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Viruflos (Iridaceae), back in the light after more than 60 years in the darkness

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Abstract. [*Viruflos* (Iridaceae), back in the light after more than 60 years in the darkness]
The genus *Viruflos* is established based on a new combination and status derived from *Cypella* subg. *Viruflos* Ravenna, and *Viruflos crateranthus* is proposed as a new combination for *Cypella craterantha* Ravenna. *Viruflos crateranthus* the unique species of the genus *Viruflos* occurs in northeastern Peru (La Libertad, Catamarca, and Lambayeque regions) from 400 m a.s.l., at altitudes of up to 3,000 m a.s.l., in environments of<Desierto Costero>, <Bosques Secos>, <Matorrales Desérticos> and <Meso-Andina>. The taxonomic position of the genus within the clade B of the tribe Tigridieae is discussed, and *Viruflos crateranthus* is described, illustrated, and typified. Additionally, information regarding its phenology, distribution, habitat, and conservation status is presented. A key to distinguish the genera of the tribe Tigridieae is proposed.
Key words: biodiversity, Cajamarca, *Cypella*, La Libertad, Lambayeque, Peru, Tigridieae, Tigridiinae

Resumen. [*Viruflos* (Iridaceae), de vuelta a la luz después de 60 años en la oscuridad]
Se establece el género *Viruflos* a partir de una nueva combinación y estatus derivados de *Cypella* subg. *Viruflos* Ravenna, y se propone *Viruflos crateranthus* como nueva combinación para *Cypella craterantha* Ravenna. *Viruflos crateranthus*, la única especie conocida hasta ahora del género *Viruflos* se encuentra en el noreste del Perú (regiones de La Libertad, Catamarca y Lambayeque), desde los 400 m s.n.m. hasta los 3000 m s.n.m., en ambientes de <Desierto Costero>, <Bosques Secos>, <Matorrales Desérticos> and <Meso-Andina>. Se discute la posición taxonómica del género en el Clado B de la tribo Tigridieae y se describe, ilustra y tipifica *Viruflos crateranthus*. Además, se presenta información sobre su fenología, distribución, hábitat y estado de conservación. Se propone una clave para distinguir los géneros de la tribu Tigridieae.
Palabras clave: biodiversidad, Cajamarca, *Cypella*, La Libertad, Lambayeque, Perú, Tigridieae, Tigridiinae.

In the early 1960s, during an excursion to northern Peru, in the regions of Cajamarca and La Libertad, Pierfelice Ravenna (1938-2022) collected and subsequently cultivated a taxon previously unknown to science. In 1964, the publication of the aforementioned species was performed, and it was named *Cypella craterantha* Ravenna (1964: 52), where the type material was indicated to be from <*Ad septentrionem Peruviae, in convalle fluminis Chicama ad praedium Sunchobamba (Casa Grande), Cajamarca, circ. 2900m.; etiam in Abra de Porculla ad 2215 m. et in collibus prope Virú, Km. 458 (La Libertad), Exsicc.: Culta in Bonaria ex bulbis collectis in locis supra dictis; leg. Ravenna 94, Dec.-Jan. 1961-62 (Typus in Herb. Ravennae)*>. According to Ravenna (1964: 53) <*esta especie es de hecho tan distinta de las que componen el subgénero Hesperoxiphion y los restantes, que justifica la creación de una entidad aparte*> Thus, the subgenus *Viruflos* was raised to accommodate this taxon. In his treatment, Ravenna (1964) established *Cypella* Herbert (1826: pl. 2637) in a broad sense and considered four subgenera: *Cypella*, *Phalocallis* (Herbert 1839: pl. 3710) Ravenna (1964: 53), *Hesperoxiphion* (Baker 1877: 127) Ravenna (1964: 53, not formally published) and *Viruflos* Ravenna (1964: 53). Later, Ravenna (1977) rehabilitated *Phalocallis* Baker and *Hesperoxiphion* Baker, and, in sequence, he indicated that *Cypella craterantha* should be treated in a separate genus, but he did not publish this taxonomic novelty (Ravenna 1981a: 489).

Cypella craterantha was forgotten for more than 40 years, until León (2006), in her publication of the endemic Iridaceae of Peru, reported the following information for the taxon< *Hierba perenne, bulbosa, conocida solamente de una localidad, en la cuenca alta del río Chicama. No ha sido posible evaluarla, ni asignarle una categoría*> and she did not indicate any additional collections.

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Thus, for a long time, the species was known only from the type preserved in the private Herbarium of Ravenna, and therefore unavailable for analysis, since all his collections are now considered lost (Deble 2024, García et al. 2024).

In late 2019, Mr. Norton Cuba-Melly, from the Facultad de Ciencias Ambientales, Universidad Científica del Sur, Lima, Peru, contacted me with questions regarding a taxon he had found in the Lomas de Virú (La Libertad, Peru). Subsequently, I received materials of the taxon and was able to confirm that it was *Cypella craterantha.* Furthermore, during the analysis of herbarium specimens, some collections of the taxon were found, which in general were undetermined or with identification linked to other species. With the new information, it was possible to demonstrate that the taxon is misplaced in the genus *Cypella*. As Ravenna previously published the subgenus *Viruflos*, which is still available for use, there is a need to propose a new status for this taxon. Thus, this work establishes *Viruflos* at the genus level, proposes a new combination for its only species, designates a type for the taxon, and provides information on distribution, habitat, conservation status, and taxonomic affinities, as well as an updated key to distinguish the South American genera of the tribe Tigridieae.

Materials and methods

The research was carried out by revision of specimens, including digital images, of the following herbaria: HUT, MOL, USM, F, MO (Acronyms according to Thiers 2026+). The morphological data mentioned in the text follows the terminology used by Goldblatt & Manning (2008), Beentje (2010) and Deble et al. (2025), Deble (2025, 2026b). The description of the taxon is based on morphological characteristics of cultivated specimens from seed and on dry material. For the preparation of Figure 1, we used watercolor on Bristol paper, and the illustration is based on a cultivated specimen and photos of living plants. For the elaboration of figures 2, the base map used is titled <National Geographic World Map>. The software ArcMap version 10.7 was utilized, and the features were created from the base titled Topographic. For the elaboration of Figure 3 were used cultivated specimens of *Ennealophus* R. Br.*, Hesperoxiphion, Larentia* Klatt*, Mastigostyla* I.M. Johnston*, Phalocallis* and *Sphenostigma* Baker.

