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# *Hippeastrum peruvianum* (Amaryllidaceae), a New Species from Northern Peru, and Notes on a Naturalized Species of *Crinum* First Described as *Hippeastrum*

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**ABSTRACT.** A new species of *Hippeastrum* Herb. (Amaryllidaceae) from the department of Amazonas, Peru, is described and illustrated here. *Hippeastrum peruvianum* Meerow & Campos-Rocha features floral morphology unique among the other species of the genus occurring in the country. It has similarities with *H. miniatum* (Ruiz & Pav.) Herb. and *H. reginae* (L.) Herb. but is distinguished readily by its larger flowers, distinct coloration pattern, and trifold stigma. The new species is known only from the type collection by Paul C. Hutchison in 1958. It was determined as *H. miniatum* in error and has apparently been widely cultivated, especially in California, either under that name or erroneously considered a hybrid. We additionally observe that *H. ugentii* Ochoa, described from Peru and later transferred to *Crinum* L., is the naturalized South African species *C. moorei* Hook. f.

**RESUMEN.** Aquí se describe e ilustra una nueva especie de *Hippeastrum* Herb. (Amaryllidaceae), Departamento de Amazonas, Perú. *Hippeastrum peruvianum* Meerow & Campos-Rocha presentan una morfología floral única entre las otras especies del género que se encuentran en el país. Tiene similitudes con *H. miniatum* (Ruiz & Pav.) Herb. y *H. reginae* (L.) Herb., pero se distingue fácilmente por sus flores más grandes, patrón de coloración distinto y estigma trilobulado. La nueva especie es conocida solo por el tipo colección por Paul C. Hutchison en 1958. Fue determinado como *H. miniatum* por error, y aparentemente ha sido ampliamente cultivado, especialmente en California, ya sea bajo ese nombre o erróneamente considerado un híbrido. También observamos que *H. ugentii* Ochoa, descrita desde Perú y luego transferida a *Crinum* L., es la especie naturalizada de Sudáfrica *C. moorei* Hook. f.

**Key words:** Amaryllidaceae, Amaryllioideae, Andes, *Crinum*, endemic species, geophyte, Hippeastreae, *Hippeastrum*, Peru.

Amaryllidaceae are a family of cosmopolitan distribution, occurring mostly in tropical and subtropical regions of the world (Meerow & Snijman, 1998). In the Neotropics, *Hippeastrum* Herb. is one of the most species-rich genera of the family (Meerow, 2009), with ca. 70 species distributed from Mexico to Argentina. The genus has two centers of diversity: eastern Brazil and the Andes of Bolivia and Peru (Meerow & Snijman, 1998). Currently, Brazil and Bolivia each have ca. 35 recognized species (Dutilh & Oliveira, 2015; Lara Rico & Vásquez Chávez, 2015). According to the latest existing treatment for Peru, the country has 20 species of *Hippeastrum* (Vargas, 1984 [as *Amaryllis* L.]; Brako, 1993), a number of which are also found in Bolivia. The vast majority of the species are concentrated in the south-central region of the country (Vargas, 1984; León et al., 2006).

In this article we describe a species from the department of Amazonas, located in the northern region of Peru. Originally collected by Paul C. Hutchison in 1958, it was maintained in cultivation in the University of California Botanical Garden at Berkeley in the years following, where Hutchison worked for nearly two decades. Particularly interested in cacti, a family in which he became a renowned specialist, Hutchison participated and led botanical expeditions in Peru in the 1950s and 1960s (Goodspeed, 1961) before moving to the San Diego area and starting his own nursery (JSTOR Global Plants, 2018). In 1984, bulbs of this species were donated to the first author's research collections, where they have reliably flowered annually and increased vegetatively.

Hutchison's collection has spread widely in cultivation, and numerous photographs can be found on social media. The anecdotal consensus is that the plant must

