TAXONOMIC NOVELTIES IN *CALYDOREA* HERBERT (IRIDACEAE: TIGRIDIEAE) II[1]

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RESUMO
[Novidades taxonômicas em *Calydorea* Herbert (Iridaceae:Tigridieae) II].
Uma nova espécie, denominada *Calydorea charruana* é descrita, ilustrada e tem suas afinidades taxonômicas discutidas. A nova espécie é relacionada com *C. azurea*, mas difere pelos ramos do estilete conados, assim como pela forma e comprimento da bráctea tectriz. De *Calydorea nuda*, a nova espécie separa-se facilmente por suas flores maiores, que abrem durante a manhã, murchando próximo ao meio-dia. Além disso, uma coleta de *Calydorea nuda* é citada para o município de Aceguá, estado do Rio Grande do Sul, sendo esta espécie definitivamente adicionada à flora brasileira.
Palavras-chave: Biodiversidade, Brasil, Rio Grande do Sul, Taxonomia, Uruguai.

ABSTRACT
A new species, named *Calydorea charruana* is described, illustrated and has its taxonomic affinities discussed. The new species is closely related to *C. azurea* but differs by its connate style branches, shape and length of stem bract. The new species easily differs from *Calydorea nuda* because of its bigger flowers that open during early morning and wither around midday. Moreover, a collection of *Calydorea nuda* is reported from Aceguá municipality, Rio Grande do Sul state, resulting in the inclusion of this species to the Brazilian flora.
Key words: Biodiversity, Brazil, Rio Grande do Sul, Taxonomy, Uruguay.

INTRODUCTION

Hooker (1837: t. 3544) described *Sisyrinchium speciosum* based in bulbs imported from Chile by Mr. Towart. Based in this species, Herbert (1843a: 85) proposed the genus *Calydorea* to place *S. speciosum*, relating that the new genus is intermediate between *Echthronema* Herbert (1843b: 85) and *Herbertia* Sweet (1827: t. 222). Espinosa-Bustos (1922) recognized *Sisyrinchium xiphioides* Poeppig (1833: 4) as the oldest name to *Calydorea speciosa* and proposed the combination *Calydorea xiphioides*.

The generical circumscription of *Calydorea* was expanded by Baker (1876: 187-188, 1877: 100-102, 1892: 108-110) that encompassed species before placed in *Gelasine* Herbert (1840: t. 3779), *Botherbe* Klatt (1862: 562) and *Nemastylis* Nuttall (1835: 157). Latter, Goldblatt & Heinrich (1991) also included *Cardiostigma* Baker (1877: 102), *Catila* Ravenna (1983: 197), *Itysa* Ravenna (1986: 582), and *Salpingostylis* Small (1931: 161) within the genus. Most recently, *Tamia* Ravenna (2001: 15) was considered as synonymy of *Calydorea* (Goldblatt & Manning 2008, De Tullio *et al.* 2008).

In recent contributions *Calydorea* was again narrowed: Goldblatt & Manning (2008) placed *Cardiostigma* under *Tigridia* Jussieu (1789: 57) and re-established *Salpingostylis* as segregated from *Calydorea*. Ravenna (2009) accepted *Catila* as close related to *Cypella* Herbert (1826: t. 2637), mostly based on geniculate-recurved inner tepals marked by an elaiophores area. Finally Chauveau *et al.* (2012) recognized *Calydorea* as not monophyletic, instead emerging as three different well supported clade, and none of them including the type *C. xiphioides*.

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Despite the generical delimitation of *Calydorea* is still controversial, the genus can be characterized by its deceptively simple flowers recognized by the absence of trichomes, free stamens, curved or twisted anthers at dehiscence, and filiform style branches often extend between the stamens (Ravenna 2005, Goldblatt & Manning 2008, Ravenna 2009, Chauveau *et al.* 2012).

The genus includes ca. 25 species of small seasonal perennial plants centered in temperate South America. Seven species grows in Argentina, Paraguay, and Uruguay (Roitman & Castillo 2005, 2007). In Brazil, 11 species are cited (Eggers 2012), seven of them occurring in Rio Grande do Sul state.

