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Source: *Willdenowia*, 41(2) : 295-299

Published By: Botanic Garden and Botanical Museum Berlin (BGBM)

URL: <https://doi.org/10.3372/wi.41.41211>

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## Three new species of the genus *Takulumena* (Orchidaceae, Epidendrinae) from Ecuador and Peru

### Abstract

Szlachetko D. L., Mytnik-Ejsmont J., Dudek M. & Górniak M.: Three new species of the genus *Takulumena* (Orchidaceae, Epidendrinae) from Ecuador and Peru. – Willdenowia 41: 295–299. December 2011. – Online ISSN 1868-6397; © 2011 BGBM Berlin-Dahlem.

Stable URL: <http://dx.doi.org/10.3372/wi.41.41211>

The genus *Takulumena* of subtribe *Epidendrinae*, segregated from *Epidendrum* in 2006 by Szlachetko and co-authors with two species, *T. vazquezii* and *T. sophronitoides*, is easily distinguishable from *Epidendrum* by the monopodial type of growth and the basal, continuously growing inflorescences. Three new species of *Takulumena* from Ecuador and Peru are described, illustrated and their taxonomic affinities are briefly outlined. Two further species are transferred to *Takulumena* from *Epidendrum* and the corresponding new combinations are made. An identification key to all seven species of *Takulumena* is provided.

Additional key words: *Epidendrum*, orchids, taxonomy, Neotropics, Andes

### Introduction

*Epidendrum* L. is one of the largest genera within the subtribe *Epidendrinae* Szlach. of the orchid family. The genus comprises some fifteen hundred species, occurring from North Carolina, USA, to Argentina. Most of them are epiphytic, others are lithophytic or terrestrial plants. Members of *Epidendrum* are erect or creeping plants with small to showy flowers gathered in usually terminal inflorescence. Sepals and petals are more or less spreading and a variously shaped lip is more or less adnate to the column part of the gynostemium. The anther is terminal and incumbent, pollinia are two or four, equal or unequal in size, waxy, and laterally flattened. Species of *Epidendrum* are sympodials, but some groups are monopodial, many of them form cylindrical, multinodal pseudobulbs terminated with an inflorescence.

Szlachetko & al. (2006) described the new genus *Takulumena* with *T. sophronitoides* (F. Lehm. & Kraenzl.)

Szlach. as type of that name. Besides *T. sophronitoides*, the authors included a second, newly described species, *T. vazquezii* Szlach. & al. *Takulumena* is segregated from and closely related to *Epidendrum*, differing from the latter mainly by the monopodial growth, the small, *Vanda*-like habit with numerous, distichous, oblong leaves and the basal inflorescences that continue to grow over several years (Szlachetko & al. 2006). The flowers of *Takulumena* are medium-sized, non-resupinate and open successively. General flower morphology and the gynostemium structure are similar to those of *Epidendrum*, but they lack any calli and usually have a prominent thickened keel towards the apical part of the lip.

The molecular analyses by Hágsater & al. (2005) showed that *Epidendrum sophronitoides* F. Lehm. & Kraenzl. (*Takulumena sophronitoides*) is sister to *E. mancum* Lindl., what is hard to explain because both species are completely different in almost all aspects. Moreover,

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this relationship received only low statistical support.

Hágsater (2008: ad t. 1116), who prefers to treat *Takulumena* as an informal group within *Epidendrum*, transferred *Takulumena vazquezii* to *Epidendrum* and created the new name *E. dasyanthum* for it, as its epithet in *Takulumena* is already in use in *Epidendrum*. Hágsater (2008) also added two further species, *E. psilosepalum* Hágsater & E. Santiago and *E. rhodovandoides* Hágsater, and recognised *E. monanthum* Schltr. as conspecific with *E. sophronitoides* F. Lehm. & Kraenzl.

While collecting plants and revising herbarium material at W (herbarium abbreviations after Thiers 2008+) of *Takulumena* from Andean countries, we discovered more plants referable to that genus, among them also such of three hitherto undescribed species. These are described here as new to science. At this occasion we also summarise the differences between the species in an identification key to all seven species of *Takulumena* known to date.

