

Synopsis of *Hirtzia* (Orchidaceae) with the description of a new species from Peru

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A taxonomic synopsis of the genus *Hirtzia* (Orchidaceae) is presented. An identification key to the species is provided and their morphology described, supported by illustrations of plant habit and perianth segments. A new species from Peru, *H. dodsoniana* Szlach. & Kolan., is described based on material collected in the department of Pasco.

Introduction

The Neotropical genus *Hirtzia* was described in Dodson and Dodson (1984) based on *H. benzingii* from Ecuador. The authors found it to resemble to *Leochilus*, *Capanemia* and *Hybochilus* (all classified within Leochilinae by Szlachetko 1995 and Szlachetko & Mytnik-Ejsmont 2009), but differing by the equitant habit, simple lip, porrect and prominent gynostemium wings which surround the stigma, and the bifid rostellum after removal of pollinarium.

Twelve years later, Dodson (1996) found a second species of *Hirtzia* in Colombian Andes and named it *H. escobarii*. When describing this taxon, Dodson also mentioned that a third species of the genus occurred in Peru, but no reference material to support that statement was provided. A third species of *Hirtzia* was recently discovered in southern Colombia (Kolanowska & Szlachetko 2014).

Chase *et al.* (2009) proposed to include the two species of *Hirtzia* known at that time in *Pterostemma* and that concept was followed by

Neubig *et al.* (2012). Based on the results of the phylogenetic studies both *Hirtzia* and *Pterostemma* are related to representatives of the subtribe Comparettinae (*sensu* Szlachetko & Mytnik-Ejsmont 2009), e.g. *Ionopsis*, *Konantzia*, *Comparettia* and *Diadenium*. Based on morphological differences between *Hirtzia* and *Pterostemma* (Table 1), Kolanowska and Szlachetko (2014) considered the two to be distinct genera.

Species of *Hirtzia* usually grow as twig epiphytes on small trees, often near creeks. They have been reported from the altitudes of 1400–2450 m a.s.l. (Dodson & Dodson 1984, Dodson 1996). Due to the small plant size and short flowering time, herbarium material of *Hirtzia* is scanty.

Our revision of herbarium material revealed the existence of an undescribed species of *Hirtzia*, simultaneously being the first record of this genus for Peru. As all previous descriptions of *Hirtzia* species were published in separate papers, we decided to provide here a synopsis of the genus. The morphological descriptions are accompanied with information of the habitat

and distribution of each species. A comparative morphology of *Hirtzia* species is presented in Table 2.

Material and methods

A total of over 1300 herbarium specimens and liquid-preserved flowers of oncidoid orchids

Table 1. Comparative morphology of *Hirtzia* and *Pterostemma*.

	<i>Hirtzia</i>	<i>Pterostemma</i>
Leaves	equitant, conduplicate	Y- or V-shaped in cross-section
Dorsal sepal	ovate, pandurate or ovate-triangular	ovate
Petals	ovate-pandurate to lanceolate-ligulate	obliquely ovate
Lateral sepals	connate for 1/2–3/4 of their length	connate for over 2/3 of their length
Lip	shortly clawed, pandurate to oblong-ovate	shortly clawed, pandurate to obovate
Lip callus	fleshy pad in apical half of lip	elevated keels running from base of lip
Gynostemium	straight, elongate, rather slender, dorsiventrally compressed	slender, slightly arched, delicate
Column part	much shorter than anther, with two large apical wings, wings oblong, truncate, rather thick, twisted slightly inward	half as long as anther, slightly dorsiventrally compressed at base, with two tufts of erect hairs at stigma base
Column foot	absent	obscure
Anther	dorsal, erect, operculate, dorsiventrally compressed, oblong ellipsoid, obscurely 2-chambered	dorsal, erect, operculate, slightly arched and dorsiventrally flattened, oblong ellipsoid, obscurely 2-chambered
Connective	narrow, rather thin, forming an apical roof-like projection in front	narrow, rather thin, forming an oblong, apical, roof-like projection in front
Pollinia	2, subglobose, porate, hollow inside, hard	2, slightly dorsiventrally compressed, flat on one and convex on other surface, ellipsoid, hard
Stigma	small, oblong elliptic, deeply concave	rather large, elliptic, deeply concave
Rostellum	erect, oblong-triangular, subobtuse at apex; remnant distinctly 2-lobed at apex, with small oblique, concave plate on ventral surface, lobes acute, short	large, 3-lobed at apex, lobes equal in length, ligulate; remnant 3-lobed, median lobe thin, lamellate, distinctly bilobulate at apex, slightly concave at inner surface, lobules subulate, acute
Tegula	oblong-triangular	linear

Table 2. Comparative morphology of *Hirtzia barrerana*, *H. benzingii*, *H. escobarii* and *H. dodsoniana*.

Character	<i>H. barrerana</i>	<i>H. benzingii</i>	<i>H. escobarii</i>	<i>H. dodsoniana</i>
Leaves	non-articulated	non-articulated	articulated	non-articulated
Dorsal sepal	ovate to ovate-elliptic	ovate-triangular to ovate	ovate-triangular	pandurate
Lateral sepals	connate for 1/2–3/4 of their length	connate for 1/2–2/3 of their length	connate for over 2/3 of their length	connate for 1/2 of their length
Petals	lanceolate-ligulate	narrowly ovate-triangular to ligulate	oblong-falcate	ovate-pandurate
Lip	pandurate; hypochile obovate; epichile suborbicular, inconspicuously 3-lobulate fleshy pad in center of epichile	oblong-ovate;	pandurate; hypochile oblong; epichile inconspicuously 3-lobulate	pandurate; hypochile oblong; epichile transversely elliptic
Staminodes	slightly twisted	slightly twisted	not twisted	not twisted

deposited in AMES, AMO, BM, COL, CUVC, F, FLAS, HUA, JAUM, K, MO, NY, P, PMA, UGDA, VALLE and W (Thiers 2014) were examined. Every studied sheet was photographed and the data from the labels were copied. Both vegetative and generative characters of each plant were examined. The shape, size and relevant characteristics of the vegetative and reproductive parts of each plant were considered.

Taxonomic treatment

Hirtzia Dodson

Icon. Pl. Trop. 10: t. 924. 1984. — Generitype: *Hirtzia benzingii* Dodson.

Epiphytic, small plants up to 9 cm tall. Leaves several, equitant, conduplicate, up to 7 cm long. Inflorescence up to 5 cm long, 2–5-flowered, arising from leaf axils. Flowers resupinate. Pedicellate ovary glabrous, longer than floral bracts. Tepals free. Dorsal sepal ovate, pandurate or ovate-triangular. Petