

## FOUR NEW SPECIES OF *ADENELEUTEROPHORA* (ORCHIDACEAE, EPIDENDROIDEAE) FROM COLOMBIA

DARIUSZ L. SZLACHETKO & MARTA KOLANOWSKA<sup>1</sup>

**Abstract.** Four new species of the orchid genus *Adeneleuterophora* Barb. Rodr. are described and illustrated, based on Colombian material: *A. orozcoi* Szlach. & Kolan., *A. magnipetala* Szlach. & Kolan., *A. luteyni* Szlach. & Kolan. and *A. Szlach. & Kolan. emberana*. Their taxonomic affinities are briefly discussed. All new entities are placed within a key to identification of the Colombian species of *Adeneleuterophora*.

**Key words:** *Adeneleuterophora*, biodiversity, Colombian Neotropics, new species, taxonomy

Dariusz L. Szlachetko & Marta Kolanowska, Department of Plant Taxonomy and Nature Conservation, University of Gdańsk, ul. Wita Stwosza 59, 80-308 Gdańsk, Poland; e-mail: martakolanowska@wp.pl

### INTRODUCTION

One of many controversial issues in the systematics of Orchidaceae is generic delimitation within the subtribe Sobraliinae *sensu* Dressler (1981), which remains unresolved. The group has been subject to only a few comprehensive studies (Dudek & Tukałło 2007; Neubig *et al.* 2011); as most commonly recognized it comprises species of *Elleanthus* C. Presl., *Epilyna* Schltr., *Sertifera* Lindl. & Rchb. fil. and *Sobralia* Ruiz & Pav. All of them are usually placed within the epidendroid tribe Sobralieae, but Szlachetko (1995), based on gynostemium morphology, proposed placing *Sobralia* in the monotypic vanilloid tribe Sobralieae and all the other aforementioned genera in the epidendroid tribe Elleantheae. Not only is the tribal classification of Sobraliinae unclear; generic delimitation within *Elleanthus s.l.* has also drawn interest.

*Elleanthus* was described in 1827 by Carl Presl to accommodate plants characterized by plicate leaves distributed along the stem, terminal, a few- to many-flowered inflorescence and prominent floral bracts. More than 50 years after *Elleanthus* was established, Barbosa Rodriguez (1882) pro-

posed the new genus *Adeneleuterophora* Barb. Rodr. for species with grass-like leaves producing flowers resembling those of *Elleanthus* but in their habit similar to *Isochilus* R. Br. Due to the similarity of floral characters, the new genus, in fact its sole species (*A. graminifolia*), was quickly synonymized under *Elleanthus*. Subsequently, in 1918 Rudolf Schlechter described the monotypic genus *Epilyna* to separate *E. jimenezii*, distinguished by its conduplicate, ovate leaves, from all other *Elleanthus* relatives. This species was soon synonymized with *Elleanthus* by Schweinfurth (1937) but some orchidologists accept its generic distinctness (e.g., Dodson 1989, 1994). The last genus usually considered congeneric with *Elleanthus* is *Evelyna* originally described by Poeppig and Endlicher (1836) to accommodate plants similar in their habit to *Elleanthus* but distinguished by having a capitate inflorescence and a shortened rachis. Dudek and Szlachetko (2010) recently restituted this taxon and also proposed six new combinations within *Evelyna*.

All these problematic genera may be distinguished even without examining flowers. Plicate leaves are observed in *Evelyna* and *Elleanthus* species but the two genera differ in the inflorescence

<sup>1</sup> Corresponding author

arrangement (capitate in *Evelyna* vs. racemose in *Elleanthus*). Both *Adeneuleterophora* and *Epilyna* produce conduplicate leaves but the blade shape differs significantly (linear, grass-like in *Adeneuleterophora* vs. elliptic to obovate in *Epilyna*).

Recent studies of Colombian orchids revealed the existence of four new species of *Adeneuleterophora* in the national flora, elevating the number of its representatives recorded in the country to seven. The new entities are described here as new. Their floral characters are illustrated and information about their distribution is provided. Their taxonomic affinities are briefly discussed. All new entities are placed within a key to identification of the Colombian *Adeneuleterophora* species.