Results

Viruflos (Ravenna) Deble, ***comb. & stat. nov.*** Basionym: *Cypella* subg. *Viruflos* Ravenna, Revista del Instituto de Botánica 2: 53. 1964. (Figure 1) urn:lsid:ipni.org:names:77395817-1

Flores regularis erecta, fugax, conspicua, pallide lutea vel ochracea. Perigonium urceolatum. Tepala breviter connata. Tepala exteriora magna, unguiculis erecto--ascendentibus, late cuneatis, stramineo-luteis et atropurpureis maculatis, translucentis; lamina stramineo--lutea, obovata vel obdeltata, modice reflexa ad apicem crenato-apiculata. Tepala interiora distincte breviora, unguiculis erectis vel suberectis, anguste linear--cuneatis, pallide ochraceis et atropurpureis maculatis; lamina flabellate vel obcordata, apice breve revolutis, margines curva, pallide ochracea. Filamenta libera, filiformia, base incrassata. Antherae circiter longitudinis filamentorum ad maturitatem vel pauce maiorum, oblongo-lineares, connectivo angustato. Stylus ad base anguste linearibus ad apice trifidus, incrassatibus; styli rami plicati; cristae 2, falcatae; pilorum stigmatorum ad dorsum. Ovarium angulatum, obovatum, pluriovulatum. Capsula obovato-clavata, angulata. Semina parva, brunnea, angulata, epidermis leviter reticulatis.

Plantae bulbosae. Bulbus tunicatus subglobosus; tunicis exterioribus membranaceis, brunneo-aurantiacis et atropurpureis maculatis; interioribus albis, translucentis. Folia virecentia, taeniolato-plicata, flaccida. Caulis teres mediocris, base subterraneis. Spatha bivalvata, multiflora, valvis plicatis, ventricosis inaequalibus; superiores pauce longioris. Pedicellus teres.

Description— Plants herbaceous, bulbous, with fibrous and thin roots and nearly ovoid bulbs; cataphylls fleshy, the outermost brownish-orange with dark brownish-red spots, the innermost white-cream. Leaves green, plicate, flaccid. Spathes pedunculate, several-flowered; valves two, the outer one smaller than the inner one, both plicate in cross section. Pedicels terete, each surrounded by a membranous and translucent bracteole. Flowers actinomorphic, straight, fugacious, with a deep central depression. Tepals, 6, connivant at the base forming an urn. Outer tepals, 3, distinctly larger than the inner tepals; claw obovate curved upwards, speckled with dark spots, with a small central area lighter and brighter, then revolute and slightly declinate towards the apex; blade flabellate, apiculate at the apex. Inner tepals, 3, erect or slightly porrect, spathulate, contained within the outer tepals; claw, speckled with dark spots at the base and the blades; blades flabellate, lighter and brighter at the top, slightly recurved. Stamens, 3, positioned below the style branches. Staminal filaments, free, slightly porrect, filiform, adnate to the base of the style; anthers erect, oblong with

narrow connective, dehiscence longitudinal, which initiates the opening near at the apex; darker thecae; pollen ochraceous. Ovary angled, claviform, trilocular, pluriovulate. Style slender towards the base, at apex thickened, 3-branched in its distal half; branches ascending or erect-ascending, crested at top; crests two, both adaxial, stigmatic portion auriculate, extending into the dorsal part of both crests. Capsule obovate-clavate, angled, with thickened walls. Seeds obconical, reddish-brown, epidermis with irregular and few pronounced reticules.

Typus generis: *Viruflos crateranthus* (Ravenna) Deble (=*Cypella craterantha* Ravenna, Revista del Instituto de Botánica 2: 52. 1964).

Diversity of species, geographic distribution and Habitat— Genus with only one known species to date, endemic to northwestern Peru (regions of Cajamarca, La Libertad and Lambayeque), where grows in Lomas vegetation of the <Desierto Costero> ecoregion, at altitudes of 400 m a.s.l., up to the western slopes of the <Bosques Secos> and<Matorrales Desérticos> zones, reaching the valley sides of the <Meso-Andina> ecoregion at altitudes of up to 3,000 m a.s.l (ecoregion delimitations follow Britto 2017).

Etymology— *Viruflos* means <flower of Virú>. I attribute that Ravenna refers to the ancestral culture Virú, which inhabited approximately the same region of geographic distribution of *Viruflos* during the pre-Columbian period. Virú culture, formerly known as Gallinazo, was located as a society with urban elements prior to Moche and after Salinar (Wilson 1983, Millaire & Morlion 2009, Espinosa *et al*. 2021). They successively occupied the valleys of Chicama and Virú, and developed between the years 200 BC and 600 AD (Larco-Hoyle 1945).

Viruflos crateranthus (Ravenna) Deble, ***comb. nova.*** Basyonim: *Cypella craterantha* Ravenna, Revista del Instituto de Botánica 2: 52. 1964. Typus: PERU. Cajamarca/La Libertad: *Ad septentrionem Peruviae, in convalle fluminis Chicama ad praedium Sunchobamba (Casa Grande), Cajamarca, circ. 2900m.; etiam in Abra de Porculla ad 2215 m. et in collibus prope Virú, Km. 453 (La Libertad), Exsicc.: Culta in Bonaria ex bulbis collectis in locis supra dictis; leg. Ravenna 94, Dec.-Jan. 1961-62* (Holotypus: Herb. Rav., according to Deble (2024) and Garcia *et al.* (2024) destroyed by fire). Neotypus (hic locus designatus): PERU. La Libertad: Virú, Lomas de Virú, ladera del cerro, herbácea, flores amarillo, con máculas violáceas, 3 September 1949, *N. Angulo s.n.* (neotypus HUT 1095!) (Figure 1).
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Description— Plant up to 20–50 cm high above the soil, underground stems up to 6 cm long. Bulb ovoid or conic, 18–35 × 14–25 mm, prolonged in a short collar, 10–15 mm long; roots thin abundant, forming a tuft, and 1-few thickened and straight roots. Cataphylls brownish-orange with dark brownish-red spots, broadly ovate to lanceolate, fleshy, apex acute vel acuminate, margin fimbriate. Leaves viridescent, absent at anthesis or 1–4; 18–40 cm long, blades linear-elliptic or elliptic-lanceolate, 15–35 × 0.8–2 cm. Cauline leaf 1-3, proximal cauline leaf elliptic-lanceolate, ensiform, 12–45 cm long, base sheathing the stem, blades 10–35 × 1–2.4 cm; the next cauline leaf, elliptic-lanceolate, 10–35 cm long, blades 8–30 × 0.8–2 cm. Flowering stems 15–23 cm long, 1–3-branched. Spathes 1–4 per branch, fusiform, 3.5–4.5 × 1–1.4 cm, herbaceous, pallid-green, bivalved, valves subequal, plicate or slightly curved in cross-section, 4–11-flowered (up to 8–22-flowered in culture, Cuba-Melly, pers. comm.); pedunculate, peduncles 4.5–13 cm long. Pedicel shorter than the spathe, or slightly exceeding, filiform, light-green, 3–4.5 cm long, surrounded by a membranous and translucent bract. Flowers light golden yellow or yellowish ochre, with reddish purple spots, 35–50 mm diameter; central concavity 10–12 mm diameter, and 10–15 mm depth. Tepals whorls sharply dissimilar: outer tepals 25–32 mm long, then revolute and slightly patent distally, with a shiny greenish-yellow or whitish-green semispherical central area, speckled with dimmed purple stains, between the base of the blade and the apex of the claw, ca. 6 × 3 mm; outer tepal blades flabellate or broadly spathulate, peach-colored or yellowish ochre, with a macula reddish-brown at the base, 15–24 × 24–34 mm, revolute and slightly declined towards the distal portion, apices truncate or rounded, apiculate; outer tepal claws obovate, 10–16 mm long, 4–5 mm wide at the base, and 7–14 mm wide at the apex, slightly translucent, cream-colored or light yellow, speckled with reddish-brown or purplish-brown spots. Inner tepals erect or slightly porrect, spathulate, 9–12 mm long;

