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Eriopsis wercklei

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Tribe Cymbidieae
Sutribe Eriopsidinae
Genus Eriopsis *Lindley*

Eriopsis wercklei Schltr., Repert. Sp. Nov. Regni Veg. 16: 447. 1920.

TYPE: Costa Rica, San José, Corillo (Carrillo), 300 m, *Wercklé s.n.* (holotype: B, destroyed; lectotype: designated by Pupulin, 2010, tracing of Schlechter's drawing of the holotype, AMES 24701).

An epiphytic large, erect *herb* ca. 50 cm tall. *Roots* white to brownish, velamentous, smooth, to 5 mm in diameter. *Pseudobulbs* congested, robust, semispherical to pyriform, surface deeply rugose, with scarious sheats, often dark to blackish, 5–16 cm long, ca. 4 cm in diameter, 2–3 leaved near the apex. *Leaves* oblong-elliptic, subpetiolate, coriaceous, plicate-veined, up to 48 cm long and 7.5–8.0 cm wide. *Inflorescence* racemose, lateral, from the base of the pseudobulb, erect or nearly so, subdensely many flowered, shorter than or more commonly exceeding the leaves, up to 50–60 cm long; peduncle provided with several remote, short, deltoids sheaths. *Flowers* medium-sized, glabrous, showy, on a slender pedicellate ovary, yellow or orange with brownish or purplish-margined sepals and petals, the lip whitish with purple spots, the column yellow from a green base. *Dorsal sepal* elliptic oblong or ovate-oblong, concave, obtuse, about 1.5 cm long and 0.8 cm wide. *Lateral sepals* similar to the dorsal sepal but a little shorter and broader, ovate-oblong, slightly oblique. *Lip* suborbicular-ovate or reniform-ovate, concave, distinctly trilobed, a little shorter but much broader than the other segments, about 1.2 cm long and 1.7 cm wide when expanded; lateral lobes ample, incurved, broadly semiovate; midlobe small, retuse or bilobed; disc provided with a large callus at the base consisting of a pair of extrorse, broad, semirhombic lamellae within which is a pair of narrow, fleshy, serrulate lamellae and with a pair of more or less separate, smaller, verrucose-dentiform calli in front. *Column* terete, arcuate, subclavate above, with a short foot, about 1 cm long. *Anther cap* operculate, suborbicular, two-celled. *Pollinia* four in two pairs of different size, dorsiventrally superposed, with a well-developed viscidium, subquadrate, hyaline, on a short tegular stipe.

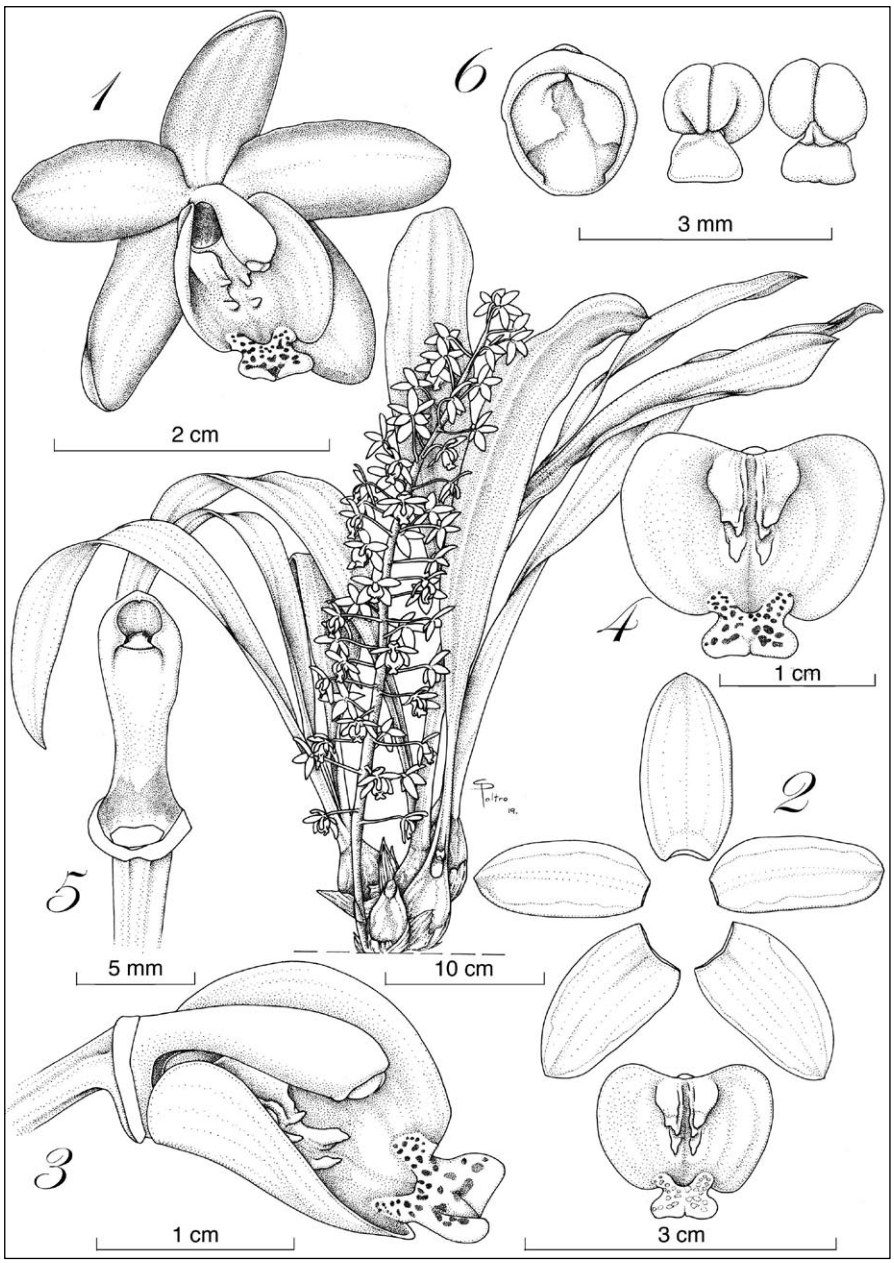
The genus *Eriopsis* is a group of epiphytic, lithophytic or terrestrial orchids first described by the English Botanist John Lindley in 1847. Nevertheless, specimens of *Eriopsis* had been collected long before, probably in the late 1770s and remained unidentified until recently (Romero et al. 2015). The type species is *Eriopsis biloba* described from a plant without locality, supposed to be of "western" origin (Lindley 1847). The name *Eriopsis* is derived from the name of another genus of Asian orchids, *Eria* Lindl., and the greek *opsis*, "having the appearance of," in reference to the vegetative similarity of the two genera (Lindley 1947). The species of this genus are distributed in tropical America from Costa Rica to Peru and Brazil (Ortiz 1991).

The relationship of *Eriopsis* with other orchids has always been controversial, because the morphology of the genus seems to combine features of several diverse groups. Initially, the structure of the pollinarium suggested a position in the vandoid orchids, probably close to the Maxillariinae (Lindley 1947). Reichenbach (1863) placed the genus in the Zygopetalinae, and Dressler (1981) included it in the Cyrtopodiinae based on flower and pollinarium structure. Later on, this same author suggested that it might deserve a separate subtribal status, which was later formally proposed by Szlachetko (1995) in creating Eriopsidinae, with the sole genus *Eriopsis*. Chase and collaborators (2003) included Eriopsidinae in Cymbidieae, a phylogenetic placement later confirmed by the unpublished data that Neubig, Whitten and coworkers obtained from their expanded molecular analyses (including nrITS/*matK*/*ycf1)*. The resulting phylogenetic trees recovered the isolated placement of Eriopsidinae within Cymbidieae, as sister to all the rest of the American groups within the tribe, and in this way the subtribe is treated in *Genera Orchidacearum*.

Geographically, *Eriopsis* ranges from Guatemala and Belize in Central America south to the western Andes of Peru and also in the lowlands of Amazonia in Venezuela, Colombia, Ecuador, Peru, Bolivia and Brazil in South America. The diversity of the genus has been long misunderstood. In the past, the number of accepted species varied greatly from treatment to treatment (Dressler 2003, Whitten and Pridgeon 2009, Romero et al. 2015). The name *Eriopsis biloba* has been broadly applied and some authors often attributed the variability in vegetative and floral morphology only to environmental conditions, treating most of the other names as synonyms (Romero et al. 2015). This confusion may be due to the fact that *Eriopsis biloba* is locally common and well documented (it is, for example, a dominant orchid on the summit of Auyan-tepui in southern Venezuela), while other species such as *Eriopsis rutidobulbon* and *Eriopsis sprucei*, less so, and the rest of the taxa are rare and poorly known (Romero et al. 2015).