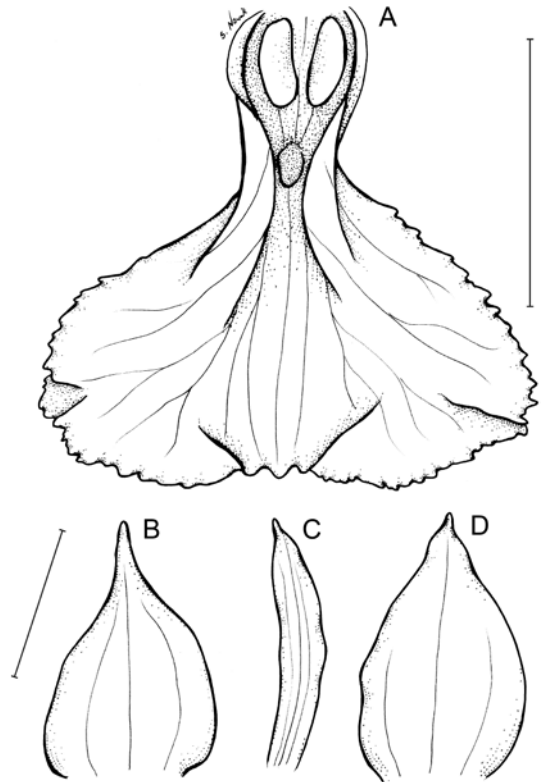
#### DESCRIPTIONS OF THE NEW SPECIES

*Adeneuleterophora orozcoi* Szlach. & Kolan.,  
*sp. nov.* Fig. 1

This species is similar in habit and flower arrangement to *Adeneuleterophora graminifolia* Barb. Rodr. but in lip form to *Elleanthus caricoides* Nash. It differs from all other species of the genus by having the basal part of the lip concave with two separated corpuscles in the cavity, squeezed above, then expanded into transversely elliptic lamina, with irregularly dentate margins.

**HOLOTYPE:** COLOMBIA, ANTIOQUIA, Mpio. San Rafael. Vereda Quebradona. Margen derecha de la Quebrada Churimo, alt. 1100 m, 14 Oct. 1981, *C.I. Orozco, J. Rivera, J.H. Torres, G. Lozano & P. Pinto 869* (COL), **ISOTYPE:** COL.

Plants caespitose. Stem to 35 cm tall, delicate, erect. Leaves numerous, up to 10 cm long and 0.15 cm wide, linear, the uppermost exceeding inflorescence. Inflorescence 2–3 cm long, densely many-flowered. Rachis glabrous. Flowers small, inconspicuous. Floral bracts up to 12 mm long, ovate-lanceolate, acuminate, glabrous, imbricating. Ovary glabrous. Sepals glabrous or sparsely furfureaceous, petals sparsely furfureaceous along mid-vein. Dorsal sepal 3.5 mm long, 1.5 mm wide, broadly ovate, acute, obscurely 3-nerved. Petals 3.5 mm long, 0.5 mm wide, linear-oblancoate, acute, falcate, 3-nerved. Lateral sepals 3.5 mm



**Fig. 1.** *Adeneuleterophora orozcoi* Szlach. & Kolan., *sp. nov.* A – lip; B – lateral sepal; C – petal; D – dorsal sepal. Scale bars = 2 mm. Drawn by S. Nowak from the holotype.

long, 1.5 mm wide, broadly ovate, acuminate, somewhat oblique, 3-nerved. Lip 3.5 mm long and wide, basal part concave with two separated corpuscles in the cavity, squeezed above, then expanded into transversely elliptic lamina, margins irregularly dentate. Gynostemium 1.6 mm long.

**PARATYPES:** VEREDA DE QUEBRADA HONDA. 4 km en aval de la desembocadura de la Quebrada Churimo en la desembocadura del Rio Guatepe, 15 Oct. 1981, *C.I. Orozco, J. Rivera, J.H. Torres, G. Lozano & P. Pinto 902* (COL); DEPT. NORTE DE SANTANDER, Region del Sarare, Cordillera Oriental. Hoya del rio Cubugon, vertientes de El Cairo, Alt. 500–700 m, 18 Nov. 1941, *Cuatrecasas 13288* (COL).

