HERBERTIA ZEBRINA (IRIDACEAE, TIGRIDIEAE, CIPURINAE) A NEW SPECIES FROM RIO GRANDE DO SUL STATE (BRAZIL)

Leonardo Paz Deble[1]

[1]*Curso de Ciências Biológicas, URCAMP, 96400-110, Bagé, RS, Brazil; deble.biol@gmail.com*

Abstract. Deble, L. P. 2010. *Herbertia zebrina* (Iridaceae, Tigridieae, Cipurinae) a new species from Rio Grande do Sul State (Brazil). *Darwiniana* 48(1): 93-96.

Herbertia zebrina, a new species from Serra do Sudeste, Rio Grande do Sul State (Brazil) is described and illustrated, and its taxonomic affinities are discussed. Comments about geographic distribution, conservation and a key to the Brazilian species of *Herbertia* are also provided.

Keywords. Brazil, *Herbertia*, Iridaceae, taxonomy.

Resumen. Deble, L. P. 2010. *Herbertia zebrina* (Iridaceae, Tigridieae, Cipurinae) una nueva especie del estado de Rio Grande do Sul (Brasil). *Darwiniana* 48(1): 93-96.

Se describe e ilustra *Herbertia zebrina,* una nueva especie para Serra do Sudeste, Rio Grande do Sul (Brasil), y se discuten sus relaciones taxonómicas. Se incluyen comentarios sobre su distribución geográfica y conservación, y se provee una clave para identificar las especies brasileñas de *Herbertia*.

Palabras clave. Brasil, *Herbertia*, Iridaceae, taxonomía.

INTRODUCTION

The genus *Herbertia* Sweet (Iridaceae, Tigridieae, Cipurinae) comprises six species: *H. crosae* Roitman & A. Castillo, *H. darwinii* Roitman & A. Castillo, *H. lahue* (Molina) Goldblatt [= *H. furcata* (Klatt) Ravenna], *H. pulchella* Sweet [= *H. amatorum* C. H. Wright], *H. quareimana* Ravenna and *H. tigridioides* (Hicken) Goldblatt, that occur on grasslands and stony grasslands from Rio Grande do Sul (Brazil), Uruguay, Argentina and Chile, in South America and *Herbertia lahue* subsp. *caerulea* (Herb.) Goldblatt, found in the southern U.S.A. (Roitman & Castillo, 2004; Roitman & Castillo, 2007; Roitman & Castillo, 2008: Roitman et al, 2008).

During the preparation of the catalogue of the family Iridaceae for Rio Grande do Sul State, Brazil, my attention was drawn to an unusual specimen of *Herbertia*. Examination of herbarium material (including types) and field research, led me to recognize a new species, *Herbertia zebrina* Deble that was found growing on stony grasslands between Encruzilhada do Sul and Amaral Ferrador municipalities. With the addition of this new species, the genus is comprised of seven species, six of them occurring in Brazil.

RESULTS

Herbertia zebrina Deble, sp. nov. TYPE: Brazil, Rio Grande do Sul, Amaral Ferrador, próximo a divisa com Encruzilhada do Sul, propriedade da Pinheira, em cerro pedregoso, na subida para o topo, 30°39'55.37"S, 52°23'59.52"W, 21-XII-2008 (fl. and fr.), *L. P. Deble, A. S. de Oliveira-Deble & M. Scipioni 10.844* (holotype SI). Figs. 1 and 2.

Ab Herbertiae crosae, tepalis externis albidis (non lilacinis), tepalis internis albidis et atropurpureis striatis (non lilacinis et luteis maculatis), truncatis vel rotundatis (non acutis), antheris

