

FOUR NEW SPECIES OF *BILABRELLA* (ORCHIDACEAE, HABENARIINAE) FROM AFRICA

MARTA KRAS & DARIUSZ L. SZLACHETKO

Abstract. Four new species of the genus *Bilabrella* Lindl. (Orchidaceae, Habenariinae) from Africa are described and illustrated, and their taxonomy is briefly discussed.

Key words: Orchidaceae, *Habenaria*, *Bilabrella*, new species, systematic

Marta Kras & Dariusz L. Szlachetko, Department of Plant Taxonomy and Nature Conservation, Gdańsk University, PL-80-441 Gdańsk, Al. Legionów 9, Poland, e-mail: bgmk@univ.gda.pl

The genus *Bilabrella* was described in 1834 by John Lindley. *Bilabrella falcicornis* Lindl. was the only species classified within the genus. The diagnostic features provided by Lindley in his diagnosis were as follows: fleshy sepals, medium-sized lateral sepals, leathery and relatively large petals, fleshy trilobed lip, anther furnished with antherophores which are free and turned upward, linear-lanceolate, curved and elongate rostellum, fleshy rostellophores bent upwards, leafy stem, linear and leathery leaves and elongate inflorescence.

Unfortunately, none of these features could be used to distinguish *Bilabrella*; because of that, Lindley sunk *Bilabrella* into *Habenaria* a few years later (Lindley 1840). Nothing changed in the classification of the genus until, on the basis on their detailed revision of herbarium material and literature data, we decided not to recognize sections *Bilabrellae* Kraenzl. and *Replicatae* Kraenzl.; at the same time we reinstated *Bilabrella* and transferred 60 species to the genus (Szlachetko & Kras-Lapinska 2003). After further studies we changed the taxonomic status of 11 more species (Szlachetko & Kras 2006). The genus *Bilabrella* is distinguishable from other representatives of Habenariinae by the specific combination of several features. The most important diagnostic characters are these: strongly asymmetric and upward-turned lateral sepals furnished with a lateral apiculus, bipartite petals split almost up to the base, deeply

trilobed lip with filiform or linear lobes; and gynostemium strongly elongate, almost filiform rostellum-, anthero- and stigmaphores, distinctive auricles and relatively short and oval anther.

As a consequence of further detailed studies based on new collections, we transferred more taxa to *Bilabrella*, so that presently 88 species are included in the genus. To these, we propose four species as new to science.

Bilabrella kraenzliniana Kras & Szlach., *sp. nov.*
Fig. 1

Haec nova species omnibus generis speciebus labelli forma differt: medius lobus in basalem partem obovatus est. Bilabrella welwitschii (Rchb.f.) Szlach. & Kras-Lap. *similis est sed petalorum loborum forma et gynostemii structura differt. Bilabrella cribbiana* (Szlach. & Olsz.) Szlach. & Kras-Lap. *similis est sed petalibus differt.*

TYPE: KENYA. SITOTAN, near Lumbwa, alt. 2550 m, Nov. 1936, *Graham 3736B* (HOLOTYPE – BR!).

ETYMOLOGY. Dedicated to Friedrich (Fritz) Wilhelm Ludwig Kraenzlin (1847–1934), the author of the only published revision of the genus *Habenaria*.

Plant 36 cm tall, rather erect. Leaves 8.5 × 0.7 cm, linear, acute, spread, the upper ones sheathlike, sparsely hairy on both surfaces. Inflorescence 6 cm long, 12-flowered, lax. Floral

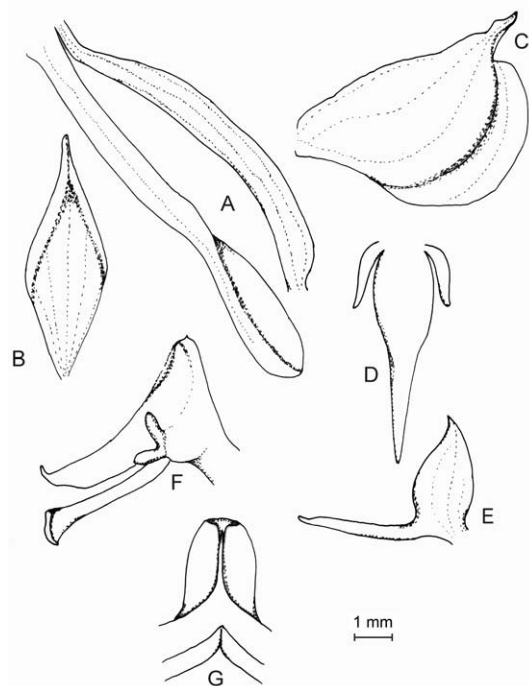


Fig. 1. *Bilabrella kraenzliniana* Kras & Szlach. A – spur and ovary, B – dorsal sepal, C – lateral sepal, D – lip, E – bipartite petal, F – gynostemium, side view, G – gynostemium, front view (Graham 3736B, BR).