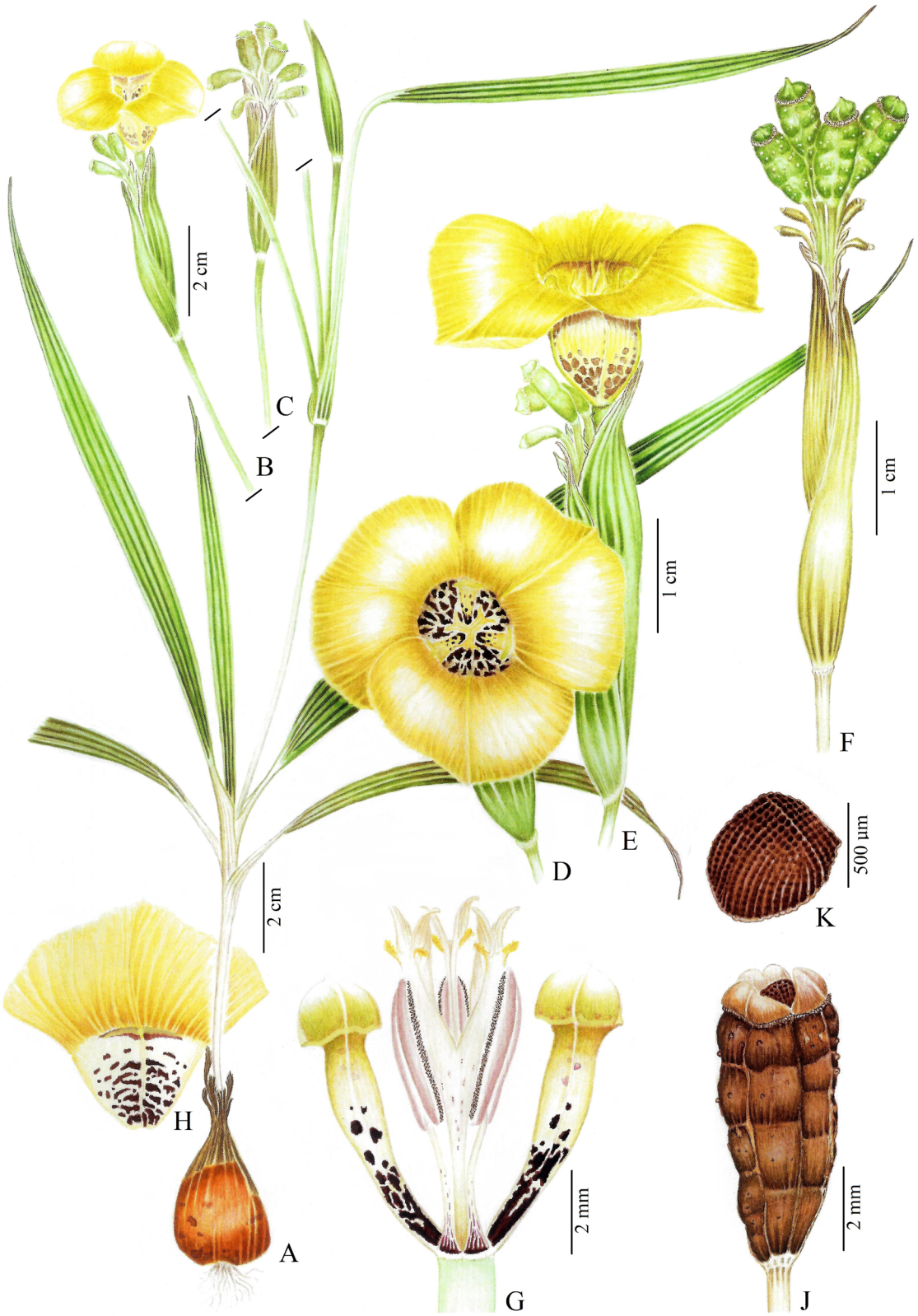

Figure 1. *Viruflos crateranthus* A. Basal part of the plant and flowering stem, B. Flowering spathe, C. Fruiting spathe, D. Flower, upper view, E. Flower, lateral view, immature fruits and spathe, F. Detail of fruiting spathe, G. Flower, with one inner tepal and outer tepals removed. H. Outer tepal. I. Fruit at the beginning of the dehiscence. J. seed.

inner tepal blades nearly cordate 2–2.5 × 2–2.5 mm wide, with dimmed purple spots, apiculate and slightly recurved, pale yellow, with a shiny greenish-yellow or whitish-green diminutive semispherical central area; claws linear-cuneate proximal ¾ cuneate, 7–10.5 mm long, 0.8–1 mm wide at the base, and 2–2.5 mm wide at the apex, pale-cream, slightly translucent, with reddish-brown stripes in its proximal third. Staminal filaments filiform 3–4.7 mm long, slightly porrect, translucent, straw-colored, base dilated brownish-yellow, free; anthers purple, basifixed, linear-oblong 5–6 × 1.2–1.5 mm; connective cream-yellow or brownish, ca. 1 mm, locules cream-yellow, pollen yellow or ochraceous. Ovary pallid-green, 5–6 mm × 2–2.5 mm. Style (including style-branches) 13–15 mm long. Style branches channeled, slightly porrect, 4–5 mm long, adnate to the base for ca. 2 mm; crests at the apex 2, both adaxial, translucent, yellowish, lanceolate, 2–2.5 mm long. Stigma bright yellow, in two lateral ear-like appendices at the base of the crests. Capsules obovate, 7–10 × 3–4 mm, markedly angled, with glandular spots and stripes. Seeds obconical, ca. 1–1.4 mm, angled, reddish-brown, epidermis with irregular and few pronounced reticules.

Typification— Ravenna (1964) mentioned in the protologue three places of occurrence for the species and, then, indicated the type; however, he did not report from which of the three locations the material used for description originated. Since the types deposited in Ravenna's herbarium must be considered destroyed, as suggested by Deble (2024) and Garcia et al. (2024), there is a need to typify this taxon. Thus, an analysis of the localities mentioned by Ravenna in the protologue was conducted to select a neotype consistent with one of the collection sites and the original description. Thereby, I decided to choose the location *collibus prope Virú,* for the type place, as this is where was found the largest number of collected material. A few collections from this site were determined by Ravenna himself as *Cypella craterantha* (a fact verifiable by his handwriting). Nevertheless, the indication in the protologue < *collibus prope Virú, Km. 453*> is wrong, because the lomas ecosystem can be found between kilometers 521 and 535 of the Panamericana highway.

Etymology— *Crateranthus* means <flower in crater>, a reference to the perigone shape, with outer tepals having the claw and the base of the blade forming a deep, narrow central depression.

