

NEW AND CRITICAL *MACROCLINIUM* (ORCHIDACEAE) FROM CENTRAL AMERICA¹

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ABSTRACT: Two new species of *Macroclinium*, *M. generalense* and *M. confertum*, are described from Costa Rica and distributional range of *M. bicolor* is revised. Descriptive terminology of *Macroclinium* labella is discussed.

SOME 29 SPECIES of *Macroclinium* are known today, but new species of these diminutive plants continue to appear in systematic collections from the Neotropics. However, due to the general uniformity of its floral shape and color, the taxonomy of the genus is still in disarray. Segregation of new species within the genus is generally carried out on the basis of few diagnostic characters, mainly concerning the lip and column morphology. Beside vegetative features (e.g. habit, pseudobulb shape, inflorescence type, etc.), also the adnation of the lip to the column base has proved to be a useful diagnostic character. Nevertheless, the descriptive terminology of the lip is often confused, making it very difficult to compare different taxa.

Macroclinium labella present an unusually wide morphological range. Lips may vary in shape from a linear blade, almost indistinguishable from the petals (as in *M. lineare* and *M. simplex*), to a simple elliptic, spatulate or pandurate lamina (*M. aduncum*, *M. chasei*, *M. hirtzii*, *M. mirabile*, *M. roseum*), to more complex configurations, with lateral auricles (*M. aurorae*, *M. bicolor*, *M. glicensteinii*, *M. junctum*, and others), without any callosity or with simple or complex calli, etc. In spite of such morphological variability, a characteristic common to the whole genus is the subdivision of the lip in two main parts: a proximal, distinct claw, and a distal lamina, generally presenting a more or less abruptly dilated

portion, varying in shape from oblong-elliptic to hastate-cordate to sagittate. However, this division is not always so obvious. In many cases the blade is deeply panduriform, and the lip has consequently been described as 3-lobed (Dodson, 1989a; Dodson & Vásquez, 1989) and even 5-lobed (Dodson, 1989b). In many species the lamina is in turn somewhat divided into two distinct parts, a basal, narrow isthmus with short auricles, and a cordate-dilated distal part. As an extreme variation of this scheme the proximal portion of the lamina (or the isthmus) is reduced to a long, slender, more or less linear band with two auricles at the base.

Phylogenetically it is probable that the lateral auricles of *Macroclinium* labella evolved from the basal lobes of a pandurate blade, as may be observed in *M. roseum*, *M. mirabile*, *M. pachybulbon* and *M. oberonia*. An intermediate and somewhat altered stage is represented by *M. bicolor*, *M. lezarzanum*, *M. xiphophorum*, *M. paniculatum* and *M. cordesii*, in which the lamina presents a shortly auriculate base, and a dilated anterior lobe. Following in the series are all the so-called "long-unguiculate" species, in which the isthmus of the lamina, at the base of which are inserted the lateral auricles, is continuous with the claw.

Lip structure and its parts in *Macroclinium* have largely been misinterpreted. Cogniaux (1906) described the claw of *M. roseum* as very long, geniculate at the middle and slightly nodose. The claw of *M. cordesii* has been characterized as elongate, with a biauriculate thickening at the middle (Williams, 1939; Allen, 1949). The lip of *M. manabinum* and *M. perryae* were delineated

¹ I would like to thank Dr. Robert L. Dressler and Dr. Calaway H. Dodson for their critical suggestions and corrections of the typescript and for the interesting discussions on *Macroclinium*.

as long-unguiculate, with a pair of small auricles near the base or at the middle (Dodson, 1980a, 1980b).

From a structural point of view, however, the term "claw" should be limited in *Macroclinium* to the portion of the lip below the lateral auricles. Though the term blade is generally applied to a wide, flat and spread portion of the petal, in *Macroclinium* labella it is all the portion of lip above the insertion of the auricles, independently of its width. The position of the callosities between the auricles seems to confirm such an interpretation, the general rule in the Oncidiinae being to have the callus on the disc between the lateral lobes of the lip.

Macroclinium generalense Pupulin *sp. nov.*
TYPE: COSTA RICA. Prov. of San José: Pérez Zeledón, Alto de San Juan, on short tree along the road to Dominical, November 1989, *F. Pupulin 24* (Holotype: USJ!). Fig. 1.

Species *M. glicensteinii* Atwood affinis, sed basi labelli columnae adnata et callo glabro differt.

