rivera, Ruta 5, 438 km, 27 March 1985, *Marchesi et al. s.n.* (MVFA 17548). Rocha, Estancia El Palmar, 20 March 1977, *Marchesi s.n.* (MVFA 14027). Salto, Ruta 3, 484 km, 19 February 1994, *Izaguirre et al. s.n.* (MVFA 20087). San José, Barra de Santa Lucía, April 1996, *Lombardo 633* (MVFA).

Distribution- Brazil, Paraguay, Uruguay (Cerro Largo, Durazno, Maldonado, Paysandú, Rivera, Rocha, Salto, San José).

Habitat- In Uruguay it is common and occurs in stony and sandy soils of grasslands, "*Serrano* forest", "*Palmares* forest", and riparian forest. Present in *"Cuenca Sedimentaria Gondwánica", "Cuesta Basáltica", "Graben de la Laguna Merín", "Graben del Santa Lucía"* and *"Sierras del Este"* (Fig. 9).

Phenology- Observed in flower and fruit between January and April.

Notes- It could be confused with *S. berroana* but differs by the shape of the petals (ovate *vs.* lanceolate), and the length of the epichile (0.2-0.3 *vs.* 0.35-0.4 cm long).

20. *Skeptrostachys berroana* (Kraenzl.) Garay, Bot. Mus. Leafl. 28: 359. 1980 publ. 1982. *Stenorrhynchos berroanum* Kraenzl., Kongl. Svenska Vetensk. Acad. Handl., n.s., 46(10): 26. 1911. *Pelexia berroana* (Kraenzl.) Schltr., Beih. Bot. Centralbl. 37(2): 400. 1920. Lectotype (designated by Rutkowski *et al.* 2008): URUGUAY. Lavalleja: Cerro Verdun. 4 December 1899, *M. Berro 1408* (HBG Image!). (Fig. 7F).

Leaves 3-4, 13-24 × 3.0-4.0 cm, linear-lanceolate, apex acute. Inflorescence 30-40-flowered; peduncle 20-60 cm long; floral bracts 1.5-1.8 × 0.5-0.7 cm, lanceolate, apex acute. Flowers yellow-greenish; dorsal sepal 0.8-0.9 × 0.4-0.5 cm, triangular-lanceolate, apex acute; lateral sepals 1.0-1.3 × 0.5-0.6 cm, linear-lanceolate, apex acute, mentum at base; petals 0.7-0.8 × 0.2-0.3 cm, lanceolate, margin glabrous, apex acute; lip 1.2-1.3 × 0.7-0.75 cm; hypochile 0.2-0.3 × 0.15-0.2 cm, linear-oblong; mesochile 0.6-0.65 × 0.7-0.75 cm, triangular-oblate; epichile 0.35-0.4 × 0.1-0.2 cm, narrow-triangular, apex acute; column 0.4-0.5 cm long, ovary 0.8-1.0 cm long.

Material examined- URUGUAY. Lavalleja, Minas, Cerro del Verdún, 03 February 1911, *Berro 4306* (MVFA).

