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# *ADA PYGMAEA* (ORCHIDACEAE: ONCIDIINAE): A NEW SPECIES FROM ECUADOR

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ABSTRACT. A new species of the genus *Ada* from southeastern Ecuador is described and illustrated. *Ada pygmaea* apparently has no close relatives within the genus, and both its plant architecture and floral morphology are somewhat anomalous within *Ada.* The new taxon is compared with *A. brachypus,* which it resembles in the small size of the plant and the flowers, the brown tepals and the white, almost immaculate lip. *Ada pygmaea* can be easily distinguished from *A. brachypus,* however, by its rhizomatose, repent-ascending habit, the absence of pseudobulbs, the coriaceous leaves, the 1- to 2-flowered inflorescences, the distinctly smaller flowers, the ovate, truncate, ecallose lip, and the column inflated-convex at the base and provided with a well-developed, petaloid, erose-lacerate clinandrium.

RESUMEN. Se describe y se ilustra una nueva especie del género *Ada* del sureste del Ecuador. Aparentemente, dentro del género no se conocen parientes cercanos de *Ada pygmaea,* y tanto la arquitectura vegetativa así como la morfología floral son anómalas en *Ada.* El nuevo taxon se compara con *A. brachypus,* a la cual asemeja por el tamaño reducido de la planta y las flores, los tépalos café y el labelo blanco casi inmaculado. Sin embargo, *A. pygmaea* se distingue fácilmente de *A. brachypus* por su hábito rizomatoso, repente-erecto, la carencia de pseudobulbos, las hojas coriáceas, las inflorescencias de 1 o 2 flores, las flores distinctamente más pequeñas, el labelo ovado, truncado y sin callos, y la columna hinchado-convexa en la base y provista de un clinandrio petaloide bien desarrollado, con márgenes eroso-lacerados.

*Key words:* Orchidaceae, Oncidiinae, *Ada,* new species, Ecuador

## INTRODUCTION

The genus *Ada* Lindl. well exemplifies the recent improvements in our knowledge of orchid richness in the Neotropics. When Norris H. Williams prepared his excellent doctoral dissertation on the taxonomy and systematics of *Brassia* R. Br. and *Ada,* he accounted for 16 names referable to *Ada* and other Glumaceous Brassias, recognizing only eight species of *Ada* (Williams, 1971, 1972). This was, to the best of the time's botanical knowledge, our understanding of natural diversity in a genus of epiphytic plants provided with rather showy and distinctive flowers. Today, as a result of the increasing activity of botanical exploration in orchid rich South American countries with the active cooperation of local botanists, the number of species in the genus *Ada* has doubled, with most of the new taxa described in the last two decades (Dodson & Williams *in* Dodson & Dodson 1984, Dodson & Bennett 1989a, Dodson 1990, 1993; Bennett & Christenson 1994, 2001).

As presently circumscribed, *Ada* is mainly characterized among the Oncidioid orchids by the plants with small, often cryptic (sometimes absent), monophyllous pseudobulbs [with the exception of *A. allenii* (L.O.Williams ex C.Schweinf.) N.H.Williams, which has no leaf at the top] and large basal cataphylls, the numerous inflorescences per growth, the large, papery floral bracts, the flowers with elongate to caudate sepals, the lip often reflexed, the base of the column forming a cavity that does not contain nectar, and the pollinarium with a large, obdeltoid stipe, without dorsal protuberance or provided with a low, rounded keel.

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With the exceptions of the type species of the genus, *A. aurantiaca* Lindl., and the recently described *A. bennettiorum* Dodson (Dodson & Bennett 1989a), which have bright orange to red flowers and are probably pollinated by hummingbirds, the remaining species are likely pollinated by small wasps of the family Pompilidae, a group of predatory hymenopterans that visit the flowers in search of prey, as happens with Pompilidae and Scoliidae wasps that pollinate species of *Brassia.*

As shown by Williams (1972), the similarities of the flowers of *Ada* with some species of *Brassia* are superficial and likely the result of convergence driven by adaptation to the same pollination syndrome, and the two groups are not closely related. Molecular analyses by Chase & Palmer (1992) and Williams et al. (2001) support William's conclusions about the inclusion of the glumaceous Brassias within *Ada,* and the close relationship of the latter with *Mesospinidium* Rchb.f.