bracts 21×4 mm, oblong-lanceolate, acuminate, hairy on external surface. Pedicel and ovary 11 mm long, slender. Dorsal sepal $7 \times 2.5\text{--}3.0$ mm, oblong-elliptic to oblong-ovate, shortly apiculate, blunt, concave, glabrous. Petals deeply bilobed, glabrous; anterior lobe 4×0.5 mm, linear-filiform, acute; posterior lobe wide, 3×2.1 mm, obliquely ovate, acute. Lateral sepals 7.5×5.5 mm, oblong-ovate, cochleate at apex which is 0.5 mm long, erect. Lip trilobed at base, glabrous; middle lobe $6 \times 1\text{--}2$ mm, obovate and thickened in the basal half, lanceolate and thinner above, acute; lateral lobes 2×0.4 mm, obliquely narrowly lanceolate at base, filiform above, acute. Spur 13 mm long, 1.6 mm in diameter at apex, cylindrical, slightly twisted near middle, distinctly swollen in apical third, blunt. Anther 3.1 mm long; connective truncate; antherophores 5 mm long, rather massive. Stigmaphores 4 mm long, narrowly cylindrical, truncate. Rostellum middle lobe 1.9×0.2 mm,

shorter than the connective, linear-triangular, acute. Auricles bilobed, rather massive.

ECOLOGY. No records. Flowers in November.

GENERAL DISTRIBUTION. Known from Kenya only. Alt. 2550 m.

SPECIMENS EXAMINED. KENYA. SITOTAN, near Lumbwa, alt. 2550 m, Nov. 1936, *Graham 3736B* (BR!).

NOTES. Unique in the genus for its peculiar lip morphology, especially for the obovate lower part of the middle lobe. Somewhat similar to *B. welwitschii* (Rchb.f.) Szlach. & Kras-Lap., from which it may be distinguished by the form of the petals: the anterior petal lobe is linear and the posterior lobe is obliquely ovate, acute. Another species similar to *B. kraenzliniana* appears to be *B. cribbiana* (Szlach. & Olsz.) Szlach. & Kras-Lap., but the form of the petals is quite different.

***Bilabrella luegiana* Kras & Szlach., sp. nov.**

Fig. 2

Bilabrella involuta (Bolus) Szlach. & Kras-Lap. *et B. riparia* (Renz & Grosvenor) Szlach. & Kras-Lap. *similis est sed petalorum anterioribus lobis (qui lineari-filiformes et posterioribus lobis duplo longiores sunt) differt.* *Bilabrella kyimbilae* (Schltr.) Szlach. & Kras-Lap. *similis est sed pendulo nec geniculato calcari differt.*

TYPE: REPUBLIC OF SOUTH AFRICA. NATAL DISTR. Alexandra, Station Dumisa, alt. 400 m, 2 Feb. 1908, *Rudatis 240* (HOLOTYPE – E!).

ETYMOLOGY. Dedicated to Chris Lueg, a German orchid grower and enthusiast, who provided one of us (DLSz) with materials for the study of gynostemium.

Stem 61 cm tall, erect, slender, glabrous. Leaves 8, $4.5\text{--}18.0 \times 1.0\text{--}1.2$ cm, linear-lanceolate, acute, spreading or appressed to the stem, decreasing in size upwards. Inflorescence 18 cm long, laxly 25-flowered. Floral bracts 13–20 mm long, ovate-lanceolate, acuminate. Pedicel and ovary 23 mm long, slender, glabrous. Dorsal sepal 6×2 mm, elliptic, apiculate, obtuse, concave, glabrous. Petals bilobed to the base, glabrous; anterior lobe 13.5×1.1 mm, linear-lanceolate, subacute to acute; pos-

