
New Combinations in South American Phaseolinae: *Dolichopsis* and *Macroptilium* (Fabaceae: Phaseoleae)

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ABSTRACT. The new combination *Dolichopsis ligulata* (Piper) A. Delgado is made from *Phaseolus ligulatus* Piper. This species is readily distinguished from *Dolichopsis paraguariensis* by its presenting the beak of the keel with a sigmoid curvature and by its western distribution in Bolivia and adjacent Paraguay. The new combination *Macroptilium ecuadoriense* (Hassler) L. Torres-Colín & A. Delgado is made from *Phaseolus atropurpureus* Sesse & Mociño ex DC. var. *ecuadoriense* Hassler, with *Phaseolus affinis* newly synonymized. Red petals borne from a tubular calyx and presence of hairs in its wing petals readily distinguish *Macroptilium ecuadoriense* from the common and widespread *Macroptilium atropurpureum* with its deep maroon petals borne from a campanulate calyx and glabrous wing petals.

Key words: Chaco, *Dolichopsis*, Ecuador, Fabaceae, *Macroptilium*, Pantanal, Phaseoleae, Phaseolinae, *Phaseolus*.

The native New World subtribe Phaseolinae comprises nine genera: *Dolichopsis* Hassler, *Macroptilium* (Bentham) Urban, *Mysanthus* G. P. Lewis & A. Delgado, *Oryxis* A. Delgado & G. P. Lewis, *Oxyrhynchus* Brandegees, *Phaseolus* L., *Ramirezella* Rose, *Strophostyles* Elliott, and *Vigna* Savi. Of these, the most diversified in terms of species is *Phaseolus*, and in the past, several species of different extant genera were originally described under it. During a phylogenetic study of *Phaseolus* (Delgado-Salinas et al., 1999), it became evident that the taxonomy of most genera needed to be worked out, and thus, the nomenclature of some requires changes, as follows:

DOLICHOPSIS HASSLER

The genus *Dolichopsis* as currently known comprises one species, *Dolichopsis paraguariensis*. This species was described by Hassler (1907), and subsequent collecting suggested that it was somewhat broadly distributed in northern Argentina, Paraguay, Bolivia, and southwestern Brazil. *Dolichopsis*

paraguariensis is ecologically and geographically unique among species of Phaseolinae by being restricted to inundated areas of the Chaco and adjacent wetlands, such as the Pantanal, Mato Grosso, and the Tucumán-Bolivian forest, and Ixiamas (Ramella & Spichiger, 1989). Combined morphological and molecular sequence analyses from both nuclear and chloroplast genomes (ITS region and *trnK* locus; e.g., Riley-Hulting et al., 2004), however, have revealed two distinct species from among these specimens of *Dolichopsis paraguariensis*. One of these is referred to as *Phaseolus ligulatus*, which was described by Piper (1926). After reviewing Burkart's (1944) complete description and figure of *Phaseolus dolichicarpus*, this species was determined to be conspecific with *Phaseolus ligulatus*. Thus, the following nomenclature and taxonomy are provided to account for these new discoveries.

Dolichopsis ligulata (Piper) A. Delgado, comb. nov. Basionym: *Phaseolus ligulatus* Piper, Contr. U.S. Natl. Herb. 22: 676. 1926. TYPE: Bolivia. Ixiamas, altitude 240 m, 19 Dec. 1921, M. Cárdenas 2000 (holotype, US; isotype, MICH).

Phaseolus dolichicarpus Burkart, Darwiniana 6: 487. 1944. Syn. nov. TYPE: Paraguay. Valenzuela (entre Villa Rica y Asunción), campos-esteros (pantanosos), mar. 1942, T. Rojas 9537 (holotype, SI not seen).

Although Piper (1926) stated that the type collection of *Phaseolus ligulatus* was made by Orland E. White, the labels on both the holotype and isotype indicate that the collector was Martín Cárdenas (his number 2000). According to Rusby (1927), both botanists collected together at Ixiamas. This is further indicated by Rusby (1927: 272), who described *Mascagnia macrophylla* from a collection at Ixiamas by M. Cárdenas (his no. 1943) on 18 December 1921, and *Dianthera graminifolia* (1927: 367) from a collection at the same locality by O. E. White (his no. 2310), collected on 19 December 1921.

