A NEW SPECIES OF ZEPHYRANTHES HERB. S. L. (AMARYLLIDACEAE, HIPPEASTREA), WITH NOTES ON THE GENUS IN COLOMBIA

by

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Abstract


A new species of Zephyranthes (Amaryllidaceae), growing in semi-arid areas of the High Plain of Bogotá, Colombia, is described and illustrated. We give notes on five other species present in Colombia: Z. albiella Traub, Z. carinata Herb., Z. puertoricensis Traub., Z. robusta (Sweet) Baker y Z. rosea (Spreng.) Lindl. The last four were registered for the first time for Colombia. We include a key for the identification of the species.

Key words: Amaryllidaceae, Colombia, Habranthus, Hippeastreae, new species, taxonomy, Zephyranthes.

Resumen

Se describe e ilustra una nueva especie de Zephyranthes (Amaryllidaceae) que crece en zonas áridas de la Sabana de Bogotá, Colombia. Se comentan otras cinco especies presentes en Colombia (Z. albiella Traub, Z. carinata Herb., Z. puertoricensis Traub., Z. robusta (Sweet) Baker y Z. rosea (Spreng.) Lindl., de las cuales, las últimas cuatro se registran para Colombia por primera vez. Se incluye una clave para la separación de las especies tratadas.

Palabras clave: Amaryllidaceae, Colombia, Habranthus, Hippeastreae, nueva especie, Taxonomía, Zephyranthes.
Introduction

Zephyranthes Herb. (Amaryllidaceae) is an American-Antillean genus with about 60 species, currently placed in the mostly American tribe Hippeastrae (Dahlgren & al., 1985; Meerow & Snijman, 1998; Meerow & al., 1999). Many Zephyranthes species are appreciated ornamentals, and are traditionally known as “rain lilies”, due to their tendency to flower shortly after rainy periods (Christian, 1999; Fellers, 1996; Mabberley, 1997). A part of the species formerly treated within Zephyranthes have now been transferred to the other Hippeastrum genera Habranthus Herb. (about 40 species distributed around subtropical South America), Pyrolirion Herb. (four species from Peru and Bolivia), and Aidema Ravenna (six species from Central and South America). Nevertheless, generic limits within this plant group are still unclear (Sealy, 1937; Uphof, 1946; Traub, 1958; Huzinker, 1967; Ravenna, 1971; Arroyo, 1990; Arroyo & Leuenberger, 1996; Lopes-Ferrari & Espejo-Serna, 2002; Ravenna, 2003).

The very subtle differences between genera are based on spathe characters, the position of the flower (erect, suberect or decinate), the - sometimes not very obvious - (a)symmetry of the corolla, the insertion of the anther filaments either at the corolla tube base (Habranthus) or above the tube (Zephyranthes), the number of different anther filament lengths (two or four, with the anthers either linear or arched), the either decinate or recurved style, and the number of seeds per locule in the capsule. In order to facilitate the recognition, and for practical reasons, we treated all the taxa of this group as species of Zephyranthes, in some cases indicating the combinations associated to generic transfers in the synonymy.

Zephyranthes in Colombia

From Colombia, only the publication of Z. albiella was known, described from plants of Cundinamarca (Traub, 1950). Furthermore, a few imprecise references exist of “Z. tubispatha Herb.”, without indication of herbarium collections (Bailey, 1939; Standley & Steyermark, 1952). From the neighboring countries, nine species have been registered from Peru (Macbride, 1936; Brako & Zarucchi, 1993), three or four from Panama (Woodson & Schery, 1965; Spencer, 1986; D’Arcy, 1987), and a single one for both Ecuador and Venezuela (Traub, 1958; Meerow, 1990).

In this paper, we report on the recent sampling of an unknown species of Zephyranthes in a semi-arid enclave of the high plain of Cundinamarca. Moreover, we included information about the distribution of Z. albiella, Z. carinata, Z. puertoricensis y Z. rosea, which are present on Colombian territory, either native or subspontaneously naturalized. Another species occasionally cultivated in Colombia, and incorporated in this work, is Zephyranthes robusta (Herb. ex Sweet) Baker, frequently treated as Habranthus robustus Herb. ex Sweet, and of an aspect very similar to that of Z. carinata.