Phenology— The bulbs break dormancy during periods of higher humidity, caused by the <*Camanchaca*>, a coastal fog characteristic of the Peruvian littoral resulting from the interaction between the cold Pacific waters of Humboldt Current and the warm tropical air between May and September, or during the rainy season on the drier, higher slopes between December and May. Flowering occurs at the end of the wet season; consequently, material with flowers and fruits are collected from August to September in areas influenced by the <*Camanchaca*>, and from March to May in the valleys and higher slopes. Flowers open only once, in the morning and start to wither at early afternoon.

Vernacular name and uses— Unknown.

Additional specimens examined— PERU. Cajamarca: Contumazá, Andaloy, San Benito, 1550 m, ladera de arbustos, <*hierba bulboso, flores amarillento con jaspes*>, 5 May 1965, *A. Sagastegui Alva y M. Fukushima s.n.* (HUT 5065!). Contumazá, Cruz Grande, ladera abierta, 2700m, <*hierba, flores blanco-amarillentos y jaspeadas*>, 20 April 1967, *A. Sagastegui-Alva et al. s.n.* (HUT 6488 photo!). Surroundings of Contumazá, 2870-3000 m, pasture, <*herb 40 cm, flowers melon-colored*>, 3 May 1999, *M. Binder et al. 1999/73* (HUT 34701 photo!; F 2211268 digital image!). San Pablo, archaeological area of Kuntur Wasi, 2260 m, < *Flores anaranjado pálido, la base del perianto con máculas marrones – vinosas>,* 26 March 2004, I. Sánchez Vega et al. 12600 (CPUN!; F 2292484 digital image!). La Libertad: Viru. Lomas de Virú, rocoso, 500 m, <*herbácea, flores amarillo*>, 15 August 1949, N. Angulo y A. López *s.n.* (HUT 1112 photo!). Lomas de Virú, ladera rocosa, 500-600 m, <*herbacea, amarillo-rojizo*>, 3 September 1949, *N. Angulo s.n.* (HUT 1109 photo!). Virú, ladera pedregosa, 400 m <*herbácea bulbosa de flores cremosas con manchas amoratadas*>30 September 1976, *A. López, A. Sagástegui y J. Cabanillas 8407* (HUT 14035 photo!). Lomas de Virú, ladera 550 m, <*hierba con flores anaranjado cremosas*>,15 September 1986, *J. Mostacero, S. Leiva G. & J. Guevara 1443* (HUT 21919 photo!; F 1983680 digital image!). Lomas de Virú, quebrada rocosa, 444 m, 17L740578 9075354, 1 September 2019, *N. Cuba-Melly & J. Odar 102* (HUT 64185 photo!).

The following material should be considered questionable for Viruflos crateranthus— PERU. Cajamarca: Yetón, Guzmango, ladera abierta, 1800m, <*hierba bulbígera con flores cremosas, interiormente jaspeadas*>, 29 April 1982, *A. Sagástegui Alva et al. 10318* (HUT photo!; MO 4989790 digital image!). Below Contumazá ca. 23 km, above Cascas ca. 15 km, 2050m <*Bulbous perennial herbs to 0.5m; flowers salmon*>,14 April 1986, M.O. Dillon, D. Dillon & A. Sagastegui *4518* (F 2118746 digital image!; MO 5617375 digital image!). Contumazá, Andaloy, San Benito-Yetón,

2000m, <*hierba bulbigera con flores cremosas jaspeadas*>, 23 March 1988, *A. Sagástegui Alva et al. 13044* (HUT 24673 photo!; MO 3675931 digital image! F 2011662 digital image!). Yetón (San Benito – Guzmango), 2000 m, <*hierba bulbífera. Flor crema con jaspas marrones*>, 7 April 1990, *A. Sagástegui y C. Sagástegui 14252* (USM 161598 photo!; MO 3873836 digital image!).

Observation— It was possible to identify photos of this species in the iNaturalist database (2026+) https://www.inaturalist.org/observations/165342762 and https://colombia.inaturalist.org/observations/159899738.

Distribution and Habitat— *Viruflos crateranthus* occurs in northwestern Peru on dry mountain slopes in full sun, associated with small shrubs and herbs. Its range extends from 400 m a.s.l., within the Lomas vegetation of the <Desierto Costero> ecoregion, up to the western slopes of the <Bosques Secos> and<Matorrales Desérticos> zones, reaching the valley sides of the <Meso-Andina> ecoregion at altitudes of up to 3,000 m a.s.l. The distribution of *Viruflos crateranthus* across distinct zones can be explained by the characteristics of the western slopes, which descend abruptly to the desert coastal plain. This proximity allows Andean species, particularly those adapted to dry climates, to expand their range across these different ecoregions (Galán de Mera et al. 2011). (Figure 2).

Conservation— *Viruflos crateranthus* is known only from few localities in mountainous places in full sun, associated with small shrubs and herbs. Its range extends from 400 m a.s.l., at altitudes of up to 3,000 m a.s.l., and the species is adapted to distinct ecosystems, such as <Desierto Costero>, <Bosques Secos>, <Matorrales Desérticos> and <Meso-Andina>. Based on observations made in La Libertad (Cuba-Melly, pers. comm.), populations consist of few individuals, and ecological notes on many herbarium labels indicate that the species is rare, even in environments suitable for its occurrence. Furthermore, many herbarium specimens are old, and there are no recent collections. The populations spread to an Extent of Occurrence (EOO) of less than 10,000 km² and Area of Occupancy (AOO) is less than 1,000 km². The populations are fragmented and *V. crateranthus* needs specific requirements as it only grows along open slopes with scattered rocks, in full sunlight in the AOO. Lomas of La Libertad are being modified by climate variability, industrial agriculture and urbanization (Cuba-Melly, 2025), while in Contumazá, ecosystems are being modified by agriculture and overgrazing (Galán de Mera et al., 2015). In accordance with the criteria of IUCN (2012, 2024), and based on its extent of occurrence, area of occupancy, number of known populations and direct threats observed, *V. crateranthus* can be considered Vulnerable (VU) according to the following criteria: B1+B2 (a, b[i, ii, iii], c[i, ii, iii, iv]).

Taxonomy

Morphology of perigone and androgynoecium

The shape of the perigone, form and arrangement of the inner and outer tepals and the presence and position of glandular and lipidic trichomes were recognized as important characteristics for distinguishing genera within the tribe Tigridieae (Ravenna 1977, Ravenna 1981b, Ravenna 1981c, Ravenna 1983a, Ravenna 1986). However, they were later interpreted as secondary characteristics, which resulted in a broad treatment of several South American genera (Goldblatt & Henrich 1991, Roitman & Castillo 2007, Goldblatt & Manning 2008, Roitman et al. 2008). From more recent studies, these characteristics were recognized as important and morphological and molecular data evidenced many taxa should be treated as independent genera (Reeves *et al.* 2001, Ravenna 2009, Chauveau *et al.* 2012, Deble 2021, Deble 2025, Deble 2026a, Deble et al. 2025).

