

A NEW *RODRIGUEZIA* (ORCHIDACEAE: ONCIDIINAE) FROM ECUADOR¹

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ABSTRACT: *Rodriguezia pulcherrima* is described and illustrated. Among the Ecuadorean species of *Rodriguezia*, *R. pulcherrima* is distinguished by the unique rhizomatous habit and elongate inflorescences up to 30 cm long. Species of *Rodriguezia* with elongate rhizomes have been recorded from Brazil, where *R. decora*, *R. obtusifolia* and *R. rigida* occur. Within this group, *R. pulcherrima* is recognized by the pink flowers with a yellow spot on the midlobe of the lip, the geniculate synsepal, the glabrous, acute, apical teeth of the column that are shorter than the stigmatic arms, the oblique stigmatic arms and the filiform stipe of the pollinarium.

DESCRIBED BY THE Spanish botanists H. Ruiz and J. Pavón (1794), *Rodriguezia* comprises about 55 species distributed in the Neotropics. The majority of the species occur in South America, specifically in the tropical wet forests of Brazil (Bock, 1988).

The genus can be recognized by the caespitose or (rarely) elongate rhizomatous habit, the psymoid seedlings developing conduplicate, coriaceous leaves when adults, the lip with a lamellar callus, the column with two conspicuous stigmatic arms and two teeth at apex, and the nectary made up from the fusion of the lip base, the sepals, and the proximal portion of the column (Chase, 1986).

When Lindley described the genus *Burlingtonia* in 1837, based on *Burlingtonia candida* Lindl., he stated that “in many aspects it agrees with the genus *Rodriguezia*,” especially in the synsepal, the lip with a horn at base and the similar shape of the pollinarium. However, the membranaceous and convolute flowers, the sepals and petals unguiculate, a long, slender column, and the two-lobed lip longer than the other flower segments convinced Lindley (1837) to treat *Burlingtonia* as a genus apart from *Rodriguezia*. Under this concept, he included *B. venusta* (Rchb.f.) Lindl., *B. fragrans* Lindl. (= *R. venusta* Rchb.f.), *B. rubescens* Lindl. (= *R. batemanii* Poepp. & Endl.) and *B. rigida* Lindl. ex Lehm., all with elongate rhizomatous habit. Later, Reichenbach (1852) transferred the former species to the genus *Rodriguezia*. Phylogenetic studies in the Oncidiinae support this conclusion and show *Rodriguezia* as a monophyletic genus closely related to *Comparettia* Poepp.

& Endl., *Ionopsis* Kunth, *Notylia* Lindl., *Scelochilus* Klotzsch., *Stigmatorthos* M.W.Chase & D.E.Benn. and *Sutrina* Lindl., which make up the *Rodriguezia* Alliance (Williams *et al.*, 2001). A general systematic revision of the taxa belonging to *Rodriguezia* has been published by Bock (1988, 1997; and references therein).

Ecologically, most of the species of *Rodriguezia* are twig epiphytes, growing in exposed conditions and disturbed areas, frequently on *Citrus* spp. (Rutaceae), *Coffea* spp. (Rubiaceae), *Crescentia* spp. (Bignoniaceae), *Psidium guajava* (Myrtaceae) and *Theobroma cacao* (Sterculiaceae). *Rodriguezia* species usually have caespitose plants with relatively short inflorescences, but three Brazilian species (namely, *R. decora*, *R. obtusifolia*, and *R. rigida*) show a distinctive elongate rhizomatous habit and long inflorescences. Although these features of vegetative architecture should not be used to separate this group into a different genus, they are very useful in circumscribing a distinct species subset.

In Ecuador, about 10 species have been recorded (Dodson, 2004), all of them caespitose plants. Here, we describe a new *Rodriguezia* from Ecuador with a distinctive rhizomatous habit.

Rodriguezia pulcherrima Bogarín, Pupulin & Medina, *sp. nov.* TYPE: Ecuador. Esmeraldas: San Lorenzo, 1°14'58.74"N 78°50'14.28"W, 30 m, 2003, flowered in cultivation in the collection of Ecuagenera at El Pangui, 9 June 2007, *F. Pupulin* 6659 (Holotype: QCNE). (Figs. 1, 2)

Rodrigueziae rigidae (Lindl.) Rchb.f. *similis*, *floribus concoloribus albis vel pallide roseis* (vs. *albos purpureo-vittatos*), *synsepalo geniculato* (vs. *strictum*), *callo labelli macula flava* (vs. *purpuream*) *notato*, *dentibus apicalibus columnae brevioribus glabris* (vs. *ciliatis*), *brachiis stigmaticis obliquis* (vs. *horizontalia*), *stipite pollinarii filiformi* (vs. *ovatum*) *differt*; a *Rodrigueziae decora* (Lem.)

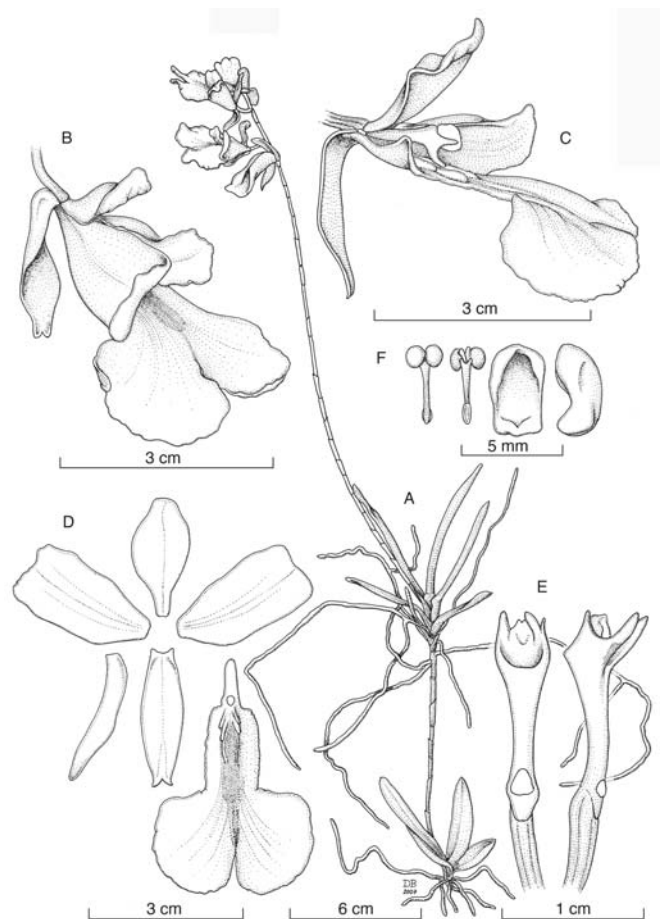
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Fig. 1. (above) The attractive flowers of *Rodriguezia pulcherrima* are white suffused with pink. The mid-part of the lip has a showy bright yellow spot. The geniculate synsepal is one of the most distinctive features to distinguish this species from the other rhizomatous *Rodriguezias*. Photograph by Franco Pupulin.

Fig. 2. (right) *Rodriguezia pulcherrima*. A. Habit. B. Flower. C. Dissected perianth. D. Column and lip, lateral view. E. Column, ventral and lateral view. F. Pollinarium and anther cap, two views. Drawing by Diego Bogarín from the holotype.



Rchb.f. sepalis petalisque concoloribus (vs. *purpureo maculata*), *sepalo dorsali late elliptico* (vs. *lanceolatum*), *petalis late oblongis truncatis* (vs. *oblanceolata acuta*), *disco labelli tribus carinis in quoque latere ornato* (vs. *quatuor*), *columna dentibus apicalibus brevioribus instructa recedit*.

Plant epiphytic, erect, with rhizomatous stem up to 40 cm long; roots flexuous, produced 1–2 cm behind the base of each pseudobulb, less than 1 mm in diameter, up to 60 cm, branching near the apex, whitish with green tips; stems elongate, with pseudobulbs produced from the rhizome at intervals of 10–12 internodes, each internode up to 7–15 mm long, with adpressed, tubular, acute papyraceous sheaths; pseudobulbs one-leaved, ovoid, laterally flattened, apiculate, 1.2–1.4 × 0.7–1 cm, concealed with leaf-bearing sheaths; sheaths several (up to 5), conduplicate, articulate with the leaves, 1.2 × 0.5 cm; leaves conduplicate, acute or obtuse to retuse, abaxially provided with a short apicule, coriaceous, subpruinose-tessellate; the apical leaf oblong to narrowly elliptic, 5.5–7 × 1–1.5 cm, the basal leaves elliptic to lanceolate, 2–3.5 × 1–1.5 cm; inflorescence lateral, racemose, distichous, arising from the base of the pseudobulbs, basally covered by



Fig. 3. *Rodriguezia candida* (syn. *Burlingtonia candida*) is the type species of the genus *Burlingtonia*. Plants of this species have caespitose habit. Its showy white flowers have a yellow-blotched lip.

leaf-bearing sheaths, up to 30 cm long; peduncle erect, up to 25 cm long covered with tubular, acute papyraceous sheaths; rachis to 5 cm long; pedicel 3 mm long; ovary cylindric, 4 mm long; flowers showy, white suffused with pink, the callus tinged with yellow, up to 4 cm long; dorsal sepal elliptic, unguiculate, subacute to obtuse, conduplicate, deeply concave at the middle, apically revolute, 2.3×1.2 cm; lateral sepals connate into a narrowly elliptic synsepal, 2.6×0.9 cm, geniculate, basally saccate, bifid, the apices free for about 1 mm, diverging; petals broadly oblong, truncate, shortly unguiculate, apically revolute, 2.6×1.4 cm; lip oblong from an unguiculate base, deeply emarginated, broadly bilobed at apex, larger than the other floral segments, the margins undulate, basally extended into a horn inserted in the saccate base of the synsepal, 4.6×3.1 cm, the disc provided with a lamellar callus, composed by three keels on each side running to the middle, the lateral keels shorter than the inner ones; column slender at the base, clavate toward the apex, provided with two stigmatic arms touching the callus and basally tinged with yellow, apically provided with two teeth on each side, tinged with magenta along the margin, basally villous, apically glabrous, 1.3×0.3 cm; stigma ventral, anther apical; pollinia 2, globose, cleft, on a filiform



Fig. 4. *Rodriguezia lanceolata* is the type species of the genus *Rodriguezia*. The Spanish botanists José Antonio Pavón and Hipólito Ruiz López described this species during their expedition to Peru and Chile in 1798.

stipe; viscidium ovate-oblong; anther cap cucullate, oblong, concave, one-celled; capsule not seen.

ETYMOLOGY: From the Latin *pulcher*, "lovely," in allusion to the beautiful flowers of this species.

DISTRIBUTION: known only from northern Ecuador in the province of Esmeraldas. The proximity of this area to the Colombian boundary suggests that this species may also occur in Nariño province in southern Colombia.

PHENOLOGY: plants in cultivation have been recorded in flower between June and July.

HABITAT AND ECOLOGY: plants of this species grow epiphytically in disturbed areas with high light and warm, humid conditions. It has been collected as twig epiphyte in *Theobroma cacao*, *Coffea* sp. and *Citrus* sp. plantations.

DISCUSSION: Among the species of *Rodriguezia* from Ecuador (Dodson, 2004), *R. pulcherrima* is the only species having rhizomatous habit and elongate inflorescences up to 30 cm long (Figs. 3, 4). *Rodriguezia* species with elongate rhizomes have been recorded only from Brazil, where *R. decora*, *R. obtusifolia* (the type, Gardner s.n., K!) and *R. rigida* (the type, Wied Neuwied s.n., K!) occur (Bock, 1995a, 1995b) (Fig. 5). Within this group, *R. obtusifolia* and *R. rigida* are similar to



Fig. 5. *Rodriguezia rigida* (syn. *Burlingtonia rigida*) was described by John Lindley in *Edwards's Botanical Register* in 1837 as "one of the many fine plants inhabiting the woods of Brazil."

R. pulcherrima; however, the latter species can be recognized by the pinkish flowers with a yellow spot on the middle of the lip, the geniculate synsepal (vs. straight in *R. obtusifolia* and *R. rigida*), the glabrous, acute, apical teeth of the column which are shorter than the stigmatic arms (vs. hairy, obtuse and longer than the stigmatic arms), the oblique stigmatic arms (vs. straight) and the filiform stipe of the pollinarium (vs. obovate). The flowers resemble some species of pink-flowered *Utricularia* (Lentibulariaceae) or the small-flowered orchid *Ionopsis utricularioides* (Sw.) Lindl.

Rodriguezia decora (Lem.) Rchb.f., another related species, is easily distinguished by the purple spotted sepals and petals, the lanceolate dorsal sepal, the oblanceolate acute petals and the hairy callus spotted with purple, made up by four conspicuous lamellar keels running forward in two rows (Fig. 6).

LITERATURE CITED

- Bock, I. 1988. Die Gattung *Rodriguezia* (Teil I). *Die Orchidee* (Hamburg) 39(4):145–150.
 Bock, I. 1995a. Die Gattung *Rodriguezia* (Teil XI). *Die Orchidee* (Hamburg) 46(1):37–43.



Fig. 6. Described under the genus *Burlingtonia* in 1852 by Antoine Charles Lemaire, *Rodriguezia decora* is a beautiful species found in Brazil. The purple spotted sepals and petals and its characteristic rhizomatous habit distinguish this species.

- Bock, I. 1995b. Die Gattung *Rodriguezia* (Teil XII). *Die Orchidee* (Hamburg) 46(3):98–102.
 Bock, I. 1997. Die Gattung *Rodriguezia* Ruiz et Pavon, (Teil XIV). *Die Orchidee* (Hamburg) 48(1):1–4.
 Chase, M.W. 1986. A Reappraisal of the *Oncidioid* Orchids. *Syst. Bot.* 11(3):477–491.
 Dodson, C.H. 2004. *Native Ecuadorian Orchids*. Volume V. *Rodriguezia—Zygosepalum*. Dodson Publishing, Sarasota, Florida.
 Lindley, J. 1837. *Burlingtonia*. *Edwards's Bot. Reg.* 23: t. 1927. James Ridgway, London.
 Reichenbach, H.G. 1852. Neue Orchideen der expedition des Herrn J. de Warszewicz. *Bot. Zeitung (Berlin)* 10: 689–774.
 Ruiz, H., and J. Pavón. 1794. *Florae peruvianae, et chilensis prodromus ...* Typis Gabrielis de Sancha, Madrid.
 Williams, N.H., M.W. Chase, T. Fulcher and M.W. Whitten. 2001. Molecular systematics of the Oncidiinae based on evidence from four DNA sequence regions; expanded circumscription of *Cyrtorchilum*, *Erycina*, *Otoglossum* and *Trichocentrum* and a new genus (Orchidaceae). *Lindleyana* 16:113–139.