Plant epiphytic, small, cespitose, with abbreviated rhizome. **Roots** filiform, glabrous. **Pseudobulbs** inconspicuous, complanate-ellipsoid, closely invested by 3–5 conduplicating leaf-bearing sheaths, apically monophyllous, to 0.9 cm long. **Leaves** conduplicate, laterally flattened, lanceolate to narrowly elliptic-lanceolate, acute, up to 4 cm long, 1 cm wide, the basal ones articulate with imbricating sheaths provided with broad, hyaline, scarious margins. **Inflorescence** racemose, subumbellate, with lateral, subumbellate branches produced consecutively from the last bract of the inflorescence before the rhachis, few-flowered, up to 11 cm long, provided at the base with 3–5 conspicuous, ovate, concave, acute bracts, 8–11 mm long, 5 mm wide. **Floral bracts** lanceolate, acuminate, shorter than the slender pedicellate ovary, about 4 mm long. **Ovary** pedicellate, subclavate, to 6 mm long including the pedicel. **Flower** small, with white, hyaline sepals, petals pale rose spotted with purple, and lavender lip. **Dorsal sepal** lanceolate-elliptic, acuminate, cucullate, to 12 mm long, 3.5–4 mm wide. **Lateral sepals** oblong-lanceolate, acuminate, free, dorsally carinate, about 11 mm long, 3–3.5 mm wide. **Petals** obliquely lanceolate, acuminate, to 12 mm long, 3.5 mm wide. **Lip** short-unguiculate, sagittate,

acuminate, to 11 mm long; the claw linear, about 2 mm long, adnate to the base of the column for more than one third of its length; lamina with two short, retrorse, twisted auricles at the base and two membranous, slightly thickened, glabrous calli between the auricles; lamina with a narrowly linear-cuneate isthmus, presenting two short, retrorse, twisted auricles at the base and two membranous, slightly thickened, glabrous calli between the auricles; then gradually expanded into the distal, triangular-rhomboid portion, with irregular margins, apically acuminate. **Column** slender, abruptly dorsally reflexed at apex. **Anther** triangular, cucullate. **Pollinia** 2, pyriform, strongly complanate, on a long obtriangular, hyaline stipe; viscidium elliptic, brown.

DISTRIBUTION: Costa Rica.

ETYMOLOGY: Named from the type locality of the species in the northern part of Pérez Zeledón region, known as Valle del General.

ADDITIONAL SPECIMENS EXAMINED: COSTA RICA. Prov. of San José: Pérez Zeledón: Alto de San Juan, 11/1989, *F. Pupulin 25* (USJ!); 28/8/1991, *F. Pupulin & D. E. Mora-Retana 181* and *182* (USJ!), *F. Pupulin 183* (SEL!); vicinity of Rivas, *F. Pupulin & J. Cambronero s.n.* (USJ!, SEL!); Las Nubes de Quizarrá, *J. Cambronero s.n.* (USJ!).

The triangular-rhomboid blade of the lip, presenting two little auricles and two membranous, glabrous calli at the base, and the short claw connate at the column, easily distinguish *M. generalense* from the closest allied species, notably *M. glicensteinii* Atwood, *M. aurorae* Dodson and *M. dalstromii* Dodson. Colonies of this species were found on the lower crests of the Fila Costera in southern Costa Rica, in the northwestern end of the Valle del General, along the upper course of Río Chirripó Pacífico and on the first elevations of the Cordillera de Talamanca. *M. generalense* generally lives on short trees fully exposed to the sun, and form large but isolated colonies together with *Epidendrum porpax*, *Polystachya foliosa*, *Maxillaria sp.* and *Scaphyglottis sp.* The colonies can reach over 300 individuals on a single tree no more than 4 meters tall, and no consistent adaptations to particular zones of the canopy have been observed. The thin roots of this species are never conspicuous, and single roots usually do not exceed a length of 10 centimeters. Flower spikes arise from the axils of the basal leaves of