In *Viruflos* the outer tepals are distinctly larger and the blades are broadly obovate or broadly spathulate, and the claws are wide and overlap each other forming a closed urn. Near the mouth of the urn, between the most distal part of the claws and the end of the blade, there is a not glandular bright area. The shape of the external tepals of *Viruflos crateranthus* is similar to that found in some species of *Tigridia* Juss. (e.g., *T. lutea* Link, Klotzsch & Otto and *T. arequipensis* Montesin., A. Pauca & Revilla) (see Link et al. 1844: pl. 34, Montesinos-Tubée *et al.* 2016: 5 [figure 1: D-F], Aldunate-Riedemann et al. 2023: 135 [figure 1A-H], 136 [figure 2A-I]) and *Ennealophus* (see Huaylla 2015: 41/2[figure 1: B–C]). The inner tepals are quite peculiar, by absence of trichomes and by its 3-dimensional arrangement almost straight. The blades display fan-like shape, not or slightly recurved at the end of the anthesis, while the claws are narrowly cuneate. The morphological aspect of the inner tepals is similar to that

found in some species of *Mastigostyla*, mainly by absence of trichomes and by its quite reduced size (see Huaylla et al. 2010: 243 [figure 1: B], 247 [figure 3: A–D], 252 [figure 7: A–D], Donadío et al. 2016: 715 [figure 1: A–B]).

Viruflos presents stamens with filiform filaments, adnate only near the base, while the anthers are erect or slightly porrect, with a narrow connective, adnate at the base of the style branches. The style is filiform towards the base and thickened distally. The style branches contain two adaxial crests, having stigmatic region in two lateral ear-like appendices. *Hesperoxiphion* and *Larentia* display androgynoecium similar to those described for *Viruflos* (see Huyalla 2017: 2[figure 29–37]). *Larentia* shows anthers firmly attached to the branches of the style through an appendage (Hoehne 1914: pl. 20, Munguía-Lino *et al*., 2017: 479 [figure 3K]). In *Ennealophus* the stamens have adnate filaments in a bottle-shaped column, which hides the unbranched part of the style, and the anthers are oblique, attached to the style branches, while the style branches have at the top a broad, deeply 3-lobed, reniform-shaped dilation, which in some species folds to form a higher portion, similar to a crest. (Ravenna 1983b: 233[figure 65]), Goldblatt & Manning 2008: 241 [figure 60], Huyalla 2015: 41/2 [figure 1B–C, and E). *Phalocallis* has stamens with adnate filaments at the base and erect anthers, with a broad connective, while the style is filiform towards the base and thickened distally, and its style branches display petaloid and peltate or obovate at apex obtuse or rounded crests (see Herbert 1839: pl 3710, Deble & Alves 2020: 10 [figure 1:C'-D'], Ravenna & Deble 2023: 506, Deble et al. 2025 [figure 5-12]). In *Tigridia* the stamens are oblique or erect , completely adnate in a bottle shaped column or free, and the style branches are oblique or patent, with secondary divisions subulate, deeply bifid for ⅔ or more of total length of the style branch (see Montesinos-Tubée et al. 2016: 5 [figure 1: D-F], Munguía-Lino et al. 2017: 481 [figure 4:D-Y], 482 [figure 5: A-Y, 483 [figure 6: A-P], Huaylla et al. 2022: 11 [figure 3:A-I]). In *Mastigostyla* the stamens display oblique or ascending anthers. and the secondary divisions of style branches are shortly emarginated (*Cardenanthus* R.C. Foster pattern) or bifid for up to ½ of total length of the style branch (see Donadío et al. 2016: 715 [figure 1: A-B, figure 2: A-G]).

The shape of the androgynoecium has been considered important in the recognition of *Cypella* and its related taxa (Ravenna 2009, Deble & Alves 2020, Deble 2021, Deble 2025). Thus, *Cypella* and *Misionella* Deble have 3-crested style branches, two adaxial crests and one abaxial, with an oblique stigmatic region that extends at both ends. In *Onira* Ravenna, this pattern is simplified and the crests are reduced to 3-lobes and the stigmatic line, although reduced, is similar to that found in *Cypella*, while *Kelissa* Ravenna has adnate style branches along the entire structure and the stigmatic region is a dilated part at the top. (Goldblatt & Manning 2008: 238 [figure 58], Deble 2021: 37 [figure 1E, G-H]). In *Cipura* Aubl., the androgynoecium resembles that found in *Cypella* and *Misionella* (Chauceau et al. 2025: 130 [figure 2 C-I]); however, this genus is characterized by sessile spathes that form a fasciculate inflorescence, shorter than the cauline leaf (Celis et al. 2003: 421 [figure 1: A], Ravenna 1988) and the adaxial crests of style branches are rounded (Chauveau et al. 2025: 132 [figure 3D], 135 figure 5F, G]).

Viruflos and its allies

Initially, *Viruflos* was considered a subgenus of *Cypella,* but it differs from *Cypella* by a set of characters, such as the bulbs brownish-orange, with fleshy cataphylls (vs. bulbs dark-brown or pallid brown, with thin cataphylls), 4–11-flowered spathes (vs. 1–2-flowered), presence of a membranous and translucent bract surrounded the pedicel (vs. absent), spathulate and flat inner tepals (vs. geniculate-recurved or arcuate-recurved, with margins elevated and curved), absence of carpet of one-celled lipidic trichomes (vs. carpet of one-celled lipidic trichomes spreading in a central strep towards the basis of a central depression of the inner tepals [*subgenus Cypella*] or on top of a central depression of the inner tepals [*subgenus Nais* (Ravenna) Deble]), and the style branches with two crests (vs. three crests) (Deble 2026b). Under the current generic circumscription within the tribe Tigridieae, the relationship of *Viruflos* is with other genera, such as *Sphenostigma* (sensu Deble 2026a), *Ennealophus* and *Mastigostyla*. Considering only the morphology of the androgynoecium, *Viruflos* it could still be compared with the genera *Hesperoxiphion*, *Larentia* and *Phalocallis*. Even though it is morphologically more distant, it can still be compared with *Tigridia*, *Lethia* Ravenna and *Cipura*.