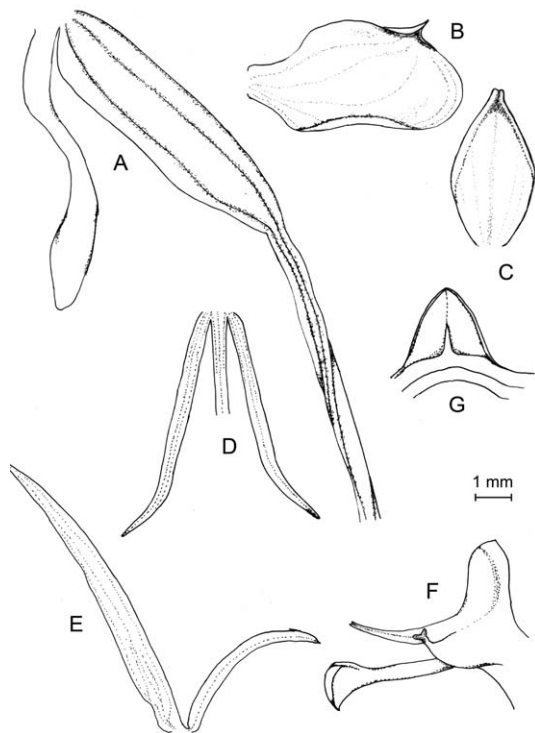


Fig. 2. *Bilabrella luegiana* Kras & Szlach. A – spur and ovary, B – lateral sepal, C – dorsal sepal, D – lip, E – bipartite petal, F – gynostemium, side view, G – gynostemium, front view (*Rudatis* 240, E).

terior lobe 6×0.5 mm, linear, obtuse, falcate. Lateral sepals 7.5×4.1 mm, elliptic-obovate, cochleate, strongly deflexed, apiculus *ca* 0.5 mm long, laterally placed. Lip trilobed nearly to the base, glabrous; middle lobe 10×0.5 mm, linear; lateral lobes 9×0.6 mm, linear, acute, slightly upcurved. Spur 12 mm long, narrowly cylindrical, sigmoid in the middle, slightly swollen in apical third, blunt. Anther 3 mm tall, ovoid-ellipsoid; connective rounded; antherophores 5 mm long, gently curved upward. Stigmaphores 5.5 mm long, clavate with rather massive truncate apices. Rostellum middle lobe half as long as thecae. Auricles small, bifid.

ECOLOGY. No records. Flowering in February.

GENERAL DISTRIBUTION. Republic of South Africa. Alt. 400 m.

SPECIMENS EXAMINED. REPUBLIC OF SOUTH AFRICA. NATAL DISTR. Alexandra, Station Dumisa, alt. 400 m, 2 Feb. 1908, *Rudatis* 240 (E!, K!).

NOTES. This species differs from *B. involuta* (Bolus) Szlach. & Kras-Lap. and *B. riparia* (Renz & Grosvenor) Szlach. & Kras-Lap. in the anterior petal lobes, which are twice as long as the posterior lobes, linear-filiform. *Bilabrella luegiana* is similar to *B. kyimbilae* (Schltr.) Szlach. & Kras-Lap. but differs by its pendent, not geniculate spur.

***Bilabrella stanislawii* Kras & Szlach., sp. nov.**

Fig. 3

Bilabrella stanislawii B. burtii (Summerh.) Szlach. & Kras-Lap. *affinis est sed calcari pendenti et labelli lateralibus lobis mediano lobo brevioribus differt. Bilabrella tangheana* (Geerinck & Schaijjes) Szlach. & Kras labelli forma et auriculis tenuibus differt.

TYPE: DEMOCRATIC REPUBLIC OF THE CONGO (ZAIRE). SHABA HIGHLAND, Kundelungu Plateau: 10.9 km NNW of Lualala Poste, near Munva stream, alt. 1650 m, 21 Apr. 1971, *Lisowski* 11147 (HOLOTYPE – UGDA-DLSz!).

ETYMOLOGY. Dedicated to Professor Stanisław Lisowski (1926–2002) from Adam Mickiewicz University in Poznań, an eminent Polish botanist who worked in West and Central Africa.