**ETYMOLOGY.** Dedicated to Clara I. Orozco, the senior collector of the type specimen.

**DISTRIBUTION.** Known from the slopes of the Western and Eastern Cordilleras of the Colombian

Andes, where it was found growing between 500 and 1100 m a.s.l. (Fig. 5).

NOTES. The new entity is similar in habit and type of inflorescence to most other members of the genus; that is, the stem is erect, delicate and flexuous, the leaves grass-like, and the inflorescence densely many-flowered with imbricating, prominent bracts. The distinctive distinguishing feature of this species is the lip. As given in the description above, it is transversely elliptic with margins irregularly dentate above the narrow, squeezed basal part. We found a similar form of the lip only in *Elleanthus caricoides* Nash but not in any species of *Adeneleuterophora*.

*Adeneleuterophora magnipetala* Szlach. & Kolan.,  
*sp. nov.* Fig. 2

This species differs from all other species of the genus by having ligulate-spathulate petals rounded at the apex, distinctly longer than sepals. The lip form is somewhat similar to *A. orozcoi* Szlach. & Kolan.

HOLOTYPE: COLOMBIA, PUTUMAYO, Mpio. Mocoa. Corregimiento de San Antonio, vereda Alto Campucana, finca La Mariposa. Vertiente amazonica de Colombia, 1°21'N, 76°38'W, Alt. 1350–1420 m, 20 Apr.–1 May 1994, J.L. Fernandez A., A. Camero, Z. Marin & E. Mesa 11248 (COL), ISOTYPE: COL.

Plants caespitose. Stem to 18 cm tall, delicate, erect. Leaves numerous, up to 6 cm long and 0.2 cm wide, linear, the uppermost exceeding the inflorescence. Inflorescence to 1 cm long, 5–7-flowered. Rachis flexuose, sparsely furfuraceous, imbricating. Flowers small, inconspicuous. Floral bracts up to 9 mm long, ovate-lanceolate, acuminate, densely furfuraceous. Ovary 3 mm long, densely furfuraceous. Sepals densely furfuraceous. Dorsal sepal 3 mm long, 1.3 mm wide, elliptic-ovate, acute, 3-nerved. Petals 4 mm long, 1.3 mm wide, ligulate-spathulate, rounded at apex, subfalcate, 2-nerved, nerves branching. Lateral sepals 3 mm long, 1.5 mm wide, elliptic-ovate, acuminate, somewhat oblique, obscurely 3-nerved. Lip 4.2 mm long, 5.1 wide, transversely elliptic above cuneate base, basal part concave with two

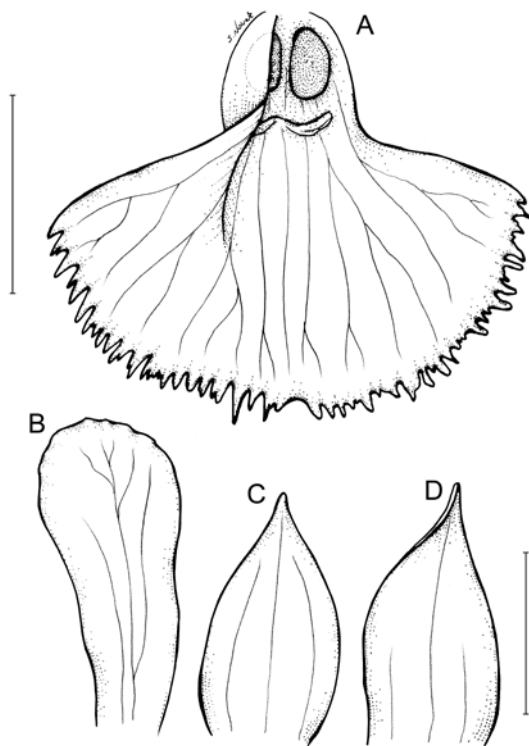


Fig. 2. *Adeneleuterophora magnipetala* Szlach. & Kolan., *sp. nov.* A – lip; B – petal; C – dorsal sepal; D – lateral sepal. Scale bars = 2 mm. Drawn by S. Nowak from the holotype.

separated corpuscles inside, margins irregularly dentate. Gynostemium 2 mm long.

ETYMOLOGY. In reference to the large petals characteristic for the species.