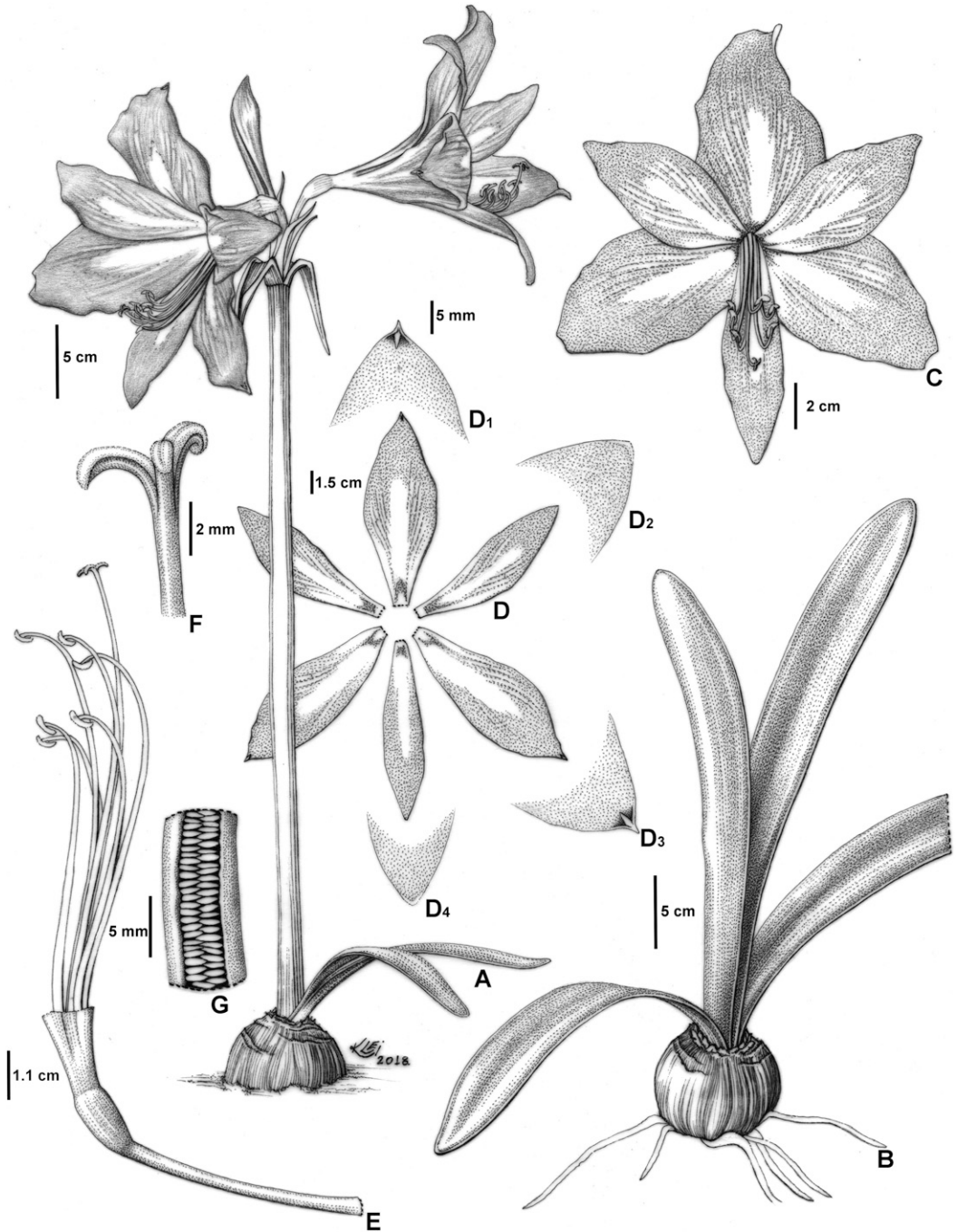


Figure 1. *Hippeastrum peruvianum* Meerow & Campos-Rocha. —A. Habit in flower. —B. Bulb with roots and leaves. —C. Flower. D1–D4. Tips of tepals (sepals and petals). —D1. Upper outer tepal (sepal). —D2. Lateral inner tepal (petal). —D3. Lateral outer tepal (sepal). —D4. Lower inner tepal (petal). —E. Flower with perianth removed, showing stamens and style. —F. Stigma. —G. Longitudinal section of the ovary. Drawing by Klei Sousa from the paratype, *Campos-Rocha 1888* (NA).

be of hybrid origin, and the cultivar name ‘Gilmar’ (the name of a friend of Hutchison) is frequently associated with it (e.g., Dave’s Garden, 2018). We see no reason to

believe that this plant is anything other than a previously undescribed species of the genus, which we now rectify with this paper.