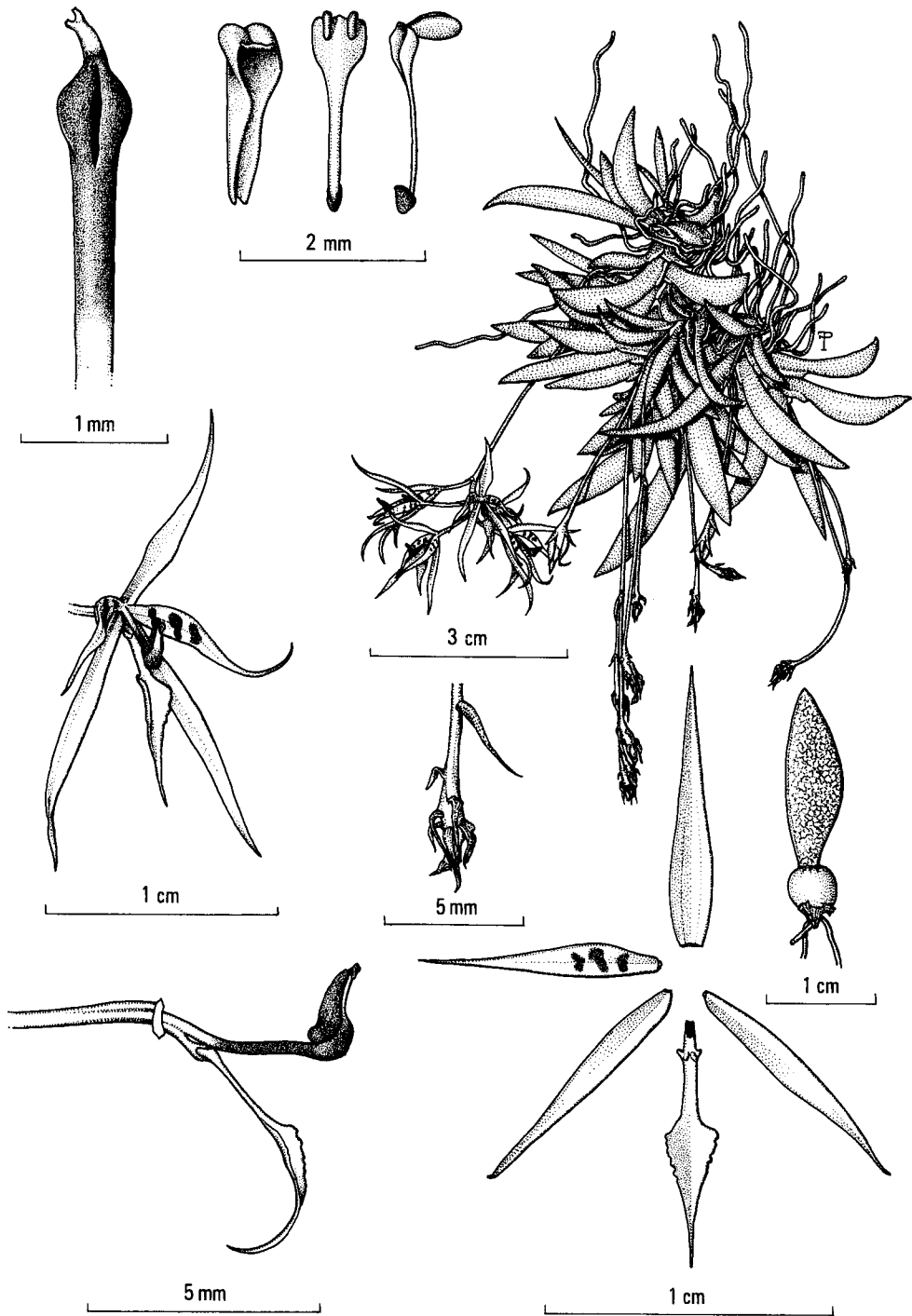


Fig. 1. *Macroclinium generalense* Pupulin. Voucher: COSTA RICA. Prov. of San José: Pérez Zeledón, Alto de San Juan, F. Pupulin 24 (USJ).

the new shoots at the beginning of the dry period, from January through March and April. Flowers are borne on a subumbellate raceme of 5–11 flowers, and secondary racemes are produced in succession from the last node of the peduncle over a long period, giving in old inflorescences the impression of a panicle composed of four or five subumbellate racemes. Production of secondary inflorescences continues consecutively for two–three months, unless pollination occurs.

Macroclinium confertum Pupulin, *sp. nov.*
 TYPE: COSTA RICA. Prov. of San José: Dota, San Marcos, road to San Joaquín (1,455 m), April 28, 1992, *F. Pupulin 204*, flowered in cultivation, July 4, 1992 (Holotype: USJ!). Fig. 2.

Species *M. ramonense* (Schltr.) Dodson affinis, sed sepalibus lateralibus in basi breviter connatis, lamina labelli e basi angustissima subito latissime ovata, antice setosa, et callo obtrullato differt.