Although the geographical range of the genus spans to the north up to Nicaragua, *Ada* is mostly from north-western South America in distribution, with the highest diversity in the Andes of Ecuador and Peru (with 9 and 8 species respectively). However, as noted by Dodson (1990), many additional species are to be found along the western drainage of Ecuadorian and Peruvian Andes.

During the preliminary work intended for a monograph of the genus *Ada* in the Andean region (Pupulin et al. in prep.), we found a group of plants grown in the orchid collection of Ecuagenera at Gualaceo that do not fit any of the previously described species. It is somewhat difficult to assign these plants to any of the genera of the Oncidiinae. The conspicuous, glumaceous floral bracts and the small, brown flowers with the white lip abruptly replicate at the middle are reminiscent of *Ada,* but the lip lacks the typical, basal, more or less parallel ridges and teeth of the latter genus. The stout column is basally inflated, but unlike species of *Ada* the ventral base of the column is not concave and presents a thick, rounded, protruding mentum; furthermore, the petaloid clinandrium is deeply erose-lacerate. The structure of the lip and the column of the new taxon suggest a rather different pollination system compared with most species of *Ada,* but the genus as actually circumscribed already shows different pollination syndromes, ranging from mimics oriented to small predatory hymenopterans to ornithophyly. Like *Ada,* the new taxon has many basal cataphylls covering the stem and, as in some species of *Ada,* the plant is not pseudobulbous; unlike that genus, however, the leaves are thick-coriaceous and they lack the pronounced abaxial venation typical of *Ada.* The pollinarium provided with a small, elliptic viscidium and an obdeltoid stipe is typical of *Ada,* but the stipe is apically provided with a distinct ridge.

## Taxonomic Treatment

In view of the ongoing phylogenetic studies of the subtribe Oncidiinae, and the already nomenclaturally inflated taxonomy of this group, we prefer to describe the new taxon as a new and somewhat anomalous species of the genus *Ada*:

***Ada pygmaea*** **Pupulin, J.Valle, & G.Merino,** sp. nov. TYPE: Ecuador. Zamora-Chinchipe: Zumbi, 3°52′40″S 78°46′11″W, 1500–1600 m, collected by U. Medina & I. Acaro in 2001, flowered in cultivation in the collection of Ecuagenera at Gualaceo, 7 June 2007, *F. Pupulin 6653* (Holotype: QCA). FIGURES 1–2.

Herba epiphytica parva Adae brachypus Rchb.f. parum similis, sed habito rhizomatoso epseudobulboso, inflorescentiae uni- vel bi-floribus, floribus perparvibus, sepalis petalisque acutis non attenuatis, labello ovato ecalloso, columna clinandrio petaloideo marginibus laceratis facile dignoscenda.

***Plant*** herb, epiphytic, to 10 cm tall, shortly repent-ascending, without pseudobulbs, to 8 cm tall. ***Roots*** comparatively thick, flexuous, 2.5 mm in diameter. ***Stem*** erect, completely enclosed by the base of the imbricating sheaths. ***Sheaths*** conduplicate, triangular-ovate, to 2 × 1.2 cm, the lower ones papyraceous, the upper ones membranaceous, foliaceous, provided with hyaline margins. ***Leaves*** subcoriaceous, narrowly elliptic, acute, 1–5.5 × 0.5–0.8 cm, infolded at the base into a short petiole, abaxially provided with a prominent mid-nerve. ***Inflorecences*** 2–3 per growth, racemose, erect, emerging from the axils of the median and upper sheaths, 1- to 2-flowered; the peduncle terete, to 2 cm long, covered at the base by a membranaceous, conduplicate, triangular-ovate, acute, loose bract to 1 cm long. ***Floral bracts*** glumaceous, conduplicate, lanceolate to narrowly ovate, acute, loose, 5–8 × 3–4 mm, shorter than the pedicel. ***Ovary*** pedicellate, terete-subclavate, to 1.2 cm long, ventrally provided with an internal, elliptic-globose nectary at the apex. ***Flower*** spreading, 1.2–1.5 cm in diameter, the sepals and petals chestnut brown, apically flushed with yellowish-green, the lip white, the column white, flushed brownish green at the base. ***Sepals*** subsimilar, lanceolate, acute, shortly acuminate, slightly concave, the laterals obscurely asymmetrical, 7–7.5 × 2.5–3 mm. ***Petals*** elliptic-oblanceolate,