Stem 21 cm tall, glabrous, erect, slender, leafy throughout its length. Leaves 8, the 4 lowermost reduced to a sheath, the largest 7.9×0.4 cm, lanceolate-linear, acute, the upper leaves much smaller, adpressed to the stem, lanceolate, acuminate, similar to the lower bracts. Inflorescence 6.8 cm long, laxly 12-flowered. Floral bracts 8–9 mm long, lanceolate, acuminate. Pedicel with ovary 13.5 mm long. Dorsal sepal 3.9×1.2 mm, oblong-elliptic, shortly apiculate, truncate, concave. Petals bilobed nearly to the base; anterior lobe $7\text{--}9 \times 0.7$ mm, linear- to oblong-lanceolate, glabrous; posterior lobe 4×0.4 mm, reflexed, linear-filiform, ciliolate. Lateral sepals 6×4 mm, obliquely oblong-obovate, concave, with laterally placed apiculus 0.5 mm long, deflexed. Lip trilobed nearly to the base, the middle lobe shorter than laterals; middle lobe 9×0.5 mm, linear, obtuse; lateral lobes 10.5×0.5 mm, linear, subacute.

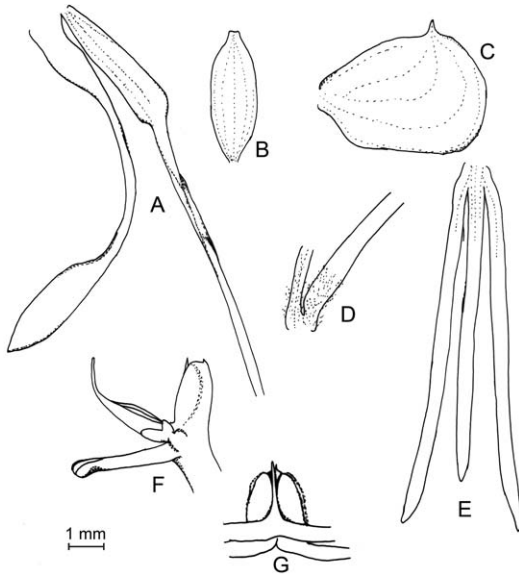


Fig. 3. *Bilabrella stanislavii* Kras & Szlach. A – spur and ovary, B – dorsal sepal, C – lateral sepal, D – bipartite petal, E – lip, F – gynostemium, side view, G – gynostemium, front view (*Lisowski 11147*, UGDA-DLSz).

Spur 14 mm long, cylindrical, slightly swollen at base and in the apical third, subacute, pendent. Anther just over 3 mm long, ellipsoid-ovoid; connective rounded, shortly apiculate; antherophores 4.5 mm long, rather slender, abruptly upcurved apically. Stigmaphores 5 mm long, narrowly cylindrical, straight. Rostellum middle lobe longer than connective, subulate. Auricles unequally bilobed, rather massive.

ECOLOGY. Damp grassland. Flowering in January–April.

GENERAL DISTRIBUTION. Democratic Republic of the Congo (Zaire). Alt. 1650 m.

SPECIMENS EXAMINED. DEMOCRATIC REPUBLIC OF THE CONGO (ZAIRE). SHABA HIGHLAND, Kundelungu Plateau: 10.9 km NNW of Lualala Poste, near Munva stream, alt. 1650 m, 21 Apr. 1971, *Lisowski 11147* (UGDA-DLSz!); Kundelungu Plateau: source of the Lofoi, damp grassland, alt. 1650 m, 10 Jan. 1971, *Lisowski 65758* (UGDA-DLSz!).

NOTES. *Bilabrella stanislavii* is related to *B. burtii* (Summerh.) Szlach. & Kras-Lap., but the spur is pendent, and the lateral lip lobes shorter

than the middle one. It differs from *B. tangheana* (Geerinck & Schaijjes) Szlach. & Kras by its lip shape and delicate auricles.

***Bilabrella usambarae* Kras & Szlach., sp. nov.**

Fig. 4

Bilabrella disparilis (Summerh.) Szlach & Kras-Lap. *similis est sed petalorum anterioribus lobis superficialiter lobulatis – alter lobulus apice rotundatus, alter triangularis, rostellii medio lobo connectivo brevior differt.* *Bilabrella thomsonii* (Rchb.f.) Szlach. & Kras-Lap. *petalorum anteriorum loborum lobulis, angusto calcari pedicello ovarioque longiore differt.*

TYPE: TANZANIA. Usambara, *Meinkof 125* (HOLOTYPE – HBG!).