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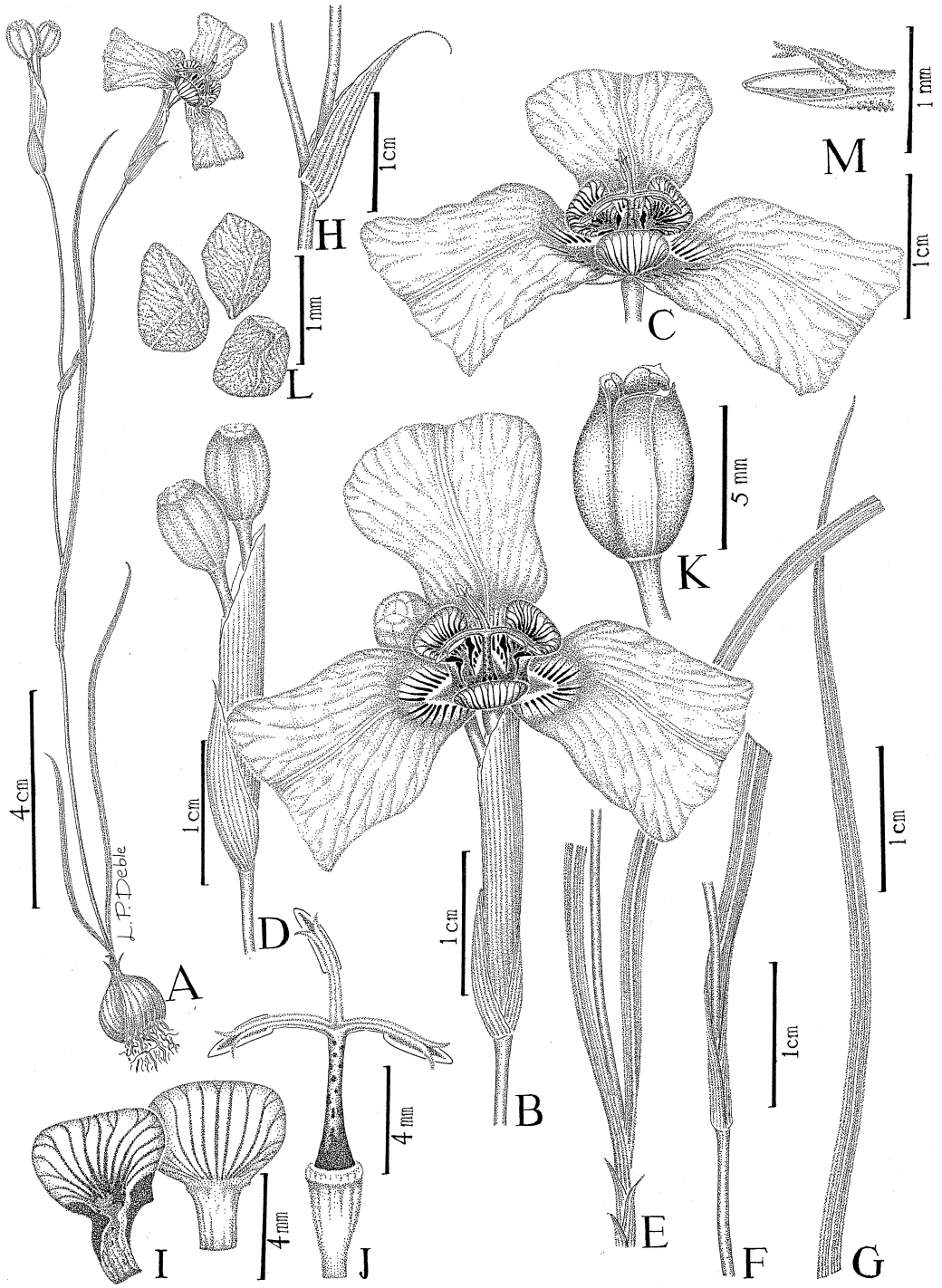

Fig. 1. *Herbertia zebrina*. **A,** plant. **B,** spathe with flower. **C,** lateral view of flower. **D,** spathe with capsules. **E,** basal part of plant. **F,** basal part of leaf. **G,** apical part of a leaf. **H,** stem bract. **I,** inner tepals. **J,** flower with tepals removed showing androgynoecium. **K,** capsule. **L,** seeds. **M,** upper part of style arm showing stigma and anthers apex. From *Deble et al. 10.844* (SI).

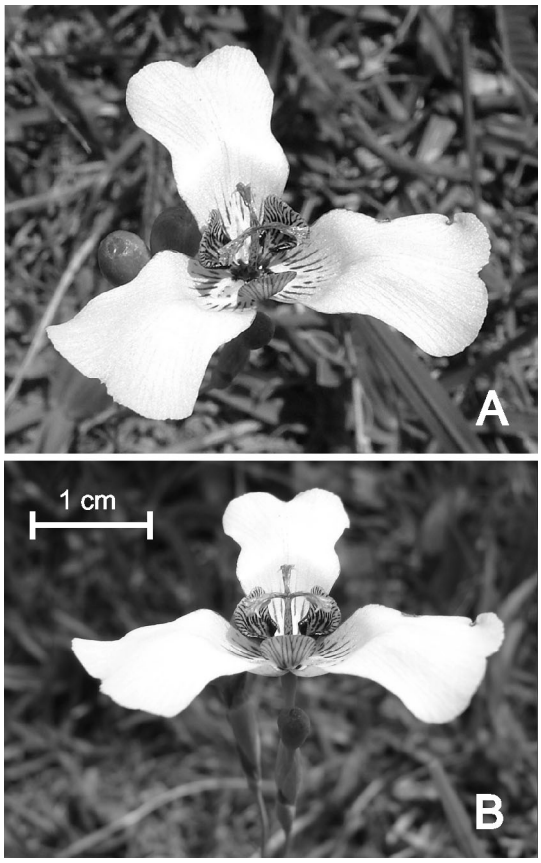

Fig. 2. *Herbertia zebrina.* **A,** flower and general habit. **B,** detail of lateral view of flower.

minoribus (2.3-2.7 mm non 4-5 mm), optime distincta.

Plant up to 15-20 cm high above ground, stems subterranean in proximal third. Bulb subglobose, 13-17 mm wide, sometimes prolonged in a short collar. Leaves 2-3, plicate, narrowly linear, 7-12 cm long, and 0.2-0.3 cm wide. Spathes 2; inflorescence 2-flowered rhipidium; spathes green, the lower 1.2-1.6 cm long, the upper 1.8-2.6 cm long, both with membranous edges; pedicel filiform, up to 1 cm long. Flower white, radially symmetrical, 3.5-4.5 cm wide. Tepals series distinctly dissimilar. Outer tepals obovate, 15-19 mm long, 9-11 mm wide, with 9-14 dark purple parallel stripes and a yellow medial stripe at the base. Inner tepals white and dark purple striped, unguiculate, 6-7 mm long; claws 2-2.5 mm long, 1.1-1.4 mm wide; blades 4-5 mm long and wide, apex rounded to truncate, slightly reflexed. Filaments united in a column, 6.5-9 mm long, free apically for 1.5-2.5 mm, dark purple-spotted along the column and dark purple in the proximal third; anthers linear, curved at dehiscence, 2.3-2.7 mm long; pollen yellowish. Ovary 3.5-5 mm long, 2-3 mm wide. Style 5-6.5 mm long. Style arms channeled, 3.5-4.5 mm long, at apex bifid for 0.5-1 mm, the divisions divaricate, recurved, apically stigmatose. Capsule broadly oblong, 6-8 mm long, 4-4.5 mm wide. Seeds oblong to obconical, angulated, reddish-brown, epidermis striate, 0.9-1.3 mm long.

Etimology. The specific epithet refers to the unusual striped standard of inner tepals.

Distribution and habitat. *Herbertia zebrina* was found growing on stony grasslands southeast of Encruzilhada do Sul and northwest of Amaral Ferrador cities; however the geographic distribution probably includes also southwest of Dom Feliciano municipality. Material with flowers and fruits are collected during December-January. *Herbertia zebrina* is sympatric with several Iridaceae species: *Herbertia lahue* subsp. *amoena* (Griseb.) Goldblatt, *H. pulchella*, *Cypella herbertii* Herb. subsp. *herbertii*, *Cypella brasiliensis* (Baker) Roitman et J.A. Castillo, *Gelasine elongata* (Graham) Ravenna, *Sisyrinchium micranthum* Cav. and S. *palmifolium* L.

Observations. *Herbertia zebrina* is easyly distinguished from the remaining co-generic species by the rounded to truncate, white and dark purple striped inner tepals, and by the presence of white outer tepals. White flowers has been seldom reported for *Herbertia lahue* and *H. pulchella*, as atipic individuals growing among regular ones (G. Roitman, com. pers.). The androgynoecia display free filaments at the apex for 1.5-2.5 mm; three other species show this characteristic: *Herbertia crosae*, *H. quareimana* and *H. pulchella*, and probably the first-one is most closely related to *H. zebrina*; both display narrowly linear leaves, a yellow medial stripe at the base on outer tepals, filaments purple-spotted along the column, similar capsules and seeds; however *H. crosae* shows pale lilac flowers (vs. white), acute inner tepals (vs. rounded to truncate), with blades lilac (vs. white and dark purple striped) and bigger anthers (4-5 mm vs. 2.3-2.7 mm long).

The rounded to truncate shape of inner tepals of *Herbertia zebrina* are very distinctive from the rest of the species of *Herbertia* which have narrow acute shape, and resemble the upper part of the inner tepals of *Cypella hauthalii* (Kuntze) R. C. Foster, *C. brasiliensis* and *C. unguiculata* (Baker) Roitman & A. J. Castillo; however, the androgynoecium of all cited species shows erect anthers, the presence of long style crests in the first species and capitate style arms in the two latter species, whereas *Herbertia zebrina* shows divergent anthers and bifid style arms. The androgynoecium features were decisive to include the new taxon within *Herbertia*, but its relationships with other species is not clearly defined. Although further molecular studies have to be performed, preliminary DNA sequence studies showed that there is a close relationship between *Herbertia* and *Cypella* (Reewes et al., 2001; Goldblatt & Manning, 2008).

The geographic distribution of *Herbertia zebrina* comprises only 400 km^2 and the area of occurrence is smaller than 10 km^2; the populations are fragmented and with few individuals. Due to the rarity, fragmentation of populations, and observed threats, it seems prudent to include *H. zebrina* in the Critically Endangered category of the IUCN Red List of endangered plant species according to the following criteria (IUCN, 2001): CR B2a,b (i,ii,iii,iv,v); C 2a(i).

Paratypes

BRAZIL. Rio Grande do Sul, Encruzilhada do Sul, Coxilha do Vento, 27-XII-2008 (fl.), *L. P. Deble, A. S. de Oliveira-Deble & M. Scipioni 10.845* (SI); *idem, 4-I-2009* (fl. and fr.), *L. P. Deble & A. S. de Oliveira-Deble 10.846* (NAR).

Key to the Brazilian species of *Herbertia*

1. Inner tepals dark purple-striped, apex rounded to truncate, white. Flowers white. . . . . *H. zebrina*
1. Inner tepals not dark striped, apex obtuse to acute, lilac to dark violet rarely white. Flowers pale lilac, violet or blue rarely white 2
2(1). Androgynoecium filaments free for 3-5 mm long at the apex. Flowers blue or blue-violet. Outer tepals with a white to light blue streak . . . . . *H. pulchella*
2. Androgynoecium filaments entirely united, forming a column or free up to 1.5 mm long at the apex. Flowers pale violet, blue-violet or violet, without a white to light blue streak 3
3(2). Flowers pale lilac. Outer and Inner tepals lilac and yellow maculate at the base . . . . . .*H. crosae*
3. Flowers blue-violet or violet. Outer tepals whitish and dark violet spotted at the base. Inner tepals dark violet without a yellow macula 4
4(3). Flowers 55-65 mm wide. Outer tepals without a yellow medial stripe at the base. Androgynoecium filaments free for 1-1.5 mm long at the apex . . . . . *H. quareimana*
4. Flowers 30-55 mm wide. Outer tepals with a yellow medial stripe at the base (rarely absent). Androgynoecium filaments entirely united, forming a column; anthers attached directly to the filament column . . . 5
5(4). Leaves 10-20 mm wide. Style arms channeled, secondary divisions recurved . . . . . *H. darwinii*
5. Leaves 4-10 mm wide. Style arms not channeled, secondary divisions straight . . . . . *H. lahue*

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