DISTRIBUTION. Known exclusively from the eastern slope of the southern Colombian Andes where it grows at ca 1350–1420 m a.s.l. (Fig. 5).

NOTES. One of the very characteristic features of *Adeneleuterophora* species is their narrow, linear, acute petals, which are usually agglutinate to the dorsal sepals. In some cases agglutination between petals and the dorsal sepal makes them inseparable. *A. magnipetala* differs from all other species of the genus by having ligulate-spathulate petals rounded at the apex, distinctly longer than the sepals. They are rather easily separable from the dorsal sepal. Petals longer than sepals can be found

in *A. isochiloides* (Løjtnant) Dudek & Szlach., *A. ligularis* (Dressler & Bogarín) Dudek & Szlach. and *A. poiformis* (Schltr.) Dudek & Szlach. but they are narrowly ligulate and the lip is essentially different from that in our species. The lip of *A. magnipetala* somewhat resembles *A. orozcoi* Szlach. & Kolan. described above.

***Adeneleuterophora luteyni* Szlach. & Kolan.,  
sp. nov.** Fig. 3

Species similar to *A. ligularis* (Dressler & Bogarín) Dudek & Szlach. but its petals are linear-oblongate and acute, and the lip corpuscles are large and approximate.

HOLOTYPE: COLOMBIA, ANTIOQUIA, Mpio. Frontino. Correg. Nutibara, region of Murri, Nutibara-La Blanca rd., alt. 950–1380 m, 20 Apr. 1988, *Luteyn*, *Callejas & Escobar 12134* (COL), ISOTYPE: COL.

Plants caespitose. Stem to 30 cm tall, delicate, erect. Leaves 6–7, up to 6 cm long and 0.2 cm wide, linear, not exceeding inflorescence. Inflorescence to 4 cm long, rather dense. Rachis flexuose, densely furfuraceous on inner surface, not imbricating. Flowers small, inconspicuous. Floral bracts up to 8 mm long, ovate-lanceolate, acuminate. Ovary 2.5 mm long, densely furfuraceous. Sepals with long hairs. Dorsal sepal 3 mm long, 1 mm wide, oblong-lanceolate, acute, 3-nerved. Petals 3 mm long, 0.4 mm wide, linear-oblongate, acute, subfalcate, 3-nerved. Lateral sepals 3.5 mm long, 1.5 mm wide, oblong-ovate, acuminate, oblique, 3-nerved. Lip 3.5 mm long and wide, subquadrate, truncate at apex, basal part concave with two large approximate corpuscles inside, lateral margins irregularly dentate, apical margin almost entire. Gynostemium 2.8 mm long.

ETYMOLOGY. Dedicated to James Luteyn, eminent collector of Neotropical plants and specimens of this new species.

DISTRIBUTION. Known only from the slopes of the Andean Western Cordillera where it grows between 950 and 1380 m a.s.l. (Fig. 5).

NOTES. *Adeneleuterophora luteyni* appears closely related to *A. ligularis* (Dressler & Bogarín)

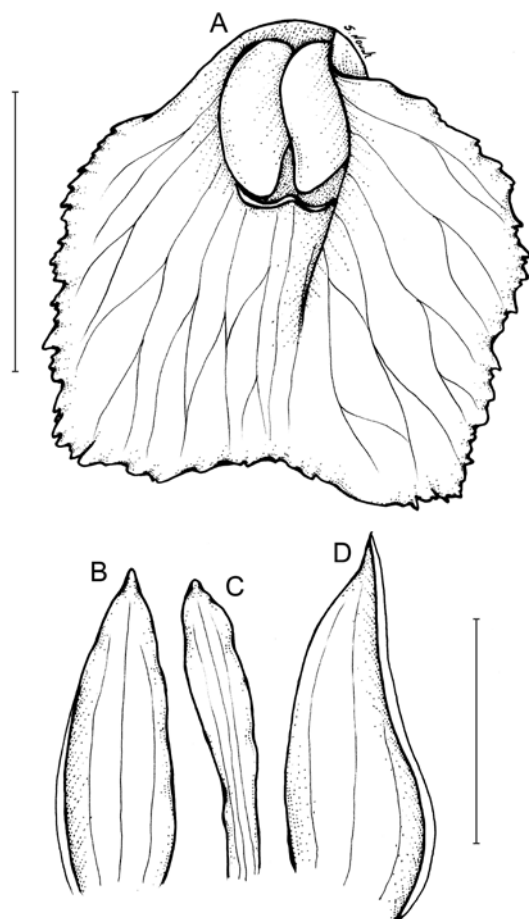


Fig. 3. *Adeneleuterophora luteyni* Szlach. & Kolan., sp. nov. A – lip; B – dorsal sepal; C – petal; D – lateral sepal. Scale bars = 2 mm. Drawn by S. Nowak from the holotype.

