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A submerged new species of Cypella (Iridaceae), and a new section for the genus (s.str.)

Pierfelice Ravenna



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Cypella aquatilis is described as a new species of the Iridaceae, occurring in the Brazilian states of Rio Grande do Sul, Santa Catarina and Paraná. The plant is remarkable by being submersed in streamlets and rivers, and by the vegetative proliferation in the inflorescence. Additionally, a new section, *Nais,* with *C. aquatilis* as the type species, and the new name *C. exilis* Ravenna to replace the illegitimate *C. gracilis* (Kl.) Bak. are proposed.

P. Ravenna, Casilla 21128, Sucursal 21, Santiago, Chile.

Introduction

In a brief treatment (Ravenna 1977b), the necessity of revalidating among others the genera *Phalocallis* Herb. and *Hesperoxiphion* Bak., until then included in *Cypella* Herb., was shown. The early concepts of Herbert (1840) and Baker (1877) were therefore recognized. Later, while describing the new *Hesperoxiphion huilense* Rav. from Colombia, I provided a key to the five species of *Hesperoxiphion* (Ravenna 1979). A new genus (Ravenna in prep.), based on *Cypella craterantha* Rav., will further clarify the generic concepts in these seemingly allied entities.

Studies in living material from all the known species of *Cypella* s. str. revealed the existence of definite subgroups, which could be morphologically defined as sections. One is described below.

Sectio Nais Ravenna sect. nov.

A sect. *Cypella* perigonio late urceolato et laminis tepalorum interiorum unguiculis minoribus haud canaliculatis sed latiuscule depressis recedit.

Species typica: *C. aquatilis* Rav.

The name alludes to Naïs, the nymph of the rivers and water springs. Other species included: *C. crenata* (Vell.) Rav. and *C. pusilla* (Link, Klotzsch et Otto) Benth. et Hook.f.

Cypella aquatilis Ravenna sp. nov.

Orig. coll.: Ravenna 1037 (Herb. Ravenna holotype, RB isotype). – Fig. 1.

A caeteris *Cypellae* speciebus habitu submerso inflorescentia tantum ex aquam surgens, foliis late plicatis subobtusis, laminis tepalorum exteriorum unguiculis brevioribus differt.

Plant up to 30–50 cm high. Bulb ovoid, 17–22 mm long, 15–24 mm wide, covered by few, dark brown, dry tunics. Basal leaves 2–3 at anthesis, 15–30 cm long, 11–25 mm broad, bright green, broadly plicate, flaccid, often obtuse. Stem cylindrical, foliose; lower leaf similar in size to the basal ones, long-sheating, 15–30 cm long, the rest gradually reduced to bracts, and each one bearing a plantlet after anthesis. Spathes several, herbaceous, bivalved, 2-flowered; lower valve 18–21 mm long; the upper one 25–31 mm long, with membranous