The habit, foliage, and fruit of *Dolichopsis ligulata*, and to a lesser extent the inflorescence, are

similar to those of *D. paraguariensis*. The flowers of the two species, however, differ in a number of features. Most noticeably, the keel petals of *D. ligulata* have a beak that is loosely and somewhat sigmoidally curved, and the style enclosed within has an identical curvature, is distally thickened, and bears a highly compact pollen brush 2 mm long. In contrast, the incurved and upwardly ascending keel in *D. paraguariensis* encloses a style that is distally tapered and bears a loose pollen brush for well over 2 mm long. The stigma is terminal to oblique in both species, but positioned toward the front of the flower in *D. paraguariensis* due to style rotation. In *D. ligulata*, the style rotates laterally toward the right side of the flower. The fruits of both *Dolichopsis* species are broad, about 1 cm wide, and laterally compressed. The seeds are transversely oriented to the fruit length at maturity, rendering a flattened and wider pod that is distinctly unlike any other pod in the subtribe Phaseolinae.

Distribution and habitat. *Dolichopsis ligulata* occurs in Bolivia and adjacent western Paraguay, and inhabits savannas or shrublands, usually in mud or standing water around the margins of seasonal or semi-permanent ponds often associated with grasses, sedges, and such species as *Tabebuia insignis*. Flowering takes place from September to March, during the rainy season. Whereas plants of *D. paraguariensis* can be found in the same ecological setting as *D. ligulata*, there have been no reports of sympatry.

Specimens examined. BOLIVIA. **Beni:** Prov. Yacuma, Estación Biológica del Beni, cerca de la Laguna Normandía, 19 Aug. 1991, *Beck 18853* (NY); alrededor del Porvenir, 21 Sep. 1997, *Beck 24296* (MEXU); near Lake Rogagua, 4 Nov. 1921, *Rusby 1639* (NY). PARAGUAY. **San Pedro:** Alto Paraguay, Primavera, 14 June 1959, *Woolston 1097* (NY).

MACROPTILIUM (BENTHAM) URBAN

The genus *Macroptilium* comprises 18 species distributed from the southwestern United States to northern Argentina. The species are mainly climbers or creeping herbs, often confined to tropical and subtropical habitats. Fifty-five percent of all taxa are endemic to South America (Torres-Colín, unpublished).

Macroptilium is characterized in part by an indumentum of simple hairs, inflorescences with nectariferous nodes, fascicles of bracts at the base of the inflorescence, caducous floral bracts and bracteoles, corollas with conspicuous large wing petals, the left-handed one occupying the position of the standard, and keel petals with an incurved, distally hooked beak. In contrast, the closely related genus

Phaseolus differs in all of these regards, from uncinuate hairs and non-nectariferous inflorescence nodes, to persistent floral bracts and laterally coiled keel beaks. Since Urban (1928) raised *Phaseolus* sect. *Macroptilium* to the generic level, species of *Phaseolus* continue to be reassigned to *Macroptilium* in both hemispheres. Recently, two new combinations have been proposed, one in South America (Drewes & Palacios, 1994), and another in Mexico (Delgado-Salinas & Torres-Colín, 1995). While preparing floristic treatments of *Macroptilium* for different regions of the Americas, a noteworthy species still referred to *Phaseolus* has been brought to our attention, and it has become evident that there is a need to propose a new combination.

Macroptilium ecuadoriense (Hassler) L. Torres-Colín & A. Delgado, comb. et stat. nov. Basionym: *Phaseolus atropurpureus* Sessé & Mociño ex DC. var. *ecuadoriensis* Hassler, *Candollea* 1: 458. 1923. TYPE: Ecuador. Chimborazo: Riobamba, "In arenosis lapidosis (Tamaúte). Puela," *R. Spruce 5791* (lectotype, designated by Piper (1926: 458), K; isotypes, F, G, NY, W not seen).