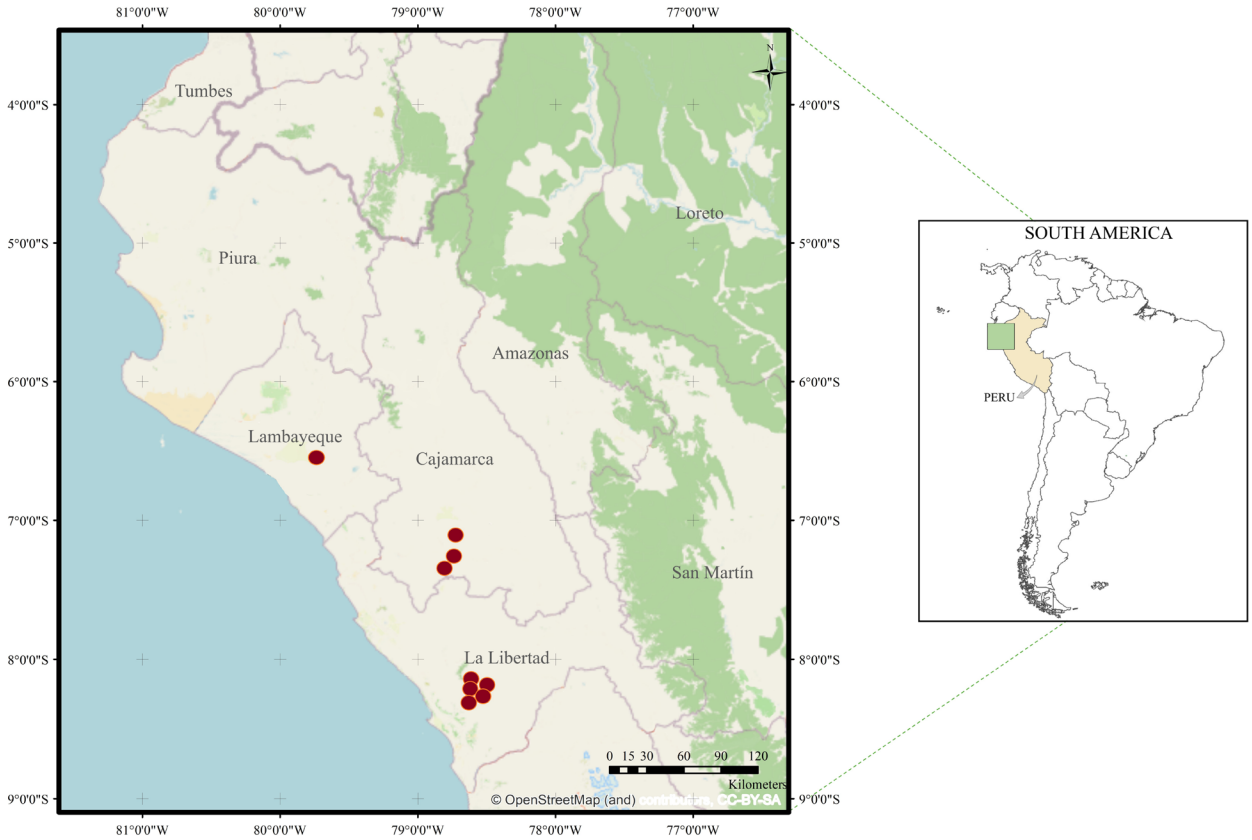

Figure 2. Map of geographic distribution of *Viruflos crateranthus* (red circles).

Viruflos shares several morphological characteristics with *Sphenostigma*, such as its vegetative appearance, a perigone with a deep central depression, and simplified inner tepals lacking trichomes (Figure 3); nevertheless, *Viruflos* differs from *Sphenostigma* by its stamens with free and obclavate staminal filaments (vs. entirely adnate in a conical column, or adnate for up to ¾ of total length), by its style, with style-branches ending in two crests, both adaxial (vs. without crests), by its stigmatic portion auriculate, extending into the dorsal part of both crests (vs. stigmatic portion dilated, reniform, transversal) (Figure 3), by its capsules obovate-clavate with thickened walls (vs. oblong or obovate-oblong, with thin walls), and by its obconical, reddish-brown seeds with epidermis having irregular and few pronounced reticules (vs. semispherical or nearly circular, strongly compressed seed with epidermis smooth or folded).

Viruflos differs from *Ennealophus* subgen. *Ennealophus* by its bulbs brownish-orange (vs. brown or dark-brown), with fleshy cataphylls (vs. thin), by its flowers with reduced and flat inner tepals (vs. developed inner tepals, with recurved blades in its distal half), and especially by its stamens with free filaments and erect anthers (vs. adnate filaments in a bottle-shaped column and oblique anthers, adnate to the style branches) and by its style branches with two erect crests (vs. style branches with a broad, deeply 3-lobed, reniform dilation at top, which in some species folds to form a higher portion, similar to a crest.) (Figure 3). *Viruflos* is more easily distinguished from the taxa of the subgenus *Actine* Ravenna (1983b: 234), given that the species of that subgenus exhibit decumbent flowering stems, and flowers with pedicels long, much exerted and radially arranged.

From *Mastigostyla* the new genus can be segregated by its medium-sized habit (vs. usually dwarf habit), by its bulbs brownish-orange (vs. russet-brown), with fleshy cataphylls (vs. thin), by its flowers having perigone with a deep, urn-shaped central depression (vs. without forming an urn, usually spreading, or when it forms a closed structure it is due to the erect position and the proximity of the internal tepals), by its stamens with filiform filaments (vs. adnate in a bottle-shaped column surrounding the unbranched part of the style),