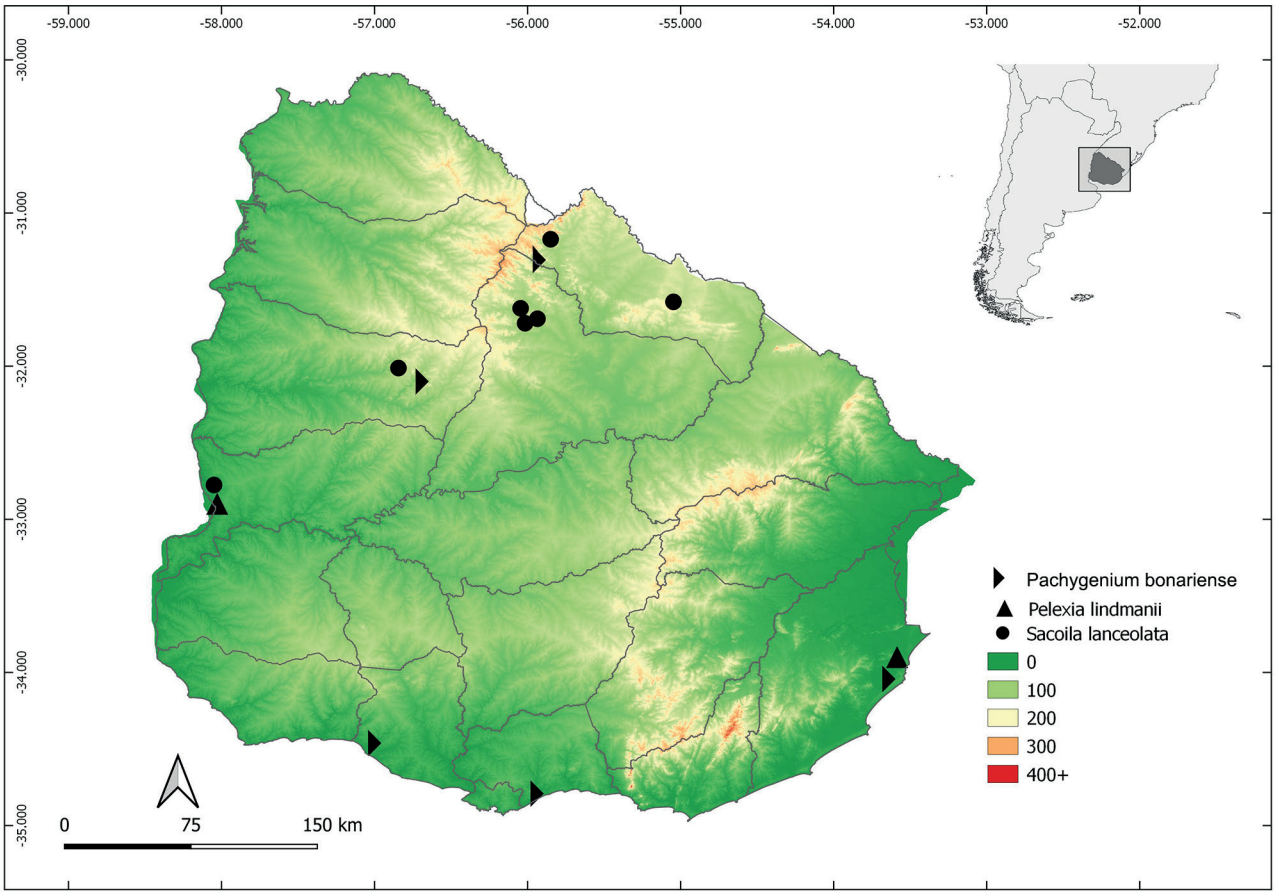

Figure 9. Distribution of species of *Skeptrostachys* in relation to the relief of the country.

Maldonado, Piriápolis, February 1907, *Arechavaleta 32* (MVFA). Rocha, La Coronilla, 27 February 1972, *Izaguirre s.n.* (MVFA 2796).

Distribution- Uruguay (Lavalleja, Maldonado, Rocha).

Habitat- In Uruguay it is rare and occurs in stony soils of grasslands, and "*Serrano* forest". Present in *"Graben de la Laguna Merín" and "Sierras del Este"* (Fig. 9).

Phenology- Observed in flower and fruit in January and February.

Notes- The species could be confused with *S. gigantea* but differs by the length of the peduncle (20-60 *vs*. 80-150 cm long) and width of the lip (0.7-0.75 *vs*. 0.8-0.9 cm wide). It is a rare species, endemic in Uruguay, and presents a restricted distribution in Uruguay, meeting criteria 1, 2 and 3 of Marchesi *et al.* (2013).

21. *Skeptrostachys gigantea* (Cogn.) Garay, Bot. Mus. Leafl. 28: 359. 1980 publ. 1982. *Stenorrhynchos giganteum*