## Results

### Key to the currently known species of *Takulumena*

1. Lip cordate at the base ..... 2
  - Lip truncate or rounded at the base ..... 3
2. Lip obscurely 3-lobed at the apex, margins flat, entire ..... *T. tungurahuae*
  - Lip unlobed, acute at the apex, crenulate along the margins ..... *T. sophronitoides*
3. Lip as wide as long or wider than long, obtuse at the apex ..... 4
  - Lip longer than wide, apex acute to apiculate ... 5
4. Sepals 4–5.5 mm long; lip 3 mm long, 4 mm wide . . . . . *T. rhodovandoides*
  - Sepals 7–14 mm long; lip 5.5–10.5 mm long, 7–12.5 mm wide ..... *T. psilosepalum*
5. Sepals and petals covered by woolly hairs; lip squeezed near the middle ..... *T. kuelapense*
  - Sepals and/or petals ciliate or papillate but never woolly; lip not squeezed ..... 6
6. Lip elliptic in outline, without thickened keel, evenly ciliate on inner surface ..... *T. vazquezii*
  - Lip triangular in outline with conspicuous oblong thickened keel along midnerve, ciliate only along margins ..... *T. wieslawii*

### *Takulumena kuelapense* Szlach. & Mytnik, sp. nov.

Holotype: Peru, Prov. Amazonas, a few km from Kuelap castle; epiphyte in secondary high forest, alt. 3000 m, August 2007, Szlachetko, Kubala, Kusibab, Piesik, Szmit & Mendoza Cabrera s.n. (UGDA-DLSz-spirit). – Fig. 1.

Haec species *Takulumena vazquezii* similis est sed labello anguste canaliculato, prope medium naturaliter distincte compresso et praeter margines glabro, sepalis et petalis lanigeris.

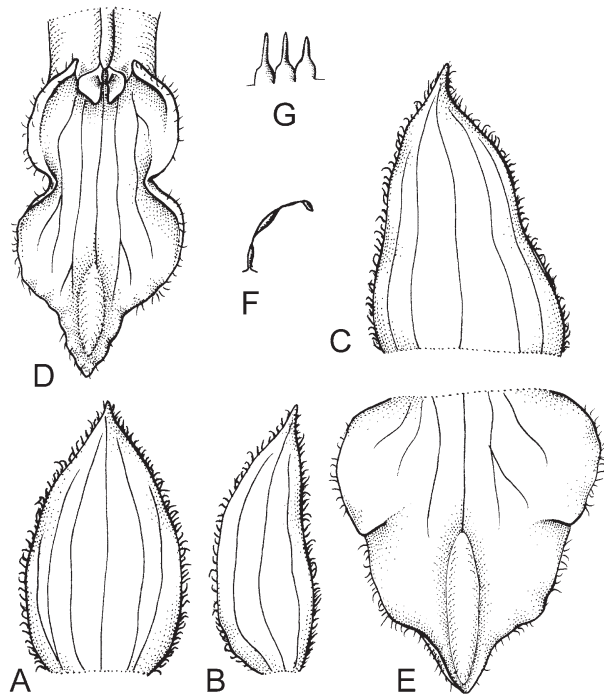


Fig. 1. *Takulumena kuelapense* Szlach. & Mytnik – A: dorsal sepal, abaxial view; B: petal, abaxial view; C: lateral sepal, abaxial view; D: lip in natural position, adaxial view; E: lip spread; F: woolly hair; G: ciliae. – Drawn by J. Mytnik-Ejsmont from the holotype.