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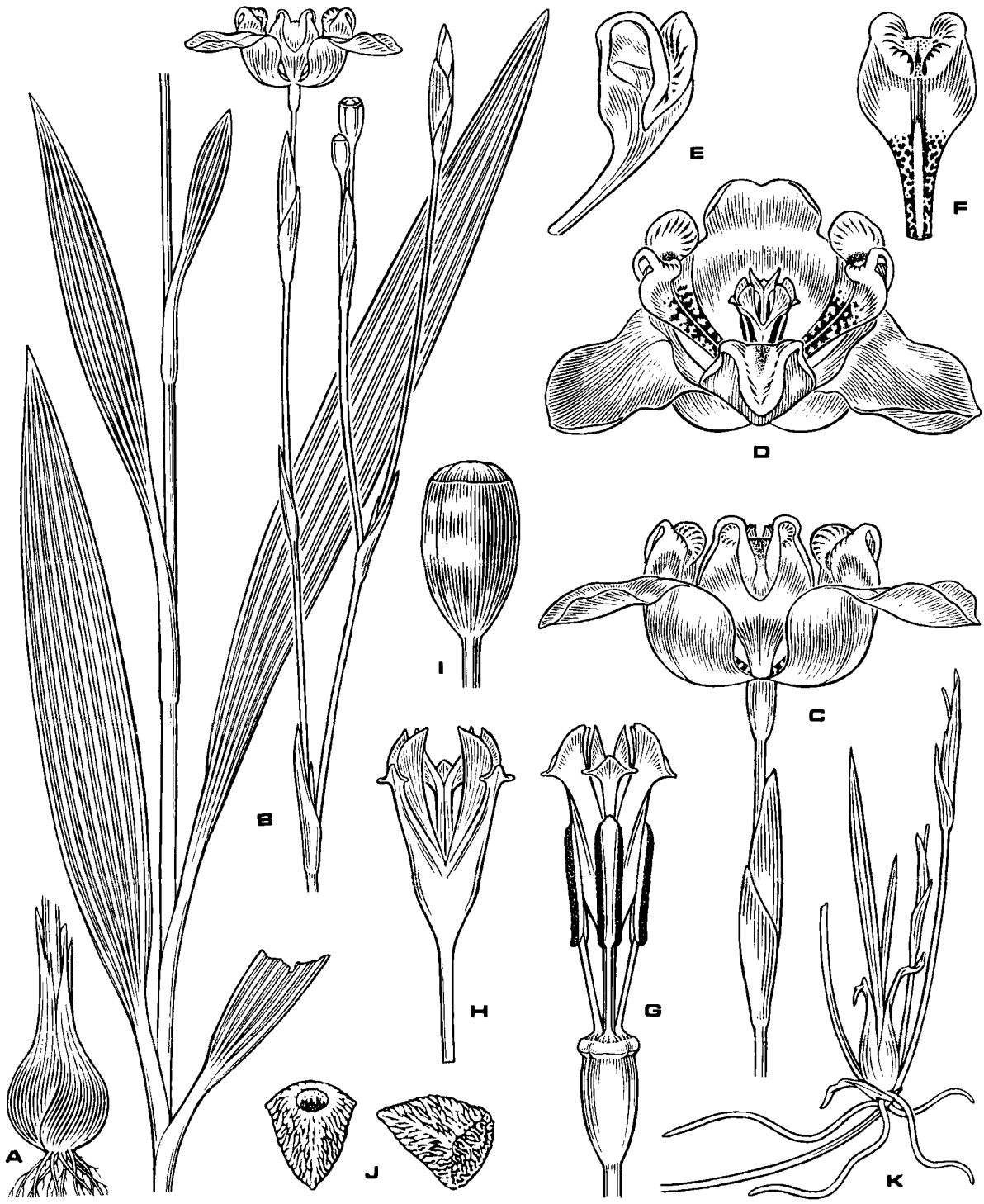


Fig. 1. *Cypella aquatilis*. A. Bulb (ca. × 0.7). – B. Flowering plant (ca. × 0.5). – C. Side view of spathe and flower, about natural size. – D. Upper-oblique view of flower, about natural size. – E. Inner tepal, side-abaxial view (ca. × 2). – F. Inner tepal, adaxial view (ca. × 2). – G. Flower with tepals removed showing androecium and gynoecium (ca. × 3). – H. Style and style arms (ca. × 3). – I. Capsule (ca. × 2). – J. Seeds (ca. × 6). – K. Vegetative proliferation in the inflorescence (ca. × 0.5). S. Magno del.

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edges. Pedicels filiform, 26–34 mm long. Flower erect, bright yellow. Ovary obovate-clavate, 3–3.9 mm long, 2–2.5 mm wide. Perigone markedly urceolate, 35–50 mm wide. Outer tepals pandurate, 30–40 mm long, 17–22 mm broad, concave for 17 mm, with diminutive dark red streaks and points. Inner tepals geniculate-recurved, 18–22 mm long, 11–14 mm broad; the claws with glandular hairs, marked by a central yellowish white streak and many diminutive streaks and spots; the blade markedly depressed at the middle and reflexed; the depressed area covered by dense, oblong, diminutive glands (elaiophores) and bordered by purple black, oblique streaks; the apex yellow, acute. Filaments free, almost filiform, yellowish, to 3 mm long, slightly enlarged below. Anthers linear-oblong, 5.3–7 mm long, often abortive, if so, narrowly linear; pollen almost black or sometimes yellow. Style 5.5–6.7 mm long. Style arms suberect, the inner face yellow, the outer face angular, whitish, concrescent for 2 mm, then 5.2 mm long; crests three, the abaxial small, often almost square and emarginate, 0.5–0.6 mm long; adaxial ones wing-shaped, to 2 mm long. Capsule obovate-clavate, pale green excepting the dark green opercles, 13–16.5 mm long, 7–9.5 mm wide, shortly trivalved when dehiscent. Seeds angled, brown, 2.8–3.2 mm long, the micropyle often distinct. Chromosomes: 2n = 14.