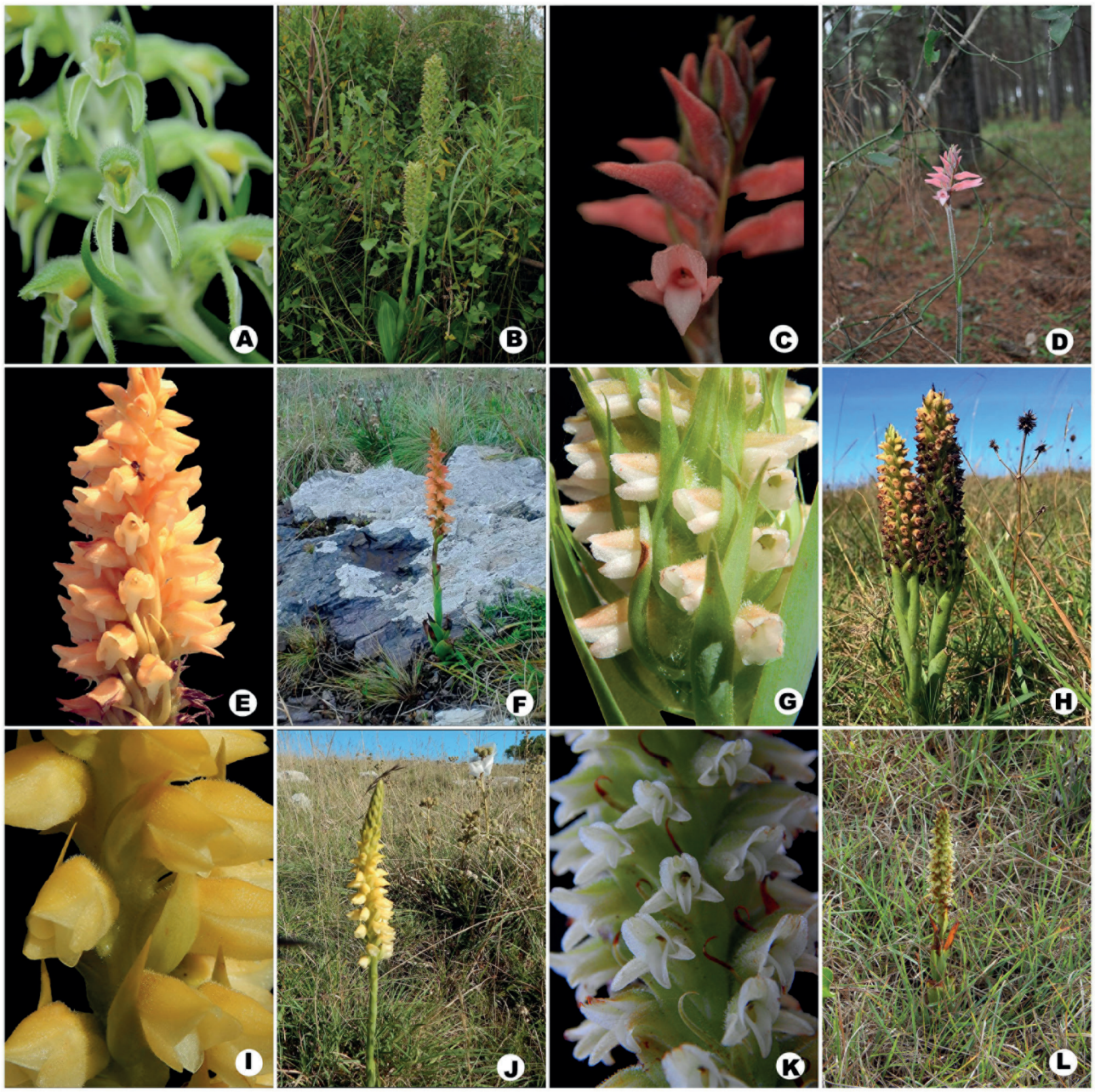

Figure 10. Spiranthinae from Uruguay. **A-B.** *Pachygenium bonariense*. **A.** Detail of the flowers. **B.** Specimens in the habitat. **C-D.** *Sacoila lanceolata*. **C.** Detail of the flowers**, D.** Specimens in the habitat. **E-F.** *Skeptrostachys arechavaletanii*. **E.** Detail of the flowers, **F.** Specimens in the habitat. **G-H.** *Skeptrostachys balanophorostachya*. **G.** Detail of the Flowers, **H.** Specimens in the habitat. **I-J.** *Skeptrostachys gigantea*. **I.** Detail of the flowers, **J.** Specimens in the habitat. **K-L.** *Skeptrostachys paraguayensis*. **K.** Detail of the Flowers. **L.** Specimens in the habitat.

Cogn. in C.F.P.von Martius & auct. suc. (eds.), Fl. Bras. 3: 533. 1906. Lectotype (designated by Rutkowski *et al.* 2008): BRAZIL. Goiás: between the Brancas and the Pico da Piedade, 24 January 1895, *A.F. Glaziou 22165* (K Image!). (Figs. 7G, 10I-J).

Leaves 10, 15-17 × 4.0-4.5 cm, lanceolate, apex acute. Inflorescence 40-80-flowered; peduncle 80-150 cm long; floral bracts 2.5-2.7 × 0.5-0.6 cm, lanceolate, apex acute. Flowers yellow-orangish; dorsal sepal 1.2-1.4 × 0.7-0.8 cm, triangular-lanceolate, apex acute; lateral sepals 1.2-1.5 × 0.7-0.8 cm, linear-lanceolate, apex obtuse, forming a mentum at base; petals 1.1-1.2 × 0.6-0.7 cm, lanceolate, margin glabrous, apex obtuse; lip 1.3-1.6 × 0.8-1.0 cm; hypochile 0.4-0.5 × 0.45-0.5 cm, oblong; mesochile 0.5-0.6 × 0.8-1.0 cm, oblate; epichile 0.4-0.5 × 0.15-0.2 cm, narrow-triangular, apex obtuse; column 0.4-0.5 cm long, ovary 0.6-1.0 cm long.