Monopodial, erect epiphytic plants 3–4 cm tall without pseudobulbs, occasionally branching basally. *Leaves* 8, up to 4 cm long and 0.7 cm wide, linear-lanceolate, shortly apiculate at the apex, falcate, duplicate, canaliculate, coriaceous, stiff, thin. *Inflorescence* 2 cm long, 2-flowered, basal, covered almost completely by scarios, imbricating bracts. *Flowers* small, non-resupinate, salmon-pink. *Floral bracts* 10 mm long, elliptic-obovate, shortly apiculate, scarios, semitransparent, glabrous. *Pedicel and ovary* 5 mm long, glabrous. *Dorsal sepal* (Fig. 1A) 7 mm long, 4 mm wide, oblong-ovate, acuminate, densely covered by long, slightly woollen hairs (Fig. 1F) on the inner surface. *Lateral sepals* (Fig. 1C) 8 mm long, 4 mm wide, obliquely triangular-ovate, acuminate, densely covered by long, slightly woollen hairs on the inner surface. *Petals* (Fig. 1B) 6.5 mm long, 2.5 mm wide, obliquely oblong-lanceolate, falcate, acuminate, densely covered by long, slightly woollen hairs on the inner surface. *Lip* (Fig. 1D–E) 8.5 mm long, 7 mm wide at the base, triangular-obovate in outline when spread, widest near the base, distinctly squeezed near the middle in natural position, narrowly triangular at the apex, cochleate, ciliate along margins only, connate with the gynostemium, ecallose, with prominent, oblong, thickened keel along the midnerve in the apical part.

*Etymology*. — The epithet refers to the type locality near Kuelap castle in the Amazonas province of Peru.



Fig. 2. *Takulumena vazquezii* Szlach. & al. – Ecuador, type locality, August 2007, courtesy T. Kusibab.

*Notes.* — The new species is similar to *Takulumena vazquezii* (Fig. 2), but its lip (Fig. 1 D–E) is narrowly canaliculate, glabrous (except margins) and distinctly squeezed near the middle in the natural position.

***Takulumena tungurahuae* Szlach. & Mytnik, sp. nov.**

Holotype: Ecuador, Prov. Tungurahua, Vulcan Tungurahua; secondary forest along creek, August 2007, *Mendoza Cabrera s.n.* (UGDA-DLSz-spirit). – Fig. 3–4.

*Takulumena vazquezii* leviter similis est sed foliis duplo latioribus, floribus omnino glabris, labello apice obscure trilobato differt.

Monopodial epiphytic plants 6 cm tall, erect, occasionally branching basally. *Leaves* 5–6, up to 4 cm long and 0.8 cm wide, linear-lanceolate, shortly apiculate at the apex, slightly falcate, duplicate, almost flat, very thick and coriaceous, stiff. *Inflorescences* 2 per plant, 5–10 cm long, 3–8-flowered, covered almost completely by scarios, imbricating bracts. *Flowers* rather large for the genus, opening successively, non-resupinate, with fibrous vascular bundles, salmon-pink. *Floral bracts* 10 mm long, elliptic-obovate, shortly apiculate, scarios, semi-transparent, glabrous. *Pedicel and ovary* 5 mm long, glabrous. *Dorsal sepal* (Fig. 3B) 13 mm long, 5.5 mm wide, ovate, long-acuminate, completely glabrous. *Lateral se-*

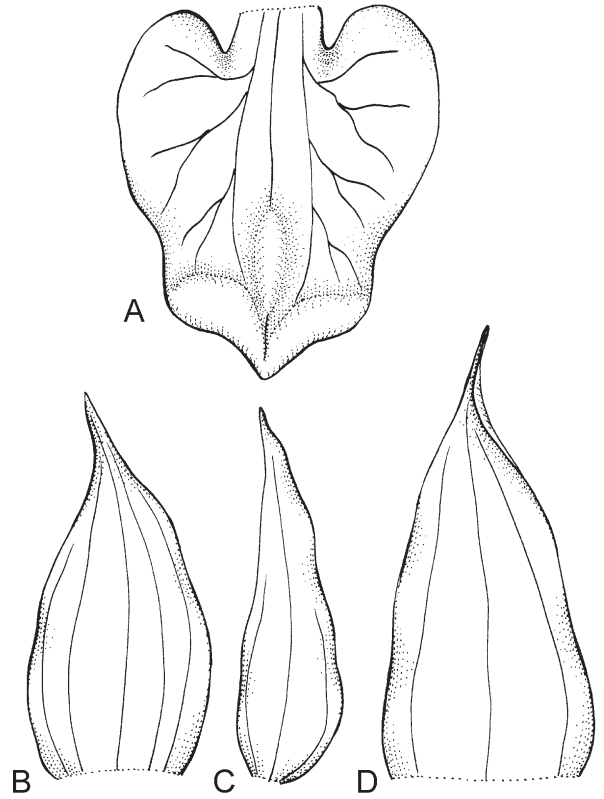


Fig. 3. *Takulumena tungurahuae* Szlach. & Mytnik – A: lip spread; B: dorsal sepal; C: petal; D: lateral sepal. – Drawn by J. Mytnik-Ejsmont from the holotype.