A new species found in the state of Rio Grande do Sul (Brazil) and Uruguay is subsequently described. Additionally, a collection of *Calydorea nuda* is cited from Brazil, being this species added to Brazilian flora.

TAXONOMY

***Calydorea charruana* Deble, *sp. nov.* (Figures 1, 2A–B, 3)**

A Calydoreae azureae cui maxime proxima bracteis 3–4 cm longae (non 5–7 cm longae), et ramis styli connatis differt. A Calydoreae nudae valde proxima sed flores matutinis (non vespertinis), majoribus (36–52 mm vs. 18–30 mm) productus bene differt.

Type:—BRAZIL. Rio Grande do Sul: Dom Pedrito, 40 km southwest of the city, on grasslands, flowers violet-blue, 5 cm diameter, 17 October 2011, fl., fr., *L. P. Deble & A. S. de Oliveira-Deble 10801* (holotype: PACA).

Plant up to 15–35 cm high above the soil, underground stems up to 8 cm. Bulb globose or depressed-globose, 20–30 mm long and wide, prolonged in a collar. Leaves at anthesis 4-8, green, plicate, linear, 6–15 × 0.2–0.5 cm. Flowering stems 10–25 cm, 1–3 branched. Stem bract linear-ensiform, 3–4 × 0.2–0.3 cm, at the base covered the stem. Spathes 2–3, green, herbaceous, bivalved, two-flowered, 26–38 × 3–4 mm, peduncles 2–4 cm long. Outer valve 19–24 mm long, the inner 24–34 mm long, convolute, both with membranous edges. Pedicel filiform, up to 50 mm long. Flower blue or violet-blue, radially symmetrical, 36–52 mm diameter. Tepals whorls sharply similar in shape and color, proximally yellow, surrounded by a violet or dark-violet macula, spreading; outer tepals oblong, 20–26 × 9–11 mm, apex slightly acute to rounded; inner tepals oblong to elliptic, 18–24 × 8–10 mm, at apex slightly acute to obtuse. Filaments free, filiform at base wider, 2.5–3 mm long, yellowish; anthers linear, curved at dehiscence, 4–5 mm; pollen yellow. Ovary 3.5–5 × 1.6–2 mm. Style 8–10 mm long, style branches connate; stigma obtuse, dark-violet. Capsule obovate-clavate, 10–12 × 6–6.5 mm. Seeds oblong to obconical, ca. 2 mm long, angled, reddish-brown, epidermis minutely foveolate.

Distribution and habitat: – *Calydorea charruana* is endemic to southern Rio Grande do Sul, Brazil, and north-central and northeastern Uruguay (Figure 3). Individuals grow on native grasslands, often dark, neutral soils.

Phenology: – Specimens with flowers and capsules can be found between October-December. The flowers open only one day, during the morning, and wither around midday.

Conservation status: – *Calydorea charruana* occurs in an extent of occurrence smaller than 50,000 km^2 and the area of occupancy is less than 2,000 km^2. The populations are fragmented and composed by few individuals. According to the IUCN Red List (IUCN 2011) the species can be assigned to Vulnerable risk category (VU, B2a, b(iii), and D) due to the small area of occupancy, few individuals known, decline in the quality of habitat and few places of occurrence.

Etymology: – Refers to *Charrua*, a group of hunters and gatherers South American aboriginals who inhabited the grasslands north of the Río de la Plata in a territory somewhat

TABLE 1 – Comparison of *Calydorea charruana* and its morphologically related species

Character/Species	*C. azurea*	*C. charruana*	*C. nuda*
Length of stem bract (mm)	50–70 × 0.5–1.5	30–40 × 2–3	30–65 × 1–2
Size of spathes (mm)	26–40 × 2–3	26–38 × 3–4	14–22 × 1.5–3
Flower color	blue or violet-blue, basally yellow, surrounded by a violet or dark-violet macula	blue or violet-blue, basally yellow, surrounded by a violet or dark-violet macula	violet, basally yellow, enclosed by a purple ring, and surrounded by a violet-blue macula, delimited by a shining light-blue strip
Flower diameter	44–56	36–52	18–30
style (including the style branches) (mm)	7–8	8–10	5–7
Style-branches	free for 2.5–4 mm long	connate	connate
Flower opening	morning	morning	late afternoon
Geographical distribution	western Uruguay, and northeast Argentina	north-central and northeastern Uruguay, and southern Rio Grande do Sul, Brazil	Uruguay and southern Rio Grande do Sul state, Brazil

larger than modern Uruguay, including also a border to Rio Grande do Sul state, Brazil.