Dudek & Szlach. The two species are separable by habit, petals and lip details. *Adeneleuterophora ligularis* is characterized by having leaves exceeding a dense inflorescence with imbricating floral bracts. In our new species the leaves do not exceed the inflorescence, which is rather dense but the floral bracts are not imbricated basally. Petals of *A. luteyni* are linear-oblongate and acute, whereas in *A. ligularis* they are oblong-ligulate, truncate or obtuse at the apex. Additionally, the lip corpuscles of the new entity are large (ca 1/2–1/3 of lip length) and approximate, and in *A. ligularis* they are well separated and much smaller (1/5–1/6 of lip length).

*Adeneleuterophora emberana* Szlach. & Kolan., *sp. nov.* Fig. 4.

This species appears related to *A. isochiloides* (Løjtant) Dudek & Szlach. but the lip is pentagonal, attenuate towards the acute apex, with somewhat erose margins and a pair of transverse ridges in front of the lip corpuscles.

HOLOTYPE: COLOMBIA, CAQUETA, Mpio. Belen de los Andaquies. Cordillera Oriental, vertiente oriental. Corridor resurgado La Cernida, PNN Alto Fragua Indiguazi, etnia Embera Katio, 1°36'08.6"N, 75°51'49.1"W, Alt. 680 m, 4 Oct. 2007, W. Trujillo, A. Tascon & R. Alope Ch. WT968 (COAH), ISOTYPE: COAH.

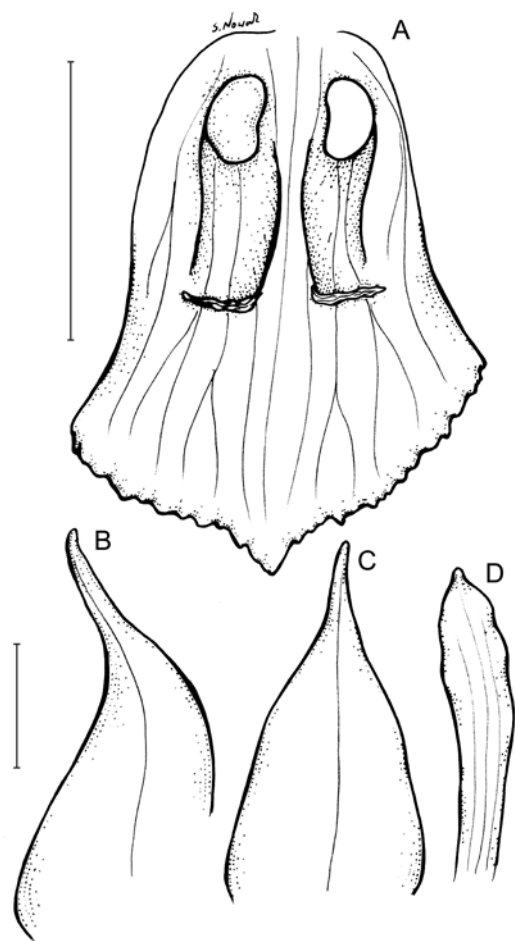


Fig. 4. *Adeneleuterophora emberana* Szlach. & Kolan., *sp. nov.* A – lip; B – lateral sepal; C – dorsal sepal; D – petal. Scale bars = 1 mm. Drawn by S. Nowak from the holotype.