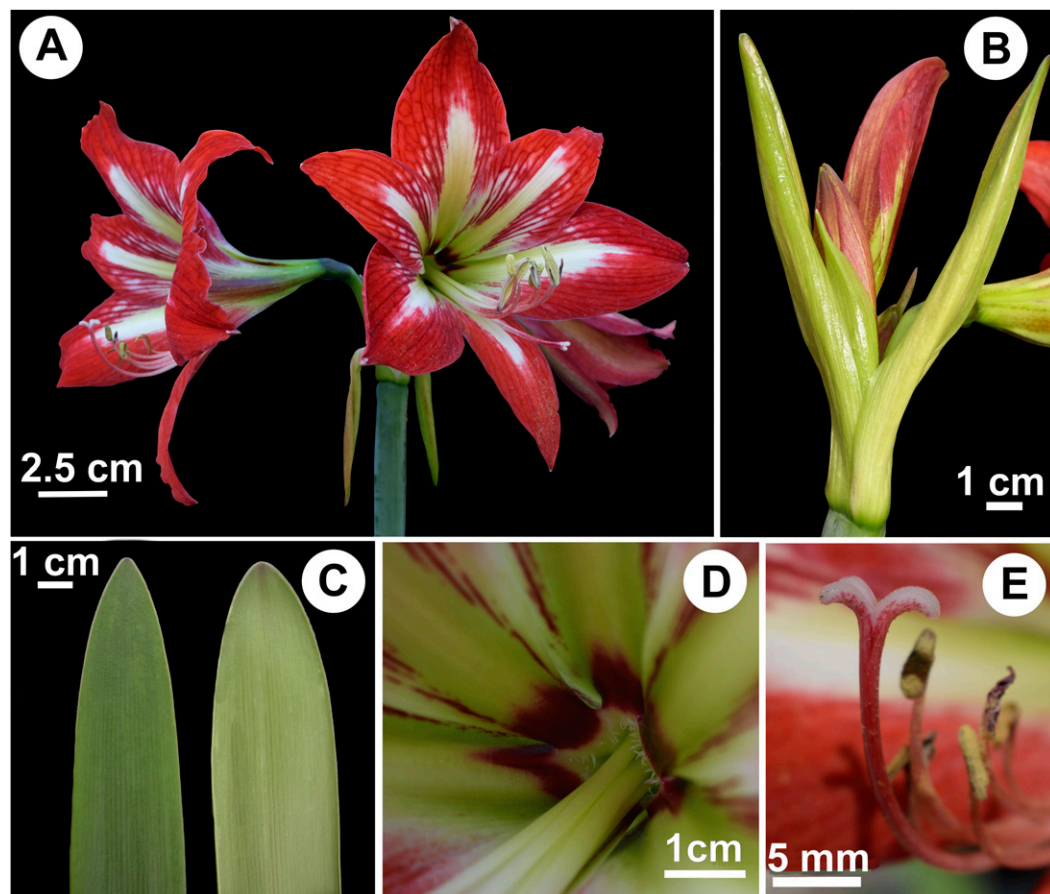


Figure 2. *Hippeastrum peruvianum* Meerow & Campos-Rocha. —A. Inflorescence, frontal view. —B. Detail of spathe bracts. —C. Apex of leaves (adaxial and abaxial side, respectively). —D. Detail of the paraperigone. —E. Detail of the stigma. Photos by Antonio Campos-Rocha from *Campos-Rocha 1888* (NA).

#### MATERIALS AND METHODS

For the description of the new species we used living material and the single specimen deposited at UC. The measures presented for other referenced species are based on data available in the literature or obtained from existing specimens in the collections of F, MO, NY, and US (acronyms following Thiers, 2018).

#### TAXONOMIC TREATMENT

***Hippeastrum peruvianum*** Meerow & Campos-Rocha, sp. nov. TYPE: Cultivated at UC Berkeley Botanical Garden from the live collection *P. C. Hutchison 1454* [Peru. Amazonas: Prov. Bagua, Cerro Tapur on the Hacienda Misqui, above the valley of the Río Utcubamba, 1200 m], 12 Apr. 1960, *J. Blydenstein s.n.* (holotype, UC-58458!). Figures 1, 2.

*Diagnosis.* *Hippeastrum peruvianum* Meerow & Campos-Rocha is most similar in floral morphology to *H. miniatum*

(Ruiz & Pav.) Herb. and *H. reginae* (L.) Herb. but can be readily distinguished from both species by its larger and lighter red flowers (vs. smaller and deep red) with a conspicuous white star in the center of the perigone, the arms of which extend for 2/3–3/4 the length of the tepals (vs. less than 1/2 the length of the tepals), a wine-colored ring at the limb throat base (absent in both *H. miniatum* and *H. reginae*), and a trifid stigma (vs. capitate to trilobed in *H. miniatum* and *H. reginae*).