Additional specimens examined (paratypes): – BRAZIL. Rio Grande do Sul: Aceguá, 7 November 2011, on grasslands, flowers blue-lilac, *L. P. Deble, J. B. Rodriguez & T. G. Lima 13584* (PACA). URUGUAY. Without Department, "Montevideo", Cerro Rincon, 1874, *M. Fruchard s.n.* (P02066913). Cerro Largo: Isidoro Noblia, 1 December 2011, *L. P. Deble & A. S. de Oliveira-Deble 13634* (PACA). Rivera. Poblado la Villa: 10 October 2012, *L. P. Deble & A. S. de Oliveira-Deble 14221* (PACA). Tacuarembó. Ruta 43, near lago Rincon del Bonete, 11 October 2012, *L. P. Deble & A. S. de Oliveira-Deble 14222* (PACA).

Comments: – *Calydorea charruana* is closely related to *Calydorea azurea* Klatt (1882: 387), both species display similar habit, large blue or violet-blue flowers, and tepals basally yellow surrounded by a violet or dark-violet macula. However, *C. charruana* differs by its connate style branches, and smaller leaf bracts. By connate shape of style branches, the new species superficially resembles *Calydora nuda* (Herbert 1840: t. 3779) Baker (1876: 188), but *C. charruana* can be easily differentiated by its large flowers that open during the morning, and wither around midday. *Calydorea charruana* may be distinguished from *C. azurea* and *C. nuda* based on the characters listed in the Table 1.

Notes about the geographic distribution of *Calydorea nuda*

Calydorea nuda was mentioned as probably occurring in Rio Grande do Sul state (Lombardo 1984, Roitman *et al.* 2008), and most recently, cited as native for Brazilian flora (Deble 2011), but the last author did not mentioned any examined material. Most recently, Dal Ri (2012) excluded *Calydorea nuda* from Brazil. *Calydorea nuda* was found by us growing on grasslands in Aceguá municipality, southern Rio Grande do Sul. We also observed the occurrence of the species in Cerro Largo department, Uruguay, adding a new record from this department.

Comments: – *Calydorea nuda* (Figure 2C–D) is close related to *Calydorea approximata* R. C. Foster (1945: 46), both species displaying