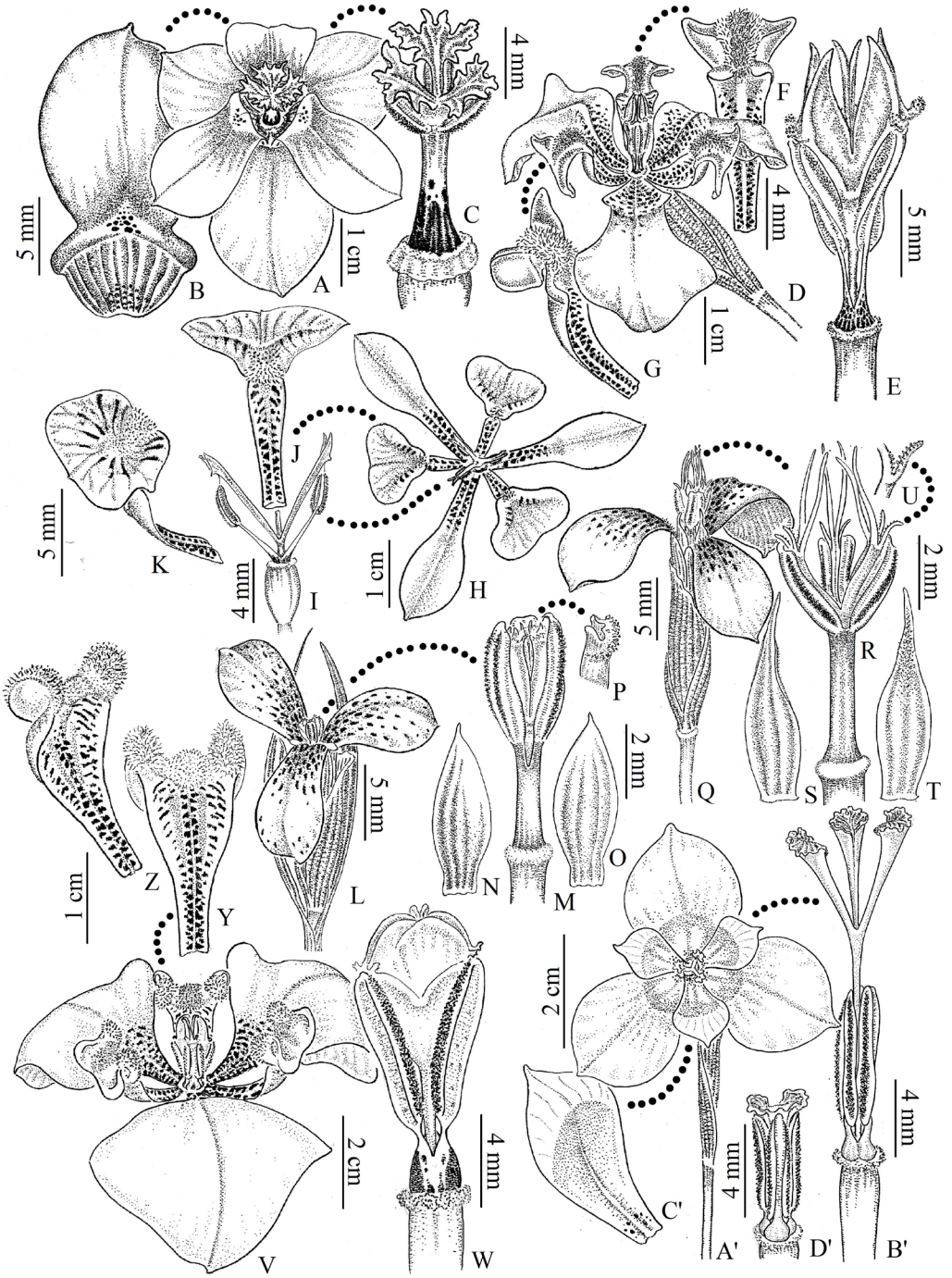

Figure 3. Morphological characteristics relevant to the identification of genera related to *Viruflos*. A-C. *Ennealophus* subg. *Ennealophus* (*E. foliosus* (Kunth) Ravenna). A, Flower, inclined view. B, Inner tepal. C, Flower, with tepals removed. D-G, *Hesperoxiphion peruvianum* Baker. D, Flower, inclined view. E, Flower, with tepals removed. F, Inner tepal, upper view. G, Inner tepal, lateral view. H-K, *Larentia linearis* (Kunth) Klatt. H, Flower, upper view. I, Flower, with tepals removed. J, Inner tepal, upper view. K, Inner tepal, lateral view. L-U, *Mastigostyla.* L-O, *Mastigostyla* aff. *boliviensis* (R.C. Foster) Goldblatt. L, Aerial stem of the plant, with flower, inclined view. M, Flower, with tepals removed. N, tepal, dorsal view. O, tepal, ventral view. P, detail of stigmatic area. Q-U, *Mastigostyla cyrtophylla* I.M. Johnston. Q, Spathe, with flower, lateral view. R, Flower, with tepals removed. S, tepal, dorsal view. T, tepal, ventral view. U, detail of stigmatic area. V-Z, *Phalocallis plumbea* Herbert. V, Flower, lateral view. Y, Inner tepal, upper view. Z, Inner tepal, lateral view. A'-D', *Sphenostigma.* A'-C', *Sphenostigma Sellowianum* Baker. A', Flower, frontal view. B', Flower, with tepals removed. C', Inner tepal, lateral view. D', *Sphenostigma rigidum* (Ravenna) Deble, flower, with tepals removed.

and erect anthers (vs. oblique or ascending), and by its style branches slightly porrect, with secondary divisions ending in two erect crests (vs. style branches oblique, with secondary divisions ending in two oblique or ascendant crests) (Figure 3).

Viruflos separates from *Hesperoxiphion* by its perigone with a deep, urn-shaped central depression (vs. perigone spreading, with shallow central depression), by its spathulate and flat inner tepals (vs. arcuate-recurved, with margins elevated and curved), without trichomes (vs. carpet of long glandular trichomes in a central strip in upper part of the blade of inner tepals)(Figure 3). The shape of the androgynoecium of *Viruflos* is similar to that found in the *Larentia* species (Figure 3). Nevertheless, *Viruflos* differs from *Larentia* by its bulbs brownish-orange, with fleshy cataphylls, (vs. bulbs dark-brown or pallid brown, with thin cataphylls), by its 4–11-flowered spathes (vs. 2-flowered), by its flowers having perigone with a deep, urn-shaped central depression (vs. perigone spreading, with shallow central depression), outer tepals with a broadly cuneate claws (vs. narrowly cuneate) and much reduced inner tepals, with a flat blade (vs. developed inner tepals, with claws similar in shape and size to those of the outer tepals and arcuate-recurved blade).

Viruflos shares with *Phalocallis* the bulbs brownish-orange, with fleshy cataphylls, and similar shape of flowers with perigone having a deep central depression and style branches with two crests. However, *Viruflos* promptly differs from *Phalocallis* by its 4–11-flowered spathes (vs. 2–5-flowered), by its spathulate and flat inner tepals (vs. arcuate-recurved, with margins elevated and curved), absence of carpet of one-celled lipidic trichomes (vs. carpet of one-celled lipidic trichomes in a central strip of the blade of inner tepals), absence of long glandular trichomes on inner tepals (vs. long glandular trichomes in two lateral ear-like bands on inner tepals), and style branches with non-petaloid and lanceolate at apex acute crests (vs. style branches with petaloid and peltate or obovate at apex obtuse or rounded crests) (Figure 3).

Diagnostic features to distinguish *Viruflos* from *Lethia* including flower pedicel containing a protective bract that surrounds the pedicel and the base of the ovary (vs. reduced spathes, with the flower pedicel lacking a protective bract), inner tepals flat, without trichomes (vs. cucullate, with a recurved apex, lipidic trichomes in a layer at apex of the claw) and stamens with free staminal filaments (vs. filaments adnate in a conic column). The genus is easily distinguished from *Tigridia* by its stamens with filiform filaments (vs. adnate in a bottle-shaped column surrounding the unbranched part of the style), and erect anthers (vs. oblique or ascending), and by its style branches slightly porrect, with secondary divisions ending in two erect crests, with stigmatic area in two lateral bands (vs. style branches oblique, with bifurcate secondary divisions ending in a stigmatic portion at top). Morphological variations found in *Tigridia* species, such as free staminal filaments, as in *Tigridia coerulea* Goldblatt and *T. gypsicola* García-Mend. & D. Sandoval (see García-Mendoza & Sandoval-Gutiérrez 2024) or the distinct shape of the secondary divisions of the style branches, such as dilated and perpendicularly emarginate (the *Cardiostigma* Baker pattern), are likewise very different from what is found in *Viruflos*. *Viruflos* can be distinguished from *Cipura* by its inflorescence with spathes borne on long pedicels (vs. sessile spathes forming a fasciculate inflorescence) and by its style branches, which bear two acute crests (vs. three crests: two adaxial and rounded, and one abaxial and ovate).