Key for the species of Zephyranthes s. l. present in Colombia (including two extra species, related to the studied ones)

1- Perigone sulfur yellow on the interior, brick red to vinaceous on the exterior ........................................... 2

1’- Perigone white, pink or lilac ............................................ 3

2- Spathe 15-25 mm long; pedicel 21-28 mm long; perigone tube ca. 1mm, tepals 6-8 mm wide; anthers 3 mm long; style up to 13 mm long ................................................................. 1. Z. susatana

2’- Spathe 25-40 mm long, pedicel 26-53 mm long, perigone tube ca. 3 mm, tepals 10-16 mm wide, anthers more than 5 mm long, style ca. 16 mm long .............. ........................................... 2. Z. tubispatha

3- Perigone white .............................................................. 4

3’- Perigone pink or lilac ...................................................... 6

4- Spathe split on one side over ca. 2/3 of its length, with one appendix (lobe) of 14-16 mm; perigone tube ca. 10 mm long; anther filaments 9.5 and 11 mm long; anthers more than 7 mm long ............. Z. nervosa

4’- Spathe split over 1/2 or less of its length, bifid; perigone tube 3-4 mm long, anther filaments more than 12 mm long; anthers up to 6 mm long ............ 5

5- Spathe split over ca. 1/2 of its length, 15-26 mm long; pedicel up to 20(25) mm, perigone 30-35 mm long; anthers 3-4 mm long ......................... 2. Z. albiella

5’- Spathe split over 1/3 of its length, 25-30 mm long; pedicel more than 30 mm, perigone 35-50 mm long; anthers 6 mm long .................... 4. Z. puertoricensis

6- Leaves glaucous; pedicel (40)45-60 mm; flowers declinate; corolla pale pink; stamens of four different lengths; anthers 4-5 mm, crescent-shaped ......................... 5. Z. robusta

6’- Leaves intensely dark green; pedicel less than 40 mm; flowers sub-erect; corolla pink or magenta; stamens
of two or three different lengths; anthers more than 5 mm, straight ........................................... 7

7- Spathe 35-50 mm long; perigone 60-75 mm long with a tube of 15-20 mm; tepals 12-20 mm wide; anthers 15-22 mm long ........................................... 3. Z. carinata

7"- Spathe up to 17-22(25) mm long; perigone 30-35 mm long with a tube of less than 5 mm; anthers 6-7 mm long ........................................... 6. Z. rosea

1. Zephyranthes susatana Fern. Alonso & Groenendijk sp. nov. Figures 1 a-d, 2 a-b.


Ab omnibus speciebus generis differt a subsecuentibus combinatori characteribus: bulbo subgloboso 1,8-2 cm diametrio, tunicae externae griseo-rubescens, foliis 4-5, non coaetanea cum scapo florifero, inaequaliter in longitude, glauca, usque ad 13,5 cm longis et 2,5-3 mm latae; scapo ad 7,5-10(13) cm longo et 1-1,5 mm diametro (in sicco); spatha bifida cum tubo 12-16 mm longis et lobis apicalis 4-8 mm longis; pedicello 21-26 mm longis et c. 1 mm diametro; flos erecta vel suberecta, ad 24-30 mm longa et ca. 20-25 mm lata in inicio anthesis; vinosolutescens, extus communiter vinoso-rufescens, intus lutescens et longitudinaliter rufo-vinaceus striatus; cum tubo inconspicuo, usque ad 1 mm, et tepalos ad 21-26 x 7-8 mm, spatulatus, apice subobtuso et apiculatus, apiculo ad 1 mm longis; staminae 6, filamentis tria ad 11 mm longis et tria ad 6-8 mm longis, antherae ad 3 x 1 mm anguste ellipticas; ovario ad 3-4 x 2 mm, stylus erectus ad 13 mm longis et stigma tripartitus ad 2,5 mm latus, ramis recurvatas conspicipe papilloso-verrucosas; fructo, glauco-viridis, globosos-compressus, ad 6-7 mm longis x 6,5-10 mm latus; loculos 8-9 seminatis, semina plana, subovata, nitido-migrescentis, ad 3-4 x 2,5-3 mm.

Etymology: The species is named after the local Muisca indigenous name “Susatá”, currently given to the landed estate where the plants were collected.

Vernacular name: “Papa de marrano”. Meaning “pig’s potato”, we speculate that it might refer to the consumption of the bulbs by domestic pigs.