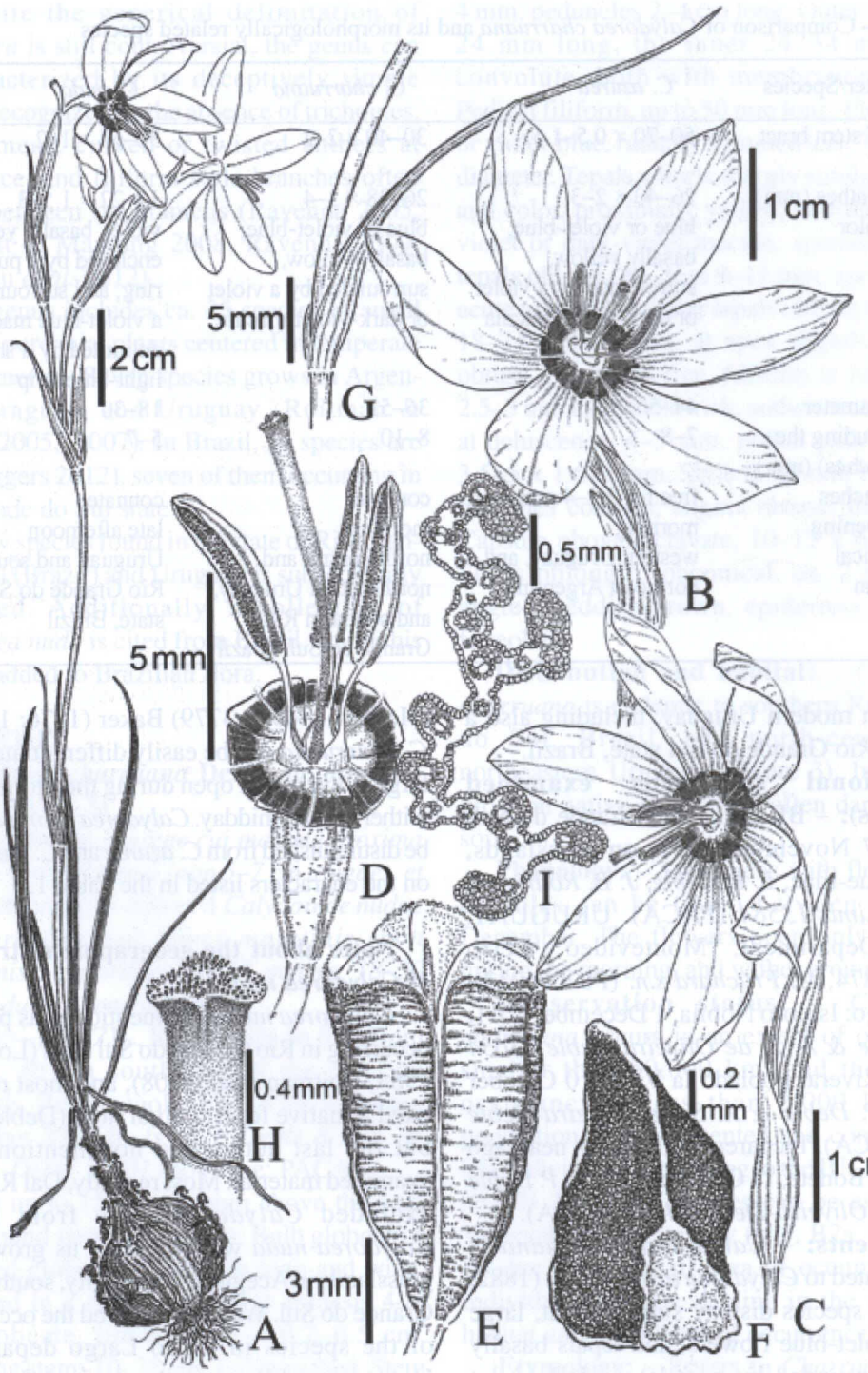

FIGURE 1. *Calydorea charruana*. A – Habit. B – Flower, oblique view. C – Flower, lateral view. D – Flower, tepals removed. E – Capsule. F – Seed. G – Stem bract. H – style apex, showing the stigmatic portion. I. Leaf in cross section (from *Deble & Oliveira-Deble 10801*). Drawn L. P. Deble