Key to distinguish the South American genera of the tribe Tigridieae (Iridaceae)

1. Outer and inner tepals equal or subequal in size (rare inner tepals with ca. of ½ of total length of the outer tepals; so, the blades are of the same color and texture of the outer tepal). One-celled lipidic trichomes absent 2
–Inner tepals much smaller than the outer tepals (sometimes subequal in North American species of *Larentia*). Blade of the inner tepals with a carpet of one-celled lipidic trichomes, rarely absent 5
2. Plants robust, leaves rigid with fiber bundles with lignin on the margins and in the most caliber veins. Spathes 4–12-flora. Bulbous with cataphylls fleshy, reddish-yellow, reddish-brown or purplish-brown in fresh 3
– Plants delicate, leaves tender without fiber bundles with lignin. Spathes 1–2 (5)-flora. Bulbous with cataphylls papery, pallid-brow or dark-brow 4

3. Style branches filiform; stigmatic region in a terminal area ..... *Gelasine* Herbert
– Style branches not filiform, with secondaries division deeply bifid and subulate; stigmatic region two for each branch .... *Eleutherine* Herbert
4. Stamens with anthers adnate towards the base, its distal half thrown back at the dehiscence. Style columnar, at apex shortly trifid, with branches erect ..... *Itysa* Ravenna
– Stamens with anthers free, curved or twisted at the dehiscence. Style often trifid at apex, with branches patent or ascendant (rarely with branches adnate, forming a columnar style: *Calydorea charruana* Deble and *C. nuda* (Herbert) Baker) .... *Calydorea* Herbert s.l.
5. Style branches short or filiform, stigmatic portion at top or prolongated in a transversal area 6
– Style branches plicate, thicker than the style, stigmatic region two for each branch 9
6. Central concavity of perigone shallow or deep. Outer and inner tepals with claws few pronounced. Inner tepals with one-celled lipidic trichomes absent or few, scattered on the claw 7
– Central concavity of perigone deep. Outer and inner tepals markedly clawed. Inner tepals with a dense carpet of one-celled lipidic trichomes on a central stripe of the blade 8
7. Inner tepals geniculate recurved. Stamens with filaments shortly adnate towards the base, anthers horizontal or patent. Style branches horizontal or patent, emarginated at top ..... *Catila* Ravenna
– Inner tepals elliptic, oblanceolate or cucullate. Stamens with filaments adnate in a column, anthers erect. Style columnar or trifid apically; stigmatic region transversely at the style branch, reniform in shape ..... *Sphenostigma* Baker
8. Style columnar, hidden by the stamens; stamens with adnate filaments, forming a column, anthers adnate to each other .... *Kelissa* Ravenna
– Style deeply trifid, visible among the stamens; stamens with free filaments ..... *Onira* Ravenna
9. Inner tepals with long and abundant glandular trichomes on the blade 10
– Inner tepals without long glandular trichomes (or if present, few and scattered along the claws). One-celled lipidic trichomes forming dense carpets in specific parts of the blade, rarely absent 11
10. Inner tepal blade with long glandular trichomes in a central stripe along the top. Style branches ending in two acute crests, not petaloid ..... *Hesperoxiphion* Baker
– Inner tepal blade with glandular trichomes in two lateral bands along the top. Style branches ending in two rounded and petaloid crests ..... *Phalocallis* Herbert
11 Stamens with filaments adnate in a cylindric or bottle shaped column. Style branches with secondary divisions emarginated or bifid, ending in a nearly spherical stigmatic portion 12
– Stamens free, partially adnate or adnate in a conical column. Style branches with secondary divisions rounded, peltate or crested 16
12 Unbranched part of style with ⅔ or more of total length of style; style branches shorter, ending in an emarginated stigmatic portion ..... *Lethia* Ravenna
– Unbranched part of style with up to ½ of total length of style, rarely more; style branches well-developed 13
13. Style branches with secondary divisions subulate, deeply bifid for ⅔ or more of total length of the style branch 14
– Style branches with secondary divisions emarginated or bifid for up to ½ of total length of the style branch 15
14. Stamens with anthers horizontal or patent (rarely ascending or erect in some North American species). Style branches oblique or patent ..... *Tigridia* Juss. s. l.
– Stamens with erect anthers; Style branches with secondary divisions ascending-erect or erect, above the anthers .... *Alophia* Herbert
15. Inner tepals with a central concavity darker and densely covered by one-celled lipidic trichomes ..... *Herbertia* Sweet
- Inner tepals smooth, one-celled lipidic trichomes absent of few, scattered .... *Mastigostyla* Johnston (including *Cardenanthus* Foster)
16. Stamens with filaments entirely adnate in a conical column, longer than the anthers. Style-branches peltate with fimbriate margin; stigmatic portion along the margin ..... *Ennealophus* R. Br.
– Stamens with filaments free, partially adnate or adnate, of equal length or shorter than the anthers. Style-branches crested or rounded, stigmatic portion in a transverse dorsal stripe or in two lateral ear-like appendices 17
17. Style branches with two crests. Inner tepals with or without one-celled lipidic glandular trichomes 18
– Style branches with three crests, two adaxial and one abaxial, sometimes reduced. Inner tepals with one-celled lipidic glandular trichomes 19
18. Outer and inner tepals ascendant, forming a shallow and spreading central depression. Claws of outer and inner tepals

similar in shape and size. Anthers with connective prolonged in an apical appendix ..... *Larentia* Klatt
– Outer and inner tepals suberect or erect-ascendant forming a deep central depression. Claws of outer tepals with broadly cuneate claws, touching each other and appearing to be adnate. Anthers with connective not prolonged in appendix .... *Viruflos* (Ravenna) Deble
19. Cauline leaf subapical inserted at the base of subterminal inflorescence. Inflorescence fasciculate. Inner tepals erect, forming a cup or arcuate-recurved. Crests of style-branches rounded ..... *Cipura* Aublet
– Cauline leaf in the basal third. Inflorescence supported by peduncles, non-fasciculate (rarely fasciculate, so the leaf inserted at the base of the inflorescence is of equal length or smaller than the spathes.). Crests of style-branches acute or obtuse 20
20**.** Spathes with inner valves convolute. Inner tepals with cuneate claws; blades not hastate, recurvate-reflexes or ascendant reflexes ..... *Cypella* Herbert
– Spathes with outer and inner valves plicate. Inner tepals with narrowly cuneate claws; blades hastate, erect-ascendant, and then uncinated ..... *Misionella* Deble

Conclusion

Viruflos is a new genus belonging to the subtribe Tigridiineae (Iridaceae: Tigridieae) or Clade B of Tigridieae sensu Chauveau et al. (2012), Pastori et al. (2018) and Pastori et al. (2021), which is characterized by a combination of distinctive morphologic features, such as (1) multiflowered spathes, borne on long peduncles, (2) outer tepals with claws wide and overlap each other forming a urn, which contains near the mouth a bright non glandular area, (3) quite reduced inner tepals, glabrous and almost flat, (3) stamens with filiform staminal filaments and anthers erect, adnate at the base of the style branches, and (4) style filiform toward at base and thickened apically, with style-branches ending in two crests at top, with stigmatic area in two lateral appendices.

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The author declare that he has no known competing financial interests or personal relationships that could have appeared to undermine the objectivity or integrity of the work reported in this paper.

Supplementary material

Supplementary material can be obtained directly via email of the author (deble.biol@gmail.com).

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