Plants caespitose. Stem to 20 cm tall, delicate, erect. Leaves 4–5, up to 6 cm long and 0.15 cm wide, linear. Inflorescence to 1.5 cm long, densely several-flowered. Rachis sparsely furfuraceous on inner surface, imbricating. Flowers small, inconspicuous. Floral bracts up to 10 mm long, ovate-lanceolate, acuminate. Ovary 2.5 mm long,

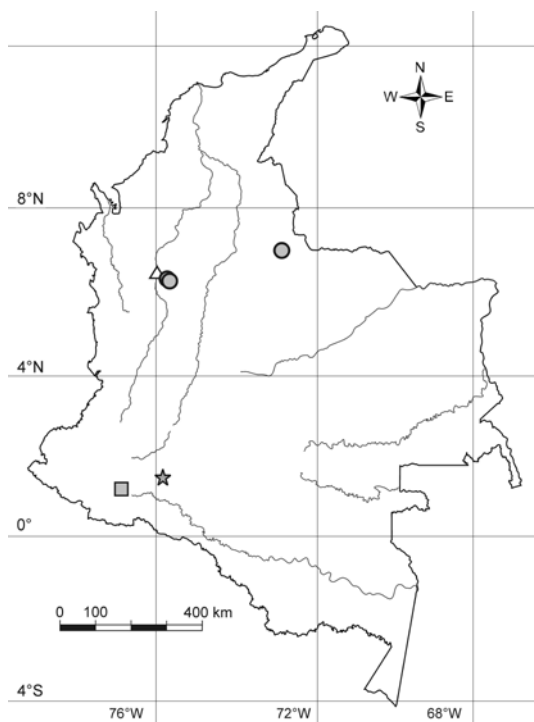


Fig. 5. Distribution of new *Adeneleuterophora* species: *A. orozcoi* Szlach. & Kolan., (circle), *A. magnipetala* Szlach. & Kolan., *sp. nov.* (square), *A. luteyni* Szlach. & Kolan. (triangle), *A. emberana* Szlach. & Kolan. (star).

densely furfuraceous. Sepals glabrous. Dorsal sepal 2.8 mm long, 1.4 mm wide, ovate-triangular, acuminate, 1-nerved. Petals 2.5 mm long, 0.4 mm wide, linear, acute, subfalcate, 3-nerved. Lateral sepals 3 mm long, 1.5 mm wide, obliquely triangular, long-acuminate, 1-nerved. Lip 2 mm long, 3 mm wide, pentagonal, acute at apex, basal part somewhat concave, corpuscles two, well-separated, lateral margins entire, apical margins shallowly and irregularly dentate. Gynostemium 2 mm long.

ETYMOLOGY. In reference to the Embera-Katio indigenous people living in the area where the type specimen was collected.

DISTRIBUTION. Known only from the Amazonian slope of the Colombian Eastern Cordillera where it was found growing at ca 680 m a.s.l. (Fig. 5).

NOTES. *Adeneleuterophora emberana* and *A. isochiloides* are similar in habit but are easily separable by the flower details, especially the lip. In the former the lip is pentagonal in outline, attenuate towards the acute apex, with somewhat erose margins. In front of the lip corpuscles are two transverse ridges. The lip of *A. isochiloides* is elliptic-ovate, rounded at the apex, with undulate margins. Its lamina is devoid of any ridges.

KEY TO THE COLOMBIAN SPECIES  
OF *ADENELEUTEROPHORA*

1. Leaves not exceeding the inflorescence ..... 2
- 1\* Leaves exceeding the inflorescence ..... 3
  2. Lip flabellate, in front with undulate margins ..... *A. fractiflexa*
  - 2\* Lip subquadrate, truncate at apex, lateral margins irregularly dentate, apical margin almost entire ..... *A. luteyni*
3. Lip longer than wide, pentagonal to oblong-obovate or elliptic-obovate ..... 4
- 3\* Lip wider than long, flabellate or transversely elliptic ..... 5
  4. Lip slightly emarginate to bilobed in front ..... *A. isochiloides*
  - 4\* Lip apex acute ..... *A. emberana*
5. Petals distinctly larger than sepals ..... *A. magnipetala*
- 5\* Petals subequal in length to sepals ..... 6
  6. Inflorescence laxly few-flowered ..... *A. linifolia*
  - 6\* Inflorescence densely few- to many-flowered ..... 7
7. Petals oblong-ligulate, apex rounded ..... *A. graminifolia*
- 7\* Petals linear-oblancoolate, acute, falcate ..... *A. orozcoi*

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