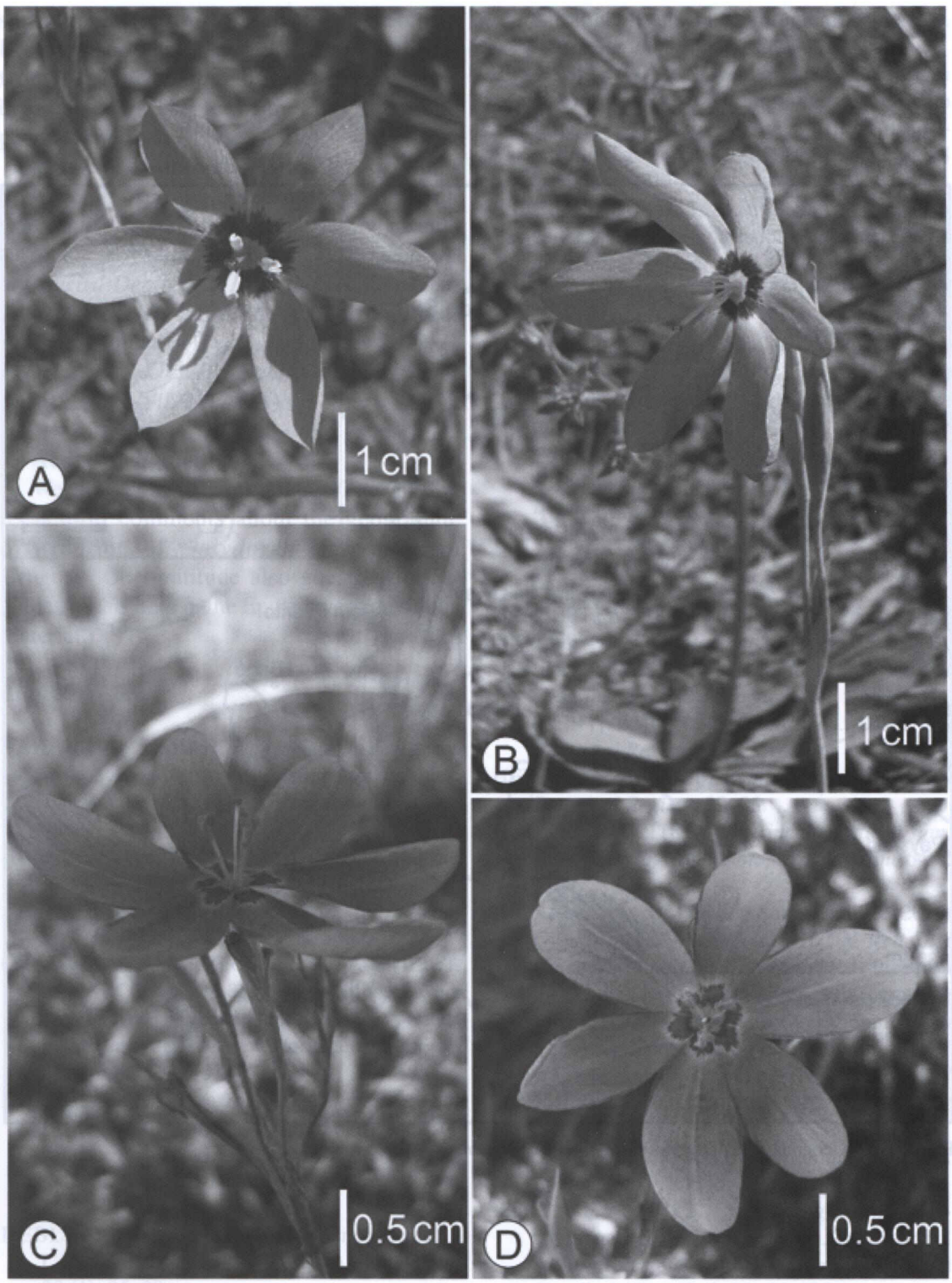

FIGURE 2. *Calydorea charruana.* A – Flower, upper view. B – Flower, lateral view. *Calydorea nuda.* C – Flower, lateral view. D – Flower, upper view. (A from *Deble & Oliveira-Deble 13634*; B from *Deble & Oliveira-Deble 10801*; C–D from *Deble et al. 14091*).

FIGURE 3 – Geographic distribution of *Calydorea charruana*.

small flowers (up to 30 mm diameter) that bloom late afternoon. However, *Calydorea nuda* differs from *C. approximata* by its connate style branches (vs. style branches free) and pedunculate spathes (vs. sessile).

Material examined: – BRAZIL. Rio Grande do Sul: Aceguá, 10 January 2012, on grasslands, flowers lilac, with a yellow macula surrounded by dark purple dots, *L. P. Deble, A. S. Oliveira-Deble, J. B. Rodriguez & T. G. Lima 14091* (PACA). URUGUAY. Cerro Largo: Acegua, camino El Casco, 10 January 2012, *L. P. Deble, A. S. Oliveira-Deble, J. B. Rodriguez & T. G. Lima 14092* (PACA).

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