Plant with a subglobose bulb of 1.8-2 cm diameter, tunics reddish grey. Leaves 4-5 (not concurrent with flow-ers, or rarely a few young ones), unequal, glaucous, up to 13.5 cm long and 2.5-3 mm wide. Scape thin, 7.5-10(13) cm long and 1-1.5 mm in diameter (when dry). Spathe 17-22 mm long, bifid, the tube 12-16 mm long, and the apical lobes 4-8 mm long. Pedicel 21-28 mm long and ca. 1 mm in diameter. Flower erect or sub-erect, 24-30 mm long and ca. 20-25 mm wide (at the start of the anthesis), vinaceous-rufous or vinaceous-yellow; the exterior generally vinaceous with darker longitudinal stripes, and the interior dark yellow. Perigone tube inconspicuous, up to 1 mm long; tepals 21-26 x 6-8 mm, spatulate, with a subobtuse-apiculate apex; apicule ca. 1 mm long. External tepals slightly broader than internal tepals, with 13-16 longitudinal whitish veins, and the internal ones with 9-11 veins. Stamens 6; three with filaments 11 mm long, two with filaments of 7-8 mm, and one ca. 6 mm long; anthers 3 x 1 mm, narrowly elliptic. Ovary 3-4 x 2 mm; style erect, up to 13 mm long; stigma trifid, 2.5 mm wide, with recurved, conspicuously papillose-verrucose lobes of ca. 1.2 mm. Fruit pedicel 2.5-3 cm x 1.5 mm. Fruit greenish glaucous, compressed-globose, 6-7 mm long, 6.5-10 mm wide; locules with 8-9 seeds. Seeds flat, ovate to subrhombic, black, shiny, 3-4 x 2.5-3 mm.

Phenology. In three years, we observed flowering from February to April, and November to December. Fruiting occurred during the flowering period and in the subsequent month. When clusters of plants were found flowering, the scapes were mostly not accompanied by leaves of the same bulb. Individuals with only leaves were found; these were probably juvenile plants. When fruiting, plants were observed either with or (still) without well-developed leaves. Under cultivation conditions, with a regular water supply, plants do have leaves together with floral scapes (Fig. 1a).

Habitat, distribution and dispersal. The species was found in a semi-arid enclave of the high plain of Bogotá (around 2650 m a.s.l.), where the annual precipitation is about 600 mm and the potential evapotranspiration exceeds 1000 mm (Claro-Rizo, 1995). In this zone, remnants are found of dwarf forest characterized by Condalia thomasianna Fern. Alonso (Rhamnaceae), an endemic treelet of this particular zone. The C. thomasianna community was relatively recently described by Van der Hammen (1997; see also Fernandez-Alonso, 1997, and Groenendijk et al., in prep).

Z. susatana is locally abundant in open, dry grasslands, which are severely disturbed by man and cattle, and often dominated by Pennisetum clandestinum Hochst. ex Chiov. It forms patches of 5-20 m in diameter, with hundreds of individuals. Other species commonly found
Figure 1. *Zephyranthes susatana*. a- Habit (cultivated plant). b- Scape with flower in lateral view. c- Flower from above, showing stigma lobes. d- Detail of the outer tepals (Photographs: a-c: J. L. Fernández; d: L. Tikovský).
at these sites are *Schkuhria pinnata* (Lam.) Kuntze, *Selaginella sellowii* Hieron., *Ophioglossum nudicaule* L.f., *Evolvulus bogotensis* Ooststr., *Verbena trifida* H.B.K., and *Stenandrium dulce* (Cav.) Nees.

The stiff fruit pedicel and the (sub)apically dehiscent capsule suggest that seed dispersal takes place over rather short distances, in spite of the flat seeds. Probably, the seeds are released from the capsule after agitation of the pedicel and capsule by wind, or probably animals, and fall nearby the mother plant.


**Affinities.** The general aspect of *Z. susatana* and the flower color show some affinity with that of the South-American species *Z. tubispatha* (L’ Her.) Herb. ex Traub. This latter species has flowers ochre-orange colored on the exterior, and copper-orange on the interior. Moreover, it differs from the here described species by having a longer spathe (24-40 mm long), a larger pedicel (26-53 mm) and perigone tube (3 mm), clearly wider tepals (more than 10 mm), and larger anthers of up to 8 mm long.