Plant epiphytic, small, cespitose, pendent, with abbreviated rhizome. **Roots** filiform, glabrous. **Pseudobulbs** inconspicuous, ovate, subcomplanate, closely invested at the base by 3–7 conduplicate leaf-bearing sheaths, apically monophyllous, 6–7 mm long, 4.5–5 mm wide. **Leaves** conduplicate, laterally flattened, linear-lanceolate to subfalcate-lanceolate, acute, to 5.5 cm long, 0.6 cm wide, the basal ones articulate with imbricating sheaths provided with hyaline margins. **Inflorescence** racemose, pendent, many-flowered, to 7.5–8 cm long, provided at the base with 2–3 lanceolate, subulate, bracts, about 4 mm long. **Floral bracts** lanceolate, acuminate, 3 mm long, 1.5 mm wide. **Ovary** pedicellate, subclavate, to 7 mm long including the pedicel. **Flower** rather large for the plant, with white, hyaline sepals, petals pale rose to lavender, spotted with purple, and lavender lip. **Dorsal sepal** linear-lanceolate, acuminate, concave, to 16 mm long, 2.2 mm wide. **Lateral sepals** narrowly linear-lanceolate, acuminate to setaceous, somewhat concave toward the base, connate at the base for about 1 mm, 16 mm long, 1.3 mm wide. **Petals** obliquely-lanceolate, acuminate to setaceous, to 12 mm long, 1.9 mm wide. **Lip** unguiculate, the claw linear, 1 mm long, arising at the base of the column, free, 9.7–10.1 mm long, 2 mm wide at the middle of the lamina: lamina with a narrowly cuneate isthmus, presenting two triangular, deflexed, somewhat twisted auricles at the base and a thickened, ob-

trullate, glabrous callus between the auricles; then abruptly very broadly ovate, with crisped margins, apically setaceous. **Column** slender, clavate, about 4 mm long, with cuneate, acute apex. **Anther** pyriform, cucullate. **Pollinia** 2, strongly complanate, slightly concave, on a long obtriangular, hyaline stipe; viscidium elliptic, brown.

DISTRIBUTION: Costa Rica.

ETYMOLOGY: From the Latin *confertus*, “pressed close together, crowded,” in reference to the crowded flowers on the inflorescence.

ADDITIONAL SPECIMENS EXAMINED: COSTA RICA. Prov. San José: Dota, road between San Marcos and San Joaquín, *F. Pupulin 201* (living collections of Jardín Botánico Lankester).

The shortly connate lateral sepals, the blade of the lip with its very broadly ovate central portion, and the obtrullate callus at the base, easily distinguish *M. confertum* from its closest allied species *M. ramonense* (Schltr.) Dodson. This species lives in the intramountain valley of the Dota region, where it has been found on the lower twigs of a short tree at the edge of a secondary wet, evergreen forest. Other sympatric orchids include *Trichocentrum pfavii*, *Oncidium dichromaticum*, *Sigmatostalix picta* and *Encyclia ceratistes*. Flower spikes arise from the base of the new pseudobulb in late April, and 11–13 flowers are borne on a congested raceme in May and June. In many cases inflorescences are produced in pairs.

Macroclinium bicolor has been reported from Mexico, through Central America to Colombia, and Dodson (1991) recently confirmed such a wide distribution for this species. Ames (1937) listed *M. bicolor* for Costa Rica on the basis of a collection made by A. Brenes at La Palma de San Ramón. This quotation has been followed by Christenson and Barringer (unpublished) and Mora-Retana and García-Castro (1992) in their checklists of the Costa Rican Orchidaceae. However, no evidence supports the existence of *M. bicolor* in Costa Rica. An inspection of the only herbarium specimen of *M. bicolor* from Costa Rica kept at the collections of the Museo Nacional, collected by Brenes at La Palma de San Ramón in 1924 (*A. Brenes 2254*, CR!), clearly revealed that it is not referable to *M. bicolor*. Both the long claw, the two retrorse auricles and the callus at the base of the lamina, in fact, are features that do not agree with *M. bicolor*. The same