*pals* (Fig. 3D) 13 mm long, 6 mm wide, obliquely triangular-ovate, long-acuminate, completely glabrous. *Petals* (Fig. 3C) 11 mm long, 3 mm wide, obliquely falcate-lanceolate, acuminate, completely glabrous. *Lip* (Fig. 3A) 10 mm long and wide at the base, shortly unguiculate, broadly auriculate, cordate in the lower half, obscurely 3-lobed above, subacute, cochleate, completely glabrous, connate with the gynostemium, with inconspicuous, oblong, ecallose, papillate thickened keel along midnerve in the apical part and thickened apical margins.



Fig. 4. *Takulumena tungurahuae* Szlach. & Mytnik – Ecuador, type locality, August 2007, courtesy T. Kusibab.



*Etymology.* — The epithet refers to the type locality of this species at Tungurahua vulcano in the homonymous province of Ecuador.

*Notes.* — *Takulumena tungurahuae* is somewhat similar to *T. vazquezii*, but the leaves are twice as wide as in the latter, the larger flowers are completely glabrous and the lip is obscurely 3-lobed at the apex.

***Takulumena wieslawii* Szlach. & Mytnik, sp. nov.**

Holotype: Ecuador, Prov. Loja, bei San Lucas, Loja, alt. 2700 m, 22.8.1878, *Lehmann s.n.* (W) – Fig. 5.

*Takulumena vazquezii* similis est sed labello ambito triangulare cordato, secus medium nervum conspicuo oblongo carina ornato, margine ciliato differt.

Monopodial, erect epiphytic plants 5–6 cm tall. *Leaves* 10–16, up to 3 cm long and 0.2 cm wide, linear-lanceolate, shortly apiculate at the apex, slightly falcate, duplicate, coriaceous, stiff. *Inflorescences* 3–6 cm long, few-flowered, covered almost completely by scarious, imbricating bracts. *Flowers* (Fig. 5A) rather small, opening successively, non-resupinate, salmon-pink. *Floral bracts* 10 mm long, elliptic-obovate, shortly apiculate, scarious, semitransparent, glabrous. *Dorsal sepal* 11 mm

long, 4 mm wide, ovate, apiculate, densely papillate. *Lateral sepals* 11 mm long, 3.6 mm wide, obliquely oblong-ovate, long-acuminate, densely papillate. *Petals* 10 mm long, 2.5 mm wide, obliquely oblong-lanceolate, falcate, acuminate, densely ciliate. *Lip* 9 mm long, 7 mm wide at the base, triangular in outline, shortly apiculate at the apex, cochleate, papillate on the inner surface, ciliate along margins, connate with the gynostemium, with conspicuous, oblong, short, thickened keel along midnerve towards the apex of the lip.

*Etymology.* — The species is dedicated to Prof. Dr hab. Wiesław Bogdanowicz, the Director of the Institute and Museum of Zoology, Polish Academy of Science, Warsaw, Poland.

*Notes.* — *Takulumena wieslawii* is similar to *T. vazquezii* but the lip is triangular-cordate in outline and furnished with a conspicuous oblong thickened keel along the midnerve towards the apex of the lip, and ciliate along the margins.

***Takulumena psilosepalum* (Hágsater & E. Santiago) Szlach. & Mytnik, comb. nov.**

≡ *Epidendrum psilosepalum* Hágsater & E. Santiago, *Icon. Orchid.* 11: ad t. 1167. 2008.