Material examined- URUGUAY. Lavalleja, Establecimiento Papazian, 10 February 2017, *Muñoz & Díaz s.n.* (MVJB 30602). Maldonado, Punta Ballena, 21 January 2019, *Marin OR15* (MVJB). Tacuarembó, Cuchilla de la Casa de Piedra, 25 January 1977, *Correa 11631* (SI). Treinta y Tres, Estancia La Teja, 20 January 2010, *Haretche et al. 222* (MVJB).

Distribution- Argentina, Brazil, Paraguay, Uruguay (Cerro Largo, Lavalleja, Maldonado, Rivera, San José, Tacuarembó).

Habitat- In Uruguay it is common and occurs in stony and sandy soils of grasslands, "*Serrano* forest", "*Parque forest*", and "*Quebrada forest*". Present in "*Cuenca Sedimentaria Gondwánica*", "*Cuesta Basáltica*", "*Escudo Cristalino*", "*Graben de la Laguna Merín*" and "*Graben del Santa Lucía*" (Fig. 9).

Phenology- Observed in flower and fruit between December and April.

Notes- It is easy to recognize among the species of the genus in the country by the longer peduncle (80-150 cm long).

22. *Skeptrostachys paraguayensis* (Rchb.f.) Garay, Bot. Mus. Leafl. 28: 360. 1980 publ. 1982. *Spiranthes paraguayensis* Rchb.f., Linnaea 25: 230. 1852. *Stenorrhynchos paraguayense* (Rchb.f.) Cogn. in C.F.P.von Martius & auct. suc. (eds.), Fl. Bras. 3(4): 162. 1895. Lectotype (designated by Guimaraes *et al.* 2014): PARAGUAY. *s.d. Fleischer s.n.* (BR Image!). (Figs. 7H, 10K-L).

Leaves 5-7, 6-20 × 2.0-3.0 cm, linear-lanceolate, apex acute. Inflorescence 40-60-flowered; peduncle 30-70 cm long; floral bracts 1.5-2.7 × 0.3-0.4 cm, linear-lanceolate, apex acute. Flowers white-pinkish; dorsal sepal 0.7-0.8 × 0.3-0.4 cm, oblong-lanceolate, apex acute; lateral sepals 0.8-0.9 × 0.4-0.5 cm, oblong-lanceolate, apex acute, forming a mentum at base; petals 0.7-0.9 × 0.25-0.3 cm, elliptical, falcate, margin glabrous, apex obtuse; lip 0.8-0.95 × 0.3-0.4 cm; hypochile 0.2-0.3 × 0.1 cm, linear-oblong; mesochile 0.3-0.35 × 0.3-0.4 cm, oblate; epichile 0.2-0.3 × 0.18-0.2 cm, triangular, apex obtuse; column *ca.* 0.4 cm long, ovary *ca.* 0.6 cm long.

Material examined- URUGUAY. Canelones, Santa Lucía, 1869, *Gibert 893* (K). Paysandú, Meseta Artigas, 03 May 1969, *Del Puerto & Marchesi 3557* (MVFA). Río Negro, Campo El Jabalí, 11 April 1994, *Marchesi & Vignale s.n.* (MVFA 28154). Rocha, Sierra de Rocha, 17 June 1999, *Báez s.n.* (MVFA 32157).

Distribution- Argentina, Brazil, Paraguay, Uruguay (Canelones, Paysandú, Río Negro, Rocha).

Habitat- In Uruguay it is common and occurs in wetlands, stony and sandy soils of grasslands, "*Serrano* forest", and "*Parque* forest". It grows in *"Cuenca Sedimentaria Gondwánica", "Cuesta Basáltica", "Graben de la Laguna Merín", "Graben del Santa Lucía"* and *"Sierras del Este"* (Fig. 9).

Phenology- Observed in flower and fruit between March and June.

Notes- It could be confused with *S. berroana* but it is easy to distinguished by the color of the flowers (white-pinkish *vs.* white-greenish), the shape of the petals (elliptical *vs.* lanceolate), and the length of the lip (0.8-0.95 *vs.* 1.2-1.3). It is considered a priority species for conservation for the country according to the criteria of Marchesi *et al.* (2013) for having a restricted distribution in Uruguay (criterion 3).

Acknowledgments

The authors are thankful to the curators of the MVM, SI, MVFA and MVJB herbaria: Meica Valdivia, Manuel García, Manuel Belgrano, Mauricio Bonifacino and Federico Aretche for the great collaboration and attention given in accessing the collections.

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