Phaseolus affinis Piper, *Contr. U.S. Natl. Herb.* 22: 682. 1926. Syn. nov. TYPE: Ecuador. Tungurahua: El Tambo, vicinity of Ambato, May 1919, *A. Pachano 248* (holotype, NY; isotypes, 01234494 & 01044710, US photo at MEXU).

While revising the South American species of *Phaseolus*, Hassler (1923) proposed a new variety of *Phaseolus atropurpureus* Sessé & Mociño ex DC. from Ecuador. His description (1923: 458) of *P. atropurpureus* var. *ecuadoriensis* was based on three specimens (*Spruce 5791*, *Jameson 876*, *877*) without the designation of a holotype. Piper (1926: 682) later described *Phaseolus affinis* based on *Pachano 248*, suggesting a resemblance to *P. atropurpureus* and *P. longipedunculatus*, now both species in *Macroptilium*. However, Piper noted without further specification that his new species *P. affinis* could be distinguished from these two taxa now in *Macroptilium* by characters of foliage and calyx, and by the larger flowers. Piper (1926) examined all three syntypes cited by Hassler and designated *Spruce 5791* as the type of *P. atropurpureus* var. *ecuadoriensis* Hassler, listing it as examined under *P. affinis*. His action thus implied that *Phaseolus affinis* and *P. atropurpureus* var. *ecuadoriensis* were conspecific. Concerning the nomenclature of both taxa, Article 11.2 of the ICBN (Greuter et al., 2000) indicates that a name of a variety such as the name *ecuadoriensis* has no priority outside its rank; thus

Table 1. Morphological comparison of *Macroptilium atropurpureum* and *M. ecuadoriense*.

	<i>M. atropurpureum</i>	<i>M. ecuadoriense</i>
Leaf petiole length (cm)	1.5–8	1–4
Leaflet length (cm), coloration, and indumentum	1.7–9; upper surface green, lower surface canescent	2–3.9; both surfaces green, strigose
Peduncular bract length (mm)	up to 90	40–45
Inflorescence length (cm)	8–45	15–35
No. of flowers per inflorescence	10 to 36, sparse throughout axis	5 to 10, clustered distally
Persistence of bracts and bracteoles	mostly caducous in anthesis	persistent through anthesis
Calyx shape, length (mm), indumentum, and teeth size	campanulate, 50–90, canescent; teeth shorter than calyx tube	tubular, ca. 75, hispid, ferruginous; teeth longer than the calyx tube
Flower length (cm) and coloration	1.5–3, corolla deep maroon red	ca. 2.5, corolla red
Wing-petal indument	absent	present
Ovule no.	ca. 13	ca. 10
Fruit length (cm)	6–11	6–7
Pollen	prolate-spheroidal; apocolpium punctuated to foveolate, mesocolpium microreticulate; muri width ca. 0.72 μm	perprolate; apocolpium & mesocolpium punctuate; muri width 1–1.5 μm

Piper's selection of the name *affinis* was suitable at that time and valid.

Although Maréchal et al. (1978) considered *Phaseolus affinis* a synonym of *Macroptilium atropurpureum* (Sessé & Mociño ex DC.) Urban, Lackey (1983) informally recognized *Phaseolus affinis* as a species of *Macroptilium*, independent from the latter, while computing information for this taxon. Indeed, *Macroptilium ecuadoriense* is readily distinguished from *M. atropurpureum* by vegetative and reproductive characters, including pollen shape and sculpture listed in Table 1. Moreover, *Macroptilium ecuadoriense* is uniquely distinguished from all other *Macroptilium* species by its pubescent wing petals.

Distribution and habitat. *Macroptilium ecuadoriense* inhabits humid montane sites, though not necessarily at higher elevations and, according to Spruce's field notes, this plant was collected in sandy and stony soils. On the basis of the two specimens available for this study, *M. ecuadoriense* is confined to the inter-Andean valleys of the Ecuadorian Andes to the south of Quito. Such rarity and limited distribution may be one reason why this species was not incorporated in a recent catalog of Ecuadorian plants (Jørgensen & León-Yáñez, 1999).

Specimen examined. ECUADOR. *Andium Aequator*, 6 June 1876, André 3567 (NY).

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