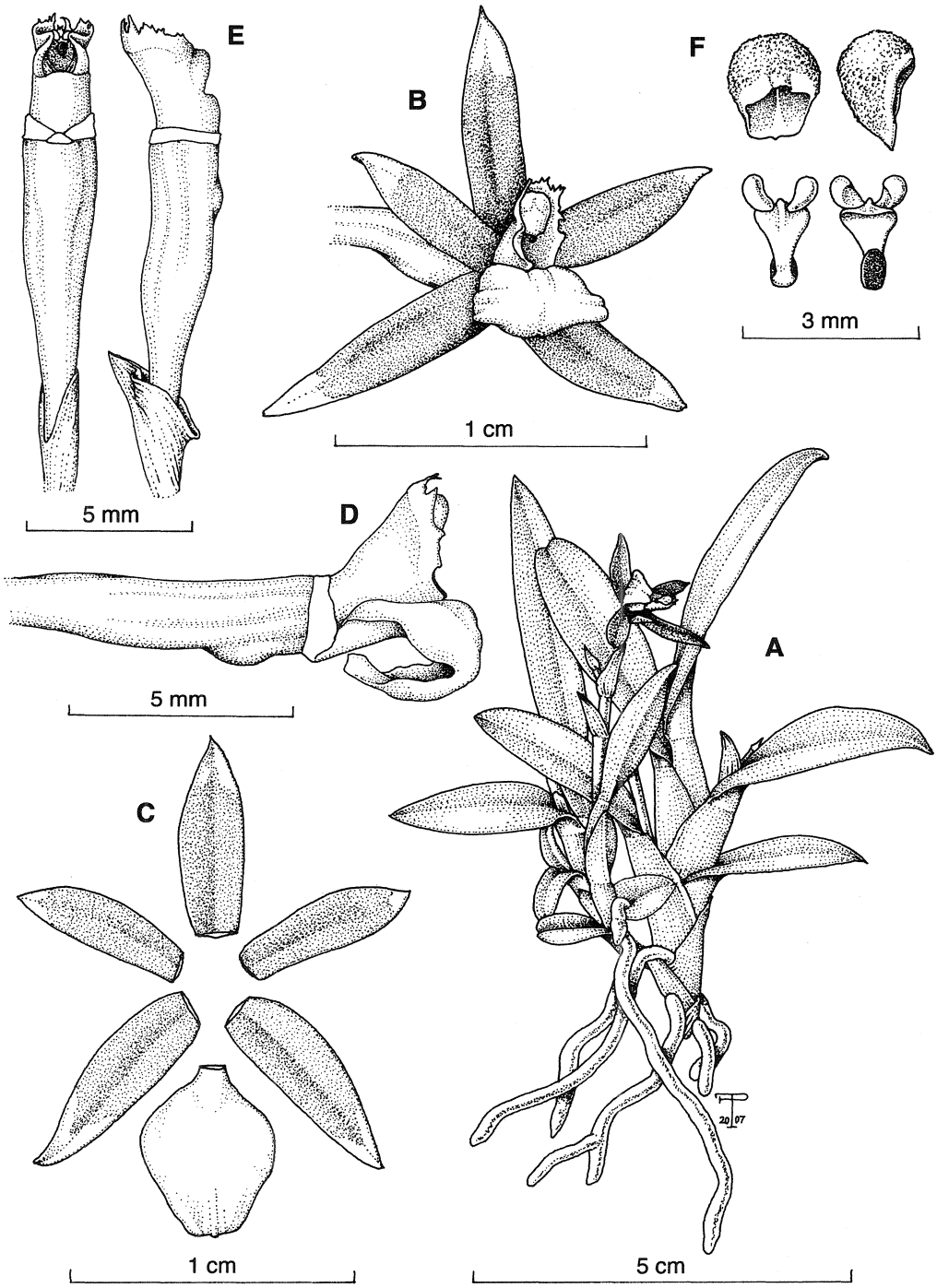


FIGURE 1. *Ada pygmaea* Pupulin, J.Valle, & G.Merino. **A.** Habit. **B.** Flower. **C.** Dissected perianth. **D.** Column and lip, lateral view. **E.** Column, ventral, and lateral views. **F.** Anther cap (adaxial and lateral views) and pollinarium (dorsal and ventral views). Drawn by P. Pupulin from the holotype.