Romero and collaborators (2015) recognized seven species in the genus. Two groups of species can be easily told apart, both in the field and the herbarium, based on the structure of the compound callus placed at the base of the labellum. The first group, which exhibits a callus with two parallel lamellae, includes *Eriopsis sceptrum* and *Ess. sprucei*, while the second group — with a callus with at least four rows of longitudinal lamellae — includes *Ess. biloba*, *Ess. rutidobulbon*, *Ess. wercklei* and *Ess. escalerensis*, plus an additional species from the Andes that is still undescribed because of the lack of sufficient data available (Romero et al. 2015).

Although usually considered a later synonym of *Eriopsis biloba* (Schweinfurth 1960), or *Eriopsis rutidobulbon* (Dressler 2003), *Ess. wercklei* is probably the correct name to apply to Central American populations, which consistently differ from their South American counterparts in the much larger size of the floral segments (Pupulin 2010), the epiphytic habit and the shape of the pseudobulbs, and also by the pattern of the calli on the labellum (Romero et al. 2015). It is distributed through the Atlantic slopes of Costa Rica



Eriopsis wercklei. The plant.
1. Flower.
2. Dissected perianth.
3. Column and lip, lateral view.
4. Lip, adaxial view.
5. Column, ventral view.
6. Anther cap and pollinarium (dorsal and ventral views).
Drawn from JBL-09953 by Sara Poltronieri.

and Panama, and possibly Colombia, where it is usually found as an epiphyte on thick trunks and branches of high trees (Romero et al. 2015).

Eriopsis werklei was described by Friedrich Richard Rudolf Schlechter (1872–1925), and named after the collector, Karl Werklé (1860–1924), who actively collected plants in Costa Rica during the first decades of the last century. Schlechter was an outstanding German botanist who described more than a thousand orchids. Of these, approximately half have been reduced to synonymy with other species already described, but a careful scrutiny of Schlechter's supposed synonyms mostly reveal that his names deserve recognition as good species, and that his work meant a great contribution to the systematics of Orchidaceae. He studied horticulture and at the age of 19 he started a series of botanical explorations in Africa. In his later years he settled again in Berlin, where he obtained his doctorate and served as curator of the Botanical Museum in Dahlem until his death. His immense collection of plants was destroyed during the bombing of Berlin in 1945. Fortunately a large number of his drawings of new species where copied in Berlin, under Schlechter's supervision, for the herbarium of Oakes Ames at the Harvard University. In several cases, the traces of Schlechter's drawings, and a few isotypes that the German botanist sent to his North American colleague, allow today a clear interpretation of Schlechter's taxonomic concepts, which would have been seriously hampered by the loss of his extraordinarily rich herbarium.

The type specimen of *Ess*. *wercklei* was sent to Schlechter by Amparo de Zeledón, a pioneer of naturalism in Costa Rica who financed botanists such as Adolphe (Adolfo) Tonduz and Karl (Carlos) Wercklé, who collected more than 20,000 specimens (Quesada 2010). Schlechter described the first species of Orchidaceae based on a collection by Wercklé (*Epidendrum wercklei*) in 1906 and he dedicated 11 new orchid species to Wercklé including *Ess*. *werklei* (Pupulin 2010).

There are few data available for the pollination of *Eriopsis*. The flowers of some species have a subtle fragrance, but they do not appear to produce any nectar. Robert L. Dressler caught, in Panamá, a female of *Euglossa villosiventris* with a pollinarium seemingly of *Ess*. *rutidobulbon*, but according to a Romero et al. (2015) review, it was probably a pollinarium of *Ess*. *wercklei*. A syrphid fly of the genus *Ocyptamus*, has also been documented visiting flowers of *Eriopsis* species, where the attachment of the pollinarium to the scutellum of the fly was clearly observed. What attracted the *Euglossa* female bee and the fly is entirely unclear, therefore deception is the most likely pollination syndrome (Romero et al. 2015). Charpentier (1973) mentioned that stinging ant nests are sometimes found among the roots of *Ess*. *wercklei* in Costa Rica.

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