**TYPE:** COLOMBIA. CUNDINAMARCA. Bogotá, (Cultivated bulbs) 30-IX-1949 *Traub* 41 (MO 3158259).


**Vernacular name** «lirio» (in Guayaquil, Ecuador).

Plant generally presenting leaves simultaneously with flowers. Scapes of about 2 mm thick. Pedicel up to 20-25 mm long. Spathe bifid, equal to or longer than pedicel (15-26 mm); spathe lobes as long as the united part. Perigone 30-35 mm long, white, with a greenish base; tube ca. 3 mm long. The 3 major stamen filaments ca. 21 mm long, with anthers of 3-4 mm long. Style 30-35 mm long. Seeds 1-3 per locule, flat, 7 x 5 mm.

**Habitat and distribution:** Species described from the high plain of Cundinamarca, in central Colombia, based on cultivated bulbs, its origin being unclear. The plant was not collected afterward in Cundinamarca. Later, it was registered in the pacific lowlands of Ecuador (*Meerow*, 1990), and also in Panama, Puerto Rico and Jamaica, by *Ravenna* (2003). The last author considered *Z. puertoricensis* a conspecific of Z. *albiella*, a view not shared in this paper. More recently, a specimen collected in 1960 in the lower parts of the department Bolivar was studied, which might suggest that the type plants originated from the Colombian lowlands.

**Studied material:** COLOMBIA. BOLIVAR. Arenas, 9 Km WSW San Jacinto, prados, 350 m, 23-IV-1962, fl., *A. Beuther* 97 (COL 492043). ECUADOR. GUAYAS. Guayaquil, 6 m.a.s.l., cultivada, muy frecuente, s.f. (fl.), *F. de Valverde* 95A (COL-163150).

**Affinities.** The nearest species *Z. puertoricensis* Traub., also found in Colombia, differs from *Z. albiella* by its spathe of 25-30 mm, shorter than the pedicel and with very short lobes of ca. 1/3 of its length, a bigger perigone (35-50 mm long), and the longer anthers (4.5-6.5 mm long).

3. **Zephyranthes carinata** Herb., Bot. Mag. 52: pl. 2594. 1825. Figure 2 c-d


**Vernacular name** «Lirio» (Cundinamarca).

Recognized by its bulbs of up to 3.5 cm in diameter, with wine-red tunics. Scapes 10-15 cm long. Spatha dark
Figure 2. a-b. Zephyranthes susatana. a- Detail of the perigone whorls, from above. b- Unripe fruit. c-d: Zephyranthes carinata. c- Cluster of plants growing in their natural environment, in San José de Suaita, Santander. d- Detail of the perigone, anthers and stigmas. (Photographs: a-b: J. Groenendijk; c-d: J. L. Fernández).
lilac, large (35-50 mm), always larger than pedicel which is 10-30 mm long. Perigone large, pink, with a tube of up to 20 mm long; tepals 60 mm long and 15-20 mm wide. Anthers erect, yellow, large (15-20 (22 mm) long). Style 50-60 mm long, with three short lobes of 1.5-2 mm.

**Habitat and distribution.** Native from México and Guatemala, the species is nowadays widespread from southern USA to Costa Rica, the Antilles, and some isolated spots in South America (Standley & Steyermark, 1952; Gereau, 2001). In South America, it apparently only occurs cultivated and naturalized. It generally flowers after the rainy periods, but in humid pastures and under cultivation conditions, colonies show staggered flowering during the whole year. Occasionally, leaves appear together with flowers. It has been observed as a weed in sugar cane plantations in the subandine belt, and as a colonizer in pastures and open herb-covered slopes near villages (Cundinamarca, Santander). It is also frequently cultivated in gardens, mostly in colder regions above 2200 m.a.s.l.


**Affinities.** The most resembling species to *Z. carinata* is *Z. rosea* (Spreng.) Lindl., being predominantly Antillean and Mesoamerican. It has pale pink flowers, and a spathe of 17-22 mm, clearly shorter than the pedicel which is 29-33 mm long. Its perigone is 3-4 cm long, with a tube of less than 5 mm, and it has shorter anthers (6-7 mm).

4. *Zephyranthes puertoricensis* Traub, Pl. Life 7: 37. 1951. Figure 3 a.


Species with bulbs of 1.5 cm in diameter, with linear leaves up to 35 cm long, and 6-9 mm wide, these generally absent during flowering. Scape 9-11 cm; spathe 25-30 mm long, scarcely divided distally. Pedicel (30) 35-50 mm. Perigone white, greenish in the throat, of intermediate size (35-50 mm), with a short tube of 3-4 mm. Tepals 3.8-4 x 1.5 cm. Stamen filaments of two sizes: 15 and 21 mm; anthers 6 mm long. Stigma trifid, the lobes filiform, ca. 3 mm long.