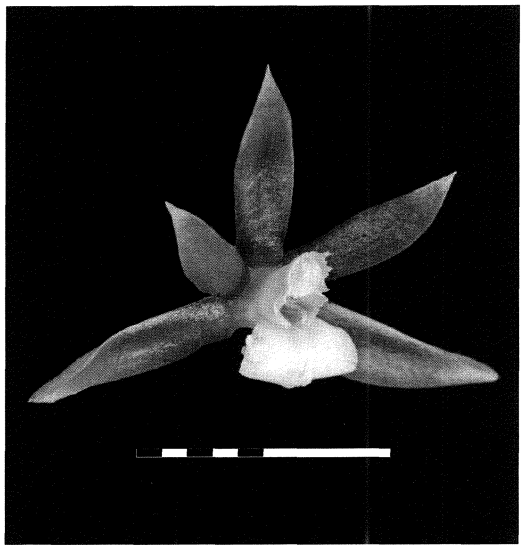

FIGURE 2. *Ada pygmaea.* Flower of the plant that served as the holotype. Scale bar = 1 cm.

acute, slightly concave toward the base, 6 × 2 mm. ***Lip*** shortly unguiculate, ovate, truncate, with a rounded apicule at apex, 6 × 4.5 mm, abruptly reflexed at the middle, abaxially provided with a distinct mid-nerve ending into a prominent keel. ***Column*** short, stout, obtriangular-inflated toward the apex, provided with a hooded, minutely lacerate, ventrally constricted clinandrium, forming a conspicuous, rounded mentum, apparently without nectar, at the base, to 4 mm long, 2 mm wide, 3 mm high at apex; the stigma elliptic-obcordate. ***Pollinia*** 2, obovoid-subreniform, slightly flattened, on an obdeltoid, hyaline stipe provided with a low, abaxial, apical keel; viscidium elliptic, orange-brown.

**Distribution.** Known only from the type locality in southern Ecuador.

**Etymology.** From the Latin *pygmaeus,* "pygmy, dwarf," in allusion to the diminutive size of the plant and the flowers.

**Ecology.** *Ada pygmea* grows in premontane to submontane cloud forests along the eastern drainage of southern Ecuadorian Andes, at 1200 to 1800 meters elevation. Plants of *A. pygmaea* are usually found rooting in mosses and lichens on the high branches of the primary forest canopy, where they form large populations in open shaded positions. Flowering occurs from May to July.

## DISCUSSION

*Ada pygmaea* has apparently no closely related species within the genus. Among the known taxa, it is most similar to *A. brachypus* Rchb.f. (Reichenbach 1875), which it resembles in the small size of the plant and the flowers, the brown sepals and petals, and the white, almost immaculate lip. The similarities between the two species are, however, superficial. The plants of *A. pygmaea* are rhizomatose, repent-ascending (vs. caespitose in *A. brachypus*), lacking pseudobulbs (vs. present), the leaves are coriaceous (vs. thin-herbaceous), the inflorescences are 1- to 2-flowered (vs. mostly 3-flowered), the flowers are distinctly smaller (sepals < 1 cm vs. > 2 cm long), petals and sepals are acute (vs. acuminate-attenuate), the lip is ovate, truncate (vs. elliptic, subacute), ecallose (vs. provided with two fleshy, parallel lamellae ending in blunt teeth), the column presents a well-developed, petaloid clinandrium with erose-lacerate margins (vs. clinandrium small, subentire), and it is inflated-convex at the base (vs. concave).

### New Combination

Incidentally, when Norris H. Williams transferred the glumaceous Brassias to *Ada* (Williams 1972), he placed *Brassia brachypus* in synonymy under *A. ocanensis* and, although variously ascribed to him (Dodson & Bennett 1989b, Govaerts 2002, Dodson & Luer 2005, w³Tropicos 2007), the combination *Ada brachypus* was never published. It is therefore validated here:

***Ada brachypus*** (Rchb.f.) Pupulin, comb. nov.

**Basionym.** *Brassia brachypus* Rchb.f., Gard. Chron. 1: 136. 1875. TYPE: Ecuador. Without specific locality, *G. Wallis s.n.* (Holotype: W-*Rchb. Orch*).

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w³Tropicos. 2007. http://mobot.mobot.org/cgi-bin/search_vast. Consulted June 2007.