Geophytic perennial herb to 70 cm at flowering. Bulb 4.5–5.5 cm, 6–9.5 cm diam., subterranean, globose to subglobose. Leaves 2 to 6, to 38.6 × 3.8–4.5 cm, lorate, flat, erect, hyaline, similarly green colored adaxially and abaxially; apex acute to rounded; margins flat to slightly revolute; midrib inconspicuous adaxially. Inflorescence 3- to 4-flowered; scape to 50.5 cm, 2–2.2 cm diam., erect, cylindrical, slightly laterally compressed, hollow, greenish, occasionally with vinaceous pigmentation near the base, glaucous; spathe bracts 2, 9–9.5 × 3–3.5 cm, free, greenish, marcescent, apex acute; bracteoles 4, 3.8–6.5 cm, lanceolate to subulate. Pedicel

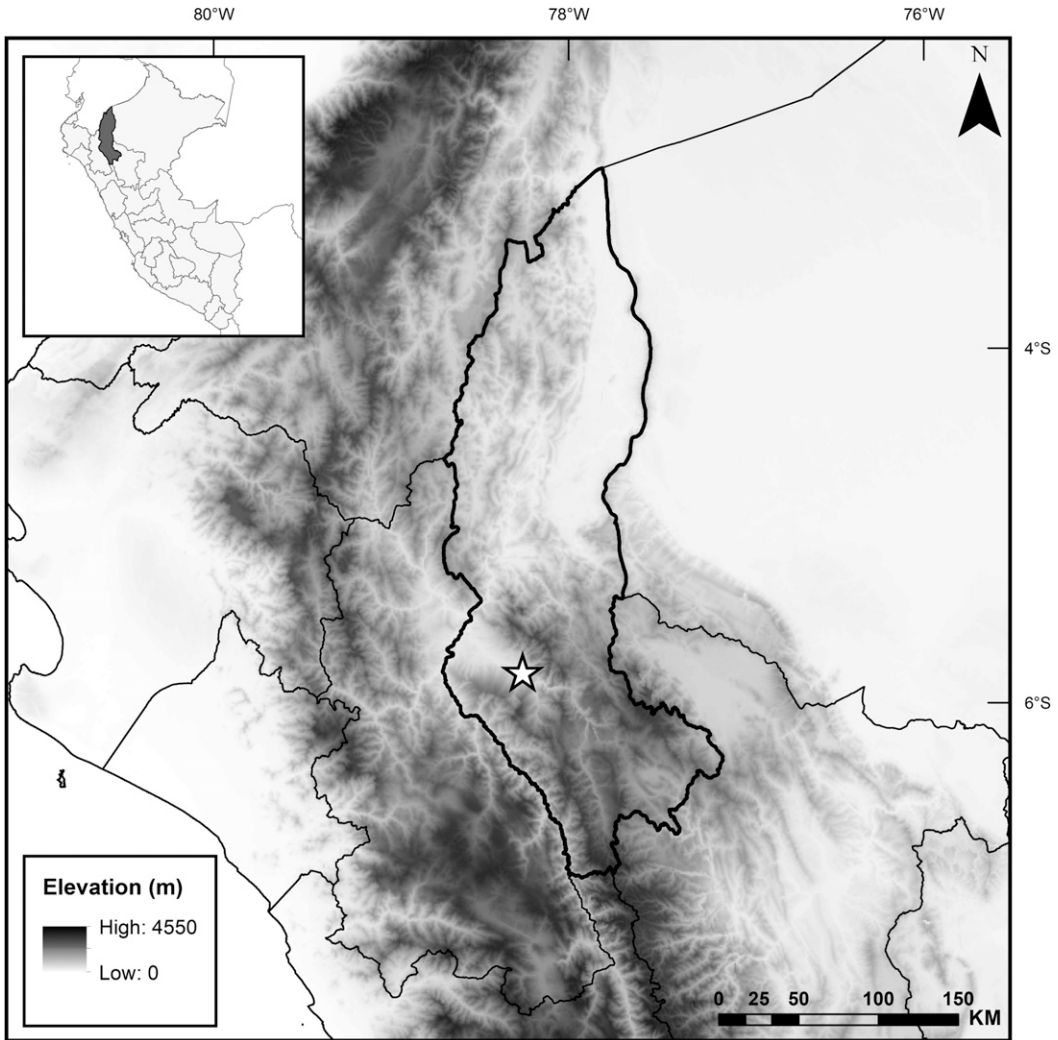


Figure 3. Distribution map of *Hippeastrum peruvianum* Meerow & Campos-Rocha in Amazonas Department, Peru.