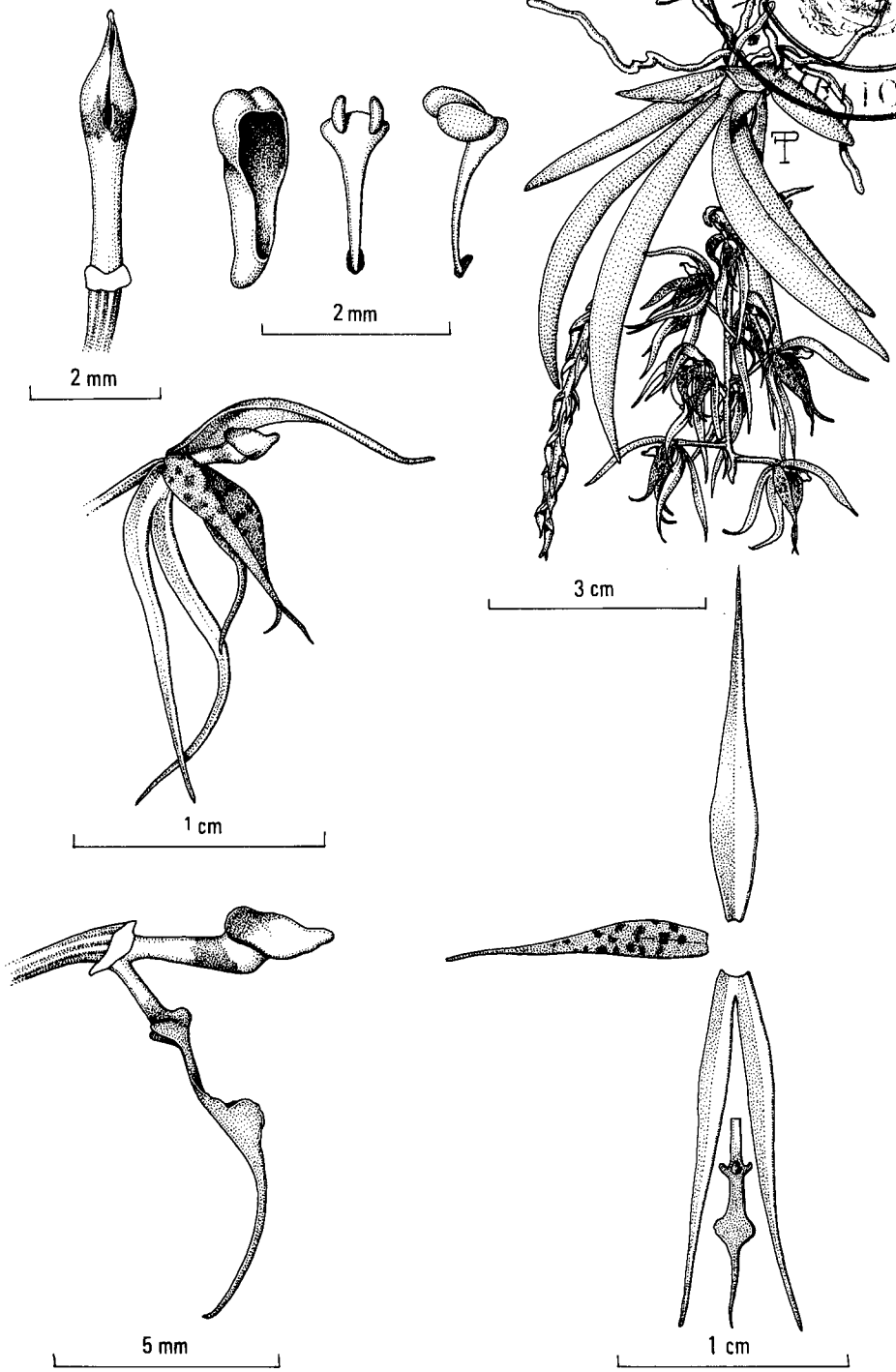


Fig. 2. *Macroclinium confertum* Pupulin. Voucher: COSTA RICA. Prov. of San José: Dota, San Marcos, road to San Joaquín, F. Pupulin 204 (USJ).

characters are clearly indicated by a good pencil sketch with *C.H. Lankester* s.n. (Nov. 8, 1952, SEL 010361!), and both of these Costa Rican specimens (from the wet slopes around La Hondura) must be referred to *M. ramonense*. At CR there is another *Macroclinium* specimen collected by Brenes in the same locality of La Palma in 1928 or 1929, determined correctly by Brenes himself as *Notylia ramonensis*.

The geographic distribution of *M. bicolor* has been extended to Nicaragua by Hamer (1985) on the basis of records from El Salvador (Hamer, 1974) and the supposed presence of this taxon in Costa Rica and south to Colombia. However, Dressler (1980) excludes *M. bicolor* from Panama, and the present status of our knowledges suggests that this species ranges only from México to El Salvador.

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