**Affinities.** *Z. puertoricensis* was treated as a species of the genus *Habranthus* by some authors (Traub, 1951, 1958; Flory, 1959). On the other hand, plants belonging to this species were cited frequently as *Zephyranthes tubispatha* (Ker-Gawler) Herbert (= *Amaryllis tubispatha* Ker-Gawler, de Jamaica), a homonym of *Amaryllis tubispatha* L’ Her., which is an Argentinean plant described before by L’Heritier (Hume, 1940; Flori, 1959), and is also treated in this paper.


**Vernacular name:** “Cebollita” (Antioquia)
Big plants, with bulbs 3-4 cm in diameter, with various large leaves of up to 30-40 cm x 5-10 mm, generally glaucous. Scape 15-30 cm, relatively thick (3-4 mm). Scape 25-40 mm, bifid in the upper third part. Pedicel (40)45-60 mm, generally larger than the spathe. Perigone declinate, large, 60-80 mm long, pale pink or lilac, with a tube of 2-4 mm long. Tepals oblongate, acuminate. Stamens with declinate filaments of 4 different lengths: two of ca. 40 mm, two of ca. 20 mm and two intermediate to the others. Anthers 4-5 mm long, lunar-shaped. Stigma lobes recurve, 3 mm long.

**Habitat and distribution.** This species has long been considered native of Argentina and Uruguay, and more recently found to originate from Rio Grande do Sul, Brazil (Traub, 1958; Ravenna, 1967; Arroyo, 1990). At present, it is widely cultivated in the USA and various South American countries, where it occasionally behaves as a naturalized species. It has been treated usually within the genus Habranthus, because of its declinate flowers and stamens of four different lengths (Stapf, 1926; Sealy, 1937; Fabris, 1969; Ravenna, 1970).

**Studied material:** COLOMBIA. ANTIOQUIA. Medellín, 1470 m, 24-III-1995, R. Fonnegra & F.J. Roldán 5424 (HUA, MO); ibidem, 1740-1830 m, 16-III-1986, F. J. Roldán & O. Marulanda 240 (HUA, MO).

**Affinities.** Z. robusta has an aspect similar to that of Z. carinata and has a similar size and perigone color. However, it is easily distinguished from Z. carinata by the following combination of character states: glaucous...

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**Figure 3.** a- *Zephyranthes puertoricensis.* Plants growing in their natural environment, on the Islas de San Bernardo, Bolivar. b- *Zephyranthes rosea.* Detail of the scape with the flower. (Photographs: a- from the voucher C. Florez- 110 (COL); b- from the voucher J. L. Fernández 21202 (COL).
leaves; floral pedicel 40-60 mm long; declinate perigone with a short tube (2-4 mm); acuminate tepals with fimbriate scales around the insertion points of the stamens; and anthers 4-5 mm long.

6. *Zephyranthes rosea* (Spreng.) Lindl., Edward’s Bot. Reg. 10: pl. 821. 1824. Figure 3 b, 4 a-b


Vernacular name: “rain flower” (San Andrés).

Plants with bulbs of ca. 15 mm in diameter, with up to 5-6 thin, dark green leaves, 3(-4) mm wide. Flowering scapes I-3, emerging successively, concurrent with the leaves, 2.5 mm thick. Pedicel 3-3.3 cm long, clearly exceeding the spathe. Spath 17-25 mm, slightly bifid, primarily pink. Perigone 30-35 mm long, with a tube of less than 5 mm long. Tepals linear-lanceolate, acute, up to 0.8-1 cm wide. Stamen filaments of four different lengths: one of 11 mm, four of 12-13 mm, and one of 16 mm. Anthers 6-7 mm long, which is much smaller than in *Z. carinata*.

Habitat and distribution. Described from Cuba (Hume, 1940), the species is widespread in Central America and the Antilles. It has been found on San Andrés y Providencia, as witnessed by a photograph corresponding to this species, but named *Z. grandiflora*, in a publication by González & al. (1995).


Affinities: The species *Z. bifolia* (Aubl.) M. Roemer, described from Haiti, and *Z. cardinalis* C. H. Wright, from Santo Domingo, have been treated frequently as conspecifics of *Z. rosea* or as varieties of it (Hume, 1939; Ravena, 2003). It has been confused occasionally with *Z. grandiflora* / *Z. carinata* by some authors.

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