4.5–5.8 cm, 0.6–0.9 cm diam. at anthesis, greenish. Perigone 12–14 cm, funnellform-campanulate; hypanthium tube 1.8–2 cm, greenish; paraperigone of fimbriae 1–2 mm at the throat. Tepals 6 in 2 whorls, densely striated “radical red” (CMYK = 0, 79, 63, 0; standard RGB = 255, 53, 94), especially distally, the striations more open proximally and showing white in between; adaxially with a white central stripe ca. 1 cm wide, stripe widest on the lateral sepals, extending for 2/3–3/4 the tepal length that in all 6 tepals together forms a conspicuous star, fading to yellowish green at the throat; abaxially suffused with green proximally, with vinaceous pigmentation at the very base that in all 6 together forms an irregular purple-maroon ring at the throat; outer whorl (sepals) wider than the inner (petals), obovate, upper 9.9–11.9 × 5–5.2 cm, lateral 10.1–12 × 4.5–5.1 cm, slightly asymmetric, apex acute

to rounded, apiculum sub-apical, 3.3–5.5 mm; petals oblanceolate, lateral 10–11.8 × 3.2–4.1 cm, lower 10–11.7 × 2.3–3 cm, apex acute, apicule sub-apical, 0.7–1.8 mm. Stamens 6, of 4 different lengths; filaments inserted at the mouth of the hypanthium tube, of similar length to or longer than limb segments, declinate-ascending, greenish proximally, whitish medially, reddish distally, upper episepalous 7–7.5 cm, lateral episepalous 7.8–8.2 cm, lateral epipetalous 7.8–9 cm, lower epipetalous 8.6–8.9 cm; anthers 6–8.2 mm after anthesis, oblong; pollen yellow. Style 9.8–10.2 cm, ca. as long as or longer than limb segments, greenish proximally, whitish medially, reddish distally; stigma trifid, lobes 5–7.2 mm, whitish adaxially. Ovary 1.1–2 cm, 7.7–9.4 mm diam., trilobular, oblong to obovoid, green; ovules ca. 50 per locule, 1.5–2.75 mm. Fruit and seed not seen.

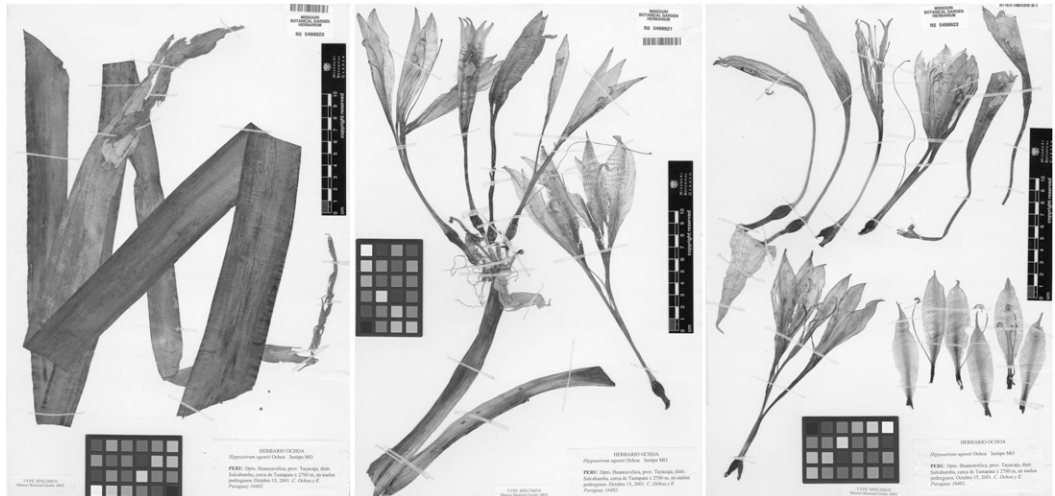


Figure 4. Isotype (three sheets) of *Hippeastrum ugentii* Ochoa (Ochoa & Paraguay 16402, MO).

**Phenology.** In cultivation, *Hippeastrum peruvianum* flowers in March and April.

**Distribution and habitat.** *Hippeastrum peruvianum* was collected at ca. 1200-m altitude, above the Valley of the Utubamba River, Amazonas Department, in the province of Bagua (Fig. 3). The region is characterized by heterogeneity of topography, climate, and vegetation. The information available on the material collected by Hutchison mentions finding the species in the “shade of forest.” However, given the diversity of forest formations in the region, it is impossible to determine the precise natural habitat of *H. peruvianum*.