ETYMOLOGY. In reference to the *locus classicus* of the type specimen.

Vegetative parts unknown. Pedicel and ovary 11.5 mm long, glabrous. Sepals all reflexed. Dorsal sepal 6 mm long, 1.8 mm wide, oblong elliptic-

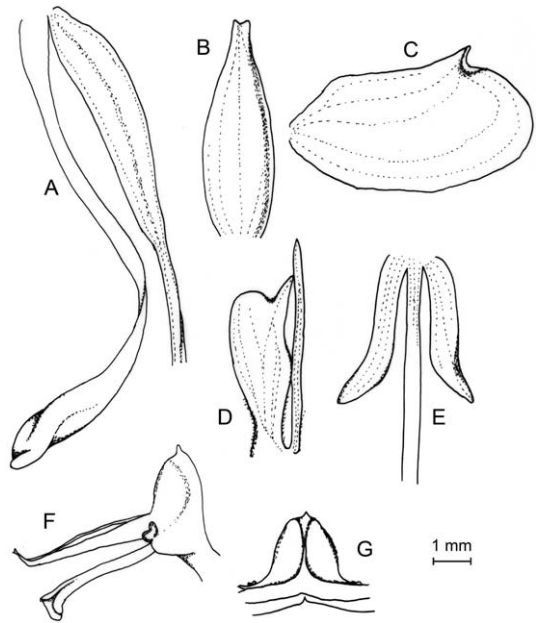


Fig. 4. *Bilabrella usambarae* Kras & Szlach. A – spur, ovary and pedicel, B – dorsal sepal, C – lateral sepal, D – bipartite petal, E – lip, F – gynostemium, side view, G – gynostemium, front view (*Meinkof 125*, HBG).

obovate, obtuse, concave. Petals bilobed; posterior lobe long 5.1 mm, wide 1.8 mm, 7-nerved, rounded, with apex; anterior lobe 6×0.3 mm, narrower than the posterior, lobules, oblong, triangular. Posterior and anterior lobes glandular to half-length. Lateral sepals 7.5×4 mm, obliquely elliptic-obovate, concave, finished by apex long 1 mm. Lip trilobed to base; middle lobe 0.5 mm wide, linear, obtuse; lateral lobes usually slightly shorter, 4.7×1 mm, linear. Spur 16 mm long, curving forwards with one twist about the middle, inflated in apical third. Anther 2.5 mm long; connective rounded, shortly apiculate; antherophores 5.5 mm long, slender, slightly upcurved apically. Stigmaphores 4 mm long, narrowly cylindrical, truncate. Rostellum middle lobe shorter than the connective. Auricles bilobed.

ECOLOGY. No records.

GENERAL DISTRIBUTION. Known so far from Tanzania only.

SPECIMENS EXAMINED. TANZANIA. Usambara. *Meinkof 125* (HBG!).

NOTES. Similar to *B. disparilis* (Summerh.) Kras & Szlach.-Lap., but the anterior petal lobes are not deeply lobulate. One of the lobules is

rounded and the other is triangular; the rostellum middle lobe is shorter than the connective. Another similar species is *B. thomsonii* (Rchb.f.) Szlach. & Kras-Lap. but *Bilabrella usambarae* differs from the latter by the lobules of the petals and narrow spur, longer than the pedicel and ovary.

ACKNOWLEDGMENTS. We are grateful to Guy Chiron for Latinizing the diagnoses and to the anonymous reviewer for valuable remarks on the manuscript. This study was supported by the Polish Ministry of Education and Science (KBN grant no. 2P04C 56 27) and the COBICE and SYNTHESYS AT-TAF-1703 projects.

REFERENCES

- LINDLEY J. 1834. *Orchis foliosa*. *Edwards's Bot. Reg.* **20**: 1701.
- LINDLEY J. 1840. *The Genera and Species of Orchidaceae Plants*, pp. 286–325. Ridgways, London.
- SZLACHETKO D. L. & KRAS-LAPINSKA M. 2003. Matériaux pour la révision taxinomique de *Habenaria* (Orchidaceae, Orchidoideae) – 1. *Richardiana* **3**(3): 136–143.
- SZLACHETKO D. L. & KRAS M. 2006. Matériaux pour la révision taxinomique de *Habenaria* (Orchidaceae, Orchidoideae) – 8. *Richardiana* **6**(4): 196–197.

Received 1 October 2008