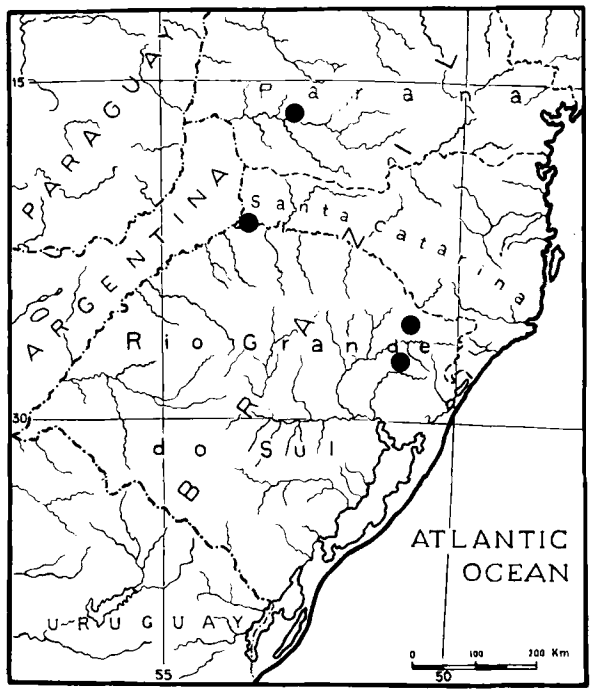


Fig. 2. Collecting sites of *Cypella aquatilis*.

Habitat. The species inhabits certain streamlets, small rivers, and flooded river-banks, in the Brazilian states of Río Grande do Sul, Santa Catarina, and Paraná. In the former State, the plant is found in the sandy bottom of clear water-courses. Along the banks, and close to the water, several Cyperaceae, Gramineae, Juncaceae, and the stout *Phalocallis coelestis* (Irid.) occur. In the nearby fields, its congeneric *C. exilis* (see below) is found scattered.

Life cycle. The plant is an evergreen, renewing its leaves preferably in spring. Inflorescences arise in late spring, producing a great number of flowers through the summer. About 70% of the stamens are abortive. After anthesis is over, a plantlet is produced at the axil of each leaf or bract. When the stem tumbles and rots under water, the new plants are carried by the current to root in a new place. Reproduction by seed seems to occur as well.

Collections. Brasilia, Río Grande do Sul, Vila Oliva pr. Caxias, in rivo ad rupes fluitans, sterilis; leg. Rambo 30918, 2. Jan 1946 (PACA). Faz. da Ronda per. Vacaria; leg. Rambo 34747, 3. Jan 1947 (PACA). Santa Catarina, mun. Itapiranga, river banks by Rio Uruguay, 3–4 km west of Itapiranga, ca. 27°10′S, 53°44′W, alt. 200–250 m; leg. L. B. Smith and R. M. Klein 13156, 11 Nov 1964 (HBR). Paraná, mun. São Jorge do Oeste, Rio Iguaçú, Salto Osório; leg. Hatschbach 20533, 7. Dec 1968 (Herb. Hatschbach, Herb. Ravenna). Culta in Bonaria ex bulbis in rivulo ad Faz. da Ronda pr. Vacaría civit. Rio Grande do Sul Brasiliae collectis; leg. Ravenna 1037, January 1970 (Herb. Ravenna, RB).

Two specimens of the new species, from Vila Oliva and Fazenda da Ronda, Rio Grande do Sul, respectively, were discovered in 1964 in Rambo's herbarium, at São Leopôldo. The material from Santa Catarina and Paraná, was received a few years later. In 1965, a first attempt to find the plant at Vila Oliva failed; but searches at the second location the subsequent year were successful. Bulbs were introduced in the author's experimental collection, then at Buenos Aires, Argentina. It is quite possible that in the future the species could also be found in the latter country.

Discussion of characters. Cypella aquatilis is related to *C. crenata* (Vell.) Rav., a rare species from the bogs of south-eastern Minas Gerais, Brazil. The species are similar in the widely urceolate perigone, and the morphology of the inner tepals. The latter, however, is a slender plant with extremely narrow leaves. *C. herbertii* (Lindl.) Herb., another species that prefers damp places, differs from the present by the narrow, acute leaves, and the shape of the outer and inner tepals.

This is the only species proliferating by plantlets born on the inflorescence, and the only in the family with a submerged habit. In America, a number of *Trimezia* species, especially those previously included in *Neomarica* (see Ravenna 1977), produce plantlets on the flower stalk. Another amazing case is found in the

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ill-named *Tigridia bracteolata* (Kl.) Macbr., where every leaf and bract axil produces a brachyblast with several diminutive bulblets. The spike of the African *Watsonia bilbillifera* L. Bolus, produces a great number of cormlets.

Horticultural uses. The plant is highly indicated for aquaria. It also can be cultivated in partially immersed pots, and placed in a light situation of the greenhouse; it will not thrive well outdoors in any climate. The better mixture to be used is white river-sand, with the addition of 1/5 or 1/4 of vegetable mould.

Cypella exilis Ravenna nom. nov.

Polia gracilis Klatt, Linnaea 31: 545, 1862. – *Cypella gracilis* (Klatt) Baker, J. Linn. Soc. Bot. 16: 129, 1877, nom. illeg.

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