**Etymology.** The species is named in honor of Peru, a great center of diversity for the Amaryllidaceae and, overall, the fourth most diverse flora of the Americas in number of species and third in endemic species (Ulloa et al., 2017).

**Discussion.** *Hippeastrum peruvianum* has very distinct floral morphology when compared to other Peruvian species treated and illustrated by Vargas (1984 [as *Amaryllis*]) and also does not resemble closely any species described from Bolivia (Lara Rico & Vásquez Chávez, 2015). Among the species occurring in Peru, it has some similarity to both *H. miniatum* and *H. reginae*. It can be distinguished from both by the size and color pattern of the perigone, as well as by its stigma morphology. In *H. peruvianum* the perigone is 12–14 cm long and the stigma is trifid (vs. perigone 7.8–11.8 cm long and stigma capitate to trilobed in *H. miniatum* and *H. reginae*). Additionally, the perigone in *H. peruvianum* has a purple ring at the throat, which is absent in the other two species. The central white stripes on the tepals of *H. peruvianum* extend for 2/3–3/4 of the tepal length, while both *H. miniatum* and *H. reginae* have

shorter, yellowish-green central stripes (less than half the tepal length). The material here designated as the holotype of *H. peruvianum* was included by Vargas (1984) among specimens of *H. miniatum*. Described from material collected in the understory of Peruvian Andean forest, *H. miniatum* is also reported from departments of south-central Peru (Vargas, 1984; Tropicos.org, 2018). *Hippeastrum reginae* is a species of wide distribution, occurring from Mexico to the south of Brazil (Oliveira, 2012; Dutilh et al., 2013). Vargas (1984) stated that *H. miniatum* and *H. reginae* might represent a single species, as did Macbride (1936) in the *Flora of Peru*. Dutilh and Oliveira (2015) formally treated *H. miniatum* as a synonym of *H. reginae*.

*Hippeastrum vittatum* (L’Hér.) Herb., a species recorded in several countries of the South American continent (Arroyo-Leuenberger & Dutilh, 2008; Oliveira, 2012), is also reported by Vargas (1984) from the department of Amazonas. It can be easily distinguished from *H. peruvianum* by the white, funnellform and fragrant flowers with pink to reddish streaks near the center of the tepals, as well as a much longer tube, 3–4 cm long (vs. up to 2 cm long in *H. peruvianum*).

It has been anecdotally suggested on social media that *Hippeastrum peruvianum* could be a hybrid, possibly by individuals unaware of its Peruvian provenance. *Hippeastrum* × *johnsonii* (Bury) Herb. was the first F<sub>1</sub> hybrid recorded in the genus, a primary cross of *H. vittatum* and *H. reginae* made in England in 1799 (Traub, 1934), which may have been created multiple times and is still widely cultivated today. While the hybrid is similar in color to *H. peruvianum* and bears a purple ring at the throat, it bears more flowers (up to six), has a longer hypanthium tube, and is, in at least some descriptions, supposedly sweetly fragrant.

*Paratype*. PERU. **Amazonas**: Prov. Bagua, flowered at the USDA Clonal Plant Germplasm Repository in Miami, Florida, from material originally received from the University of California Botanical Garden, 16 Mar. 2018, *A. Campos-Rocha 1888* (NA).

A SHORT NOTE ON A SUPERFLUOUS NAME IN *HIPPEASTRUM* AND *CRINUM*

In the treatment of Vargas (1984), three species of *Hippeastrum* were added to the Peruvian flora: *H. condemaita* (Vargas & F. Perez) Meerow, *H. hugoi* (Vargas) Gereau & Brako, and *H. leonardii* (Vargas) Gereau & Brako. Since then, only a single species of the genus has been described for Peru (Ochoa, 2006). Published from material collected in the department of Huancavelica, in the south-central region of Peru, *H. ugentii* was later transferred to the genus *Crinum* L. (Molinari-Novoa, 2015). The description and examination of the type specimen (Ochoa & Paraguaya 16402 [MO], Fig. 4) leave little doubt that it represents *C. moorei* Hook. f., a species endemic to South Africa (Verdoorn, 1973), widely cultivated throughout the world and known to naturalize in the Andean region. *Hippeastrum ugentii* and *C. ugentii* (Ochoa) Molinari are thus synonyms of *C. moorei*.

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