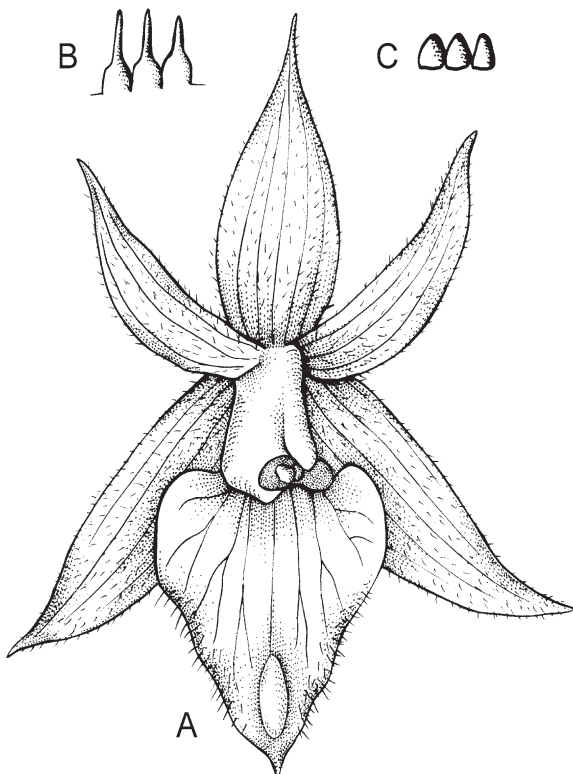


Fig. 5. *Takulumena wieslawii* Szlach. & Mytnik – A: flower; B: ciliae, C: papillae. – Drawn by J. Mytnik-Ejsmont from the holotype.

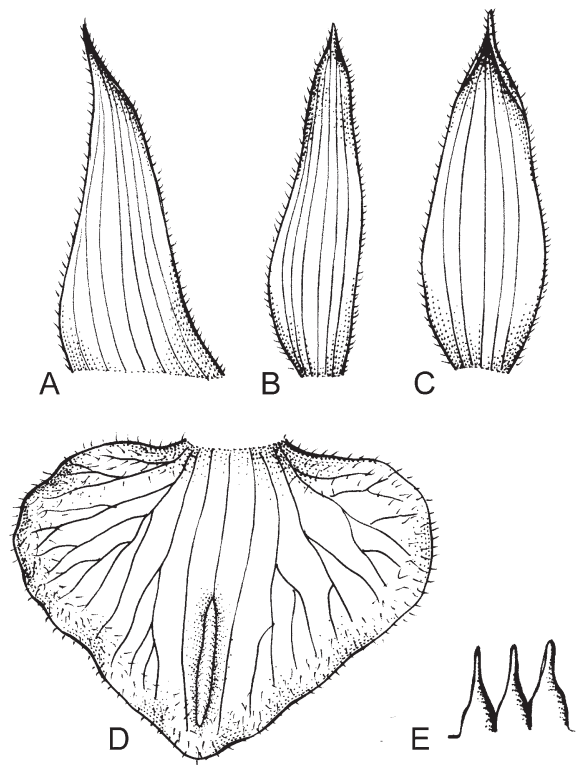


Fig. 6. *Takulumena psilosepalum* (Hágsater & E. Santiago) Szlach. & Mytnik – A: petal; B: dorsal sepal; C: lateral sepal; D: lip spread; E: ciliae. – Drawn by J. Mytnik-Ejsmont from *Lehmann s.n.* at W.

*Takulumena rhodovandoides* (Hágsater) Szlach. & Mytnik, **comb. nov.**

≡ *Epidendrum rhodovandoides* Hágsater, Icon. Orchid. 11: ad t. 1172. 2008.

#### Acknowledgements

The first author wishes to express his gratitude to the Curator of the Herbarium of the Naturhistorisches Museum Wien (W) for the hospitality during his numerous personal visits. We would also like to express our gratitude to Dr Eric Hágsater for his valuable peer review comments and Dr Guy Chiron, the Editor-in-chief of *Richardiana*, for his priceless help in translating the diagnoses of the new species. The research for this paper was financed by the grant from Polish Ministry of Science and Higher Education (3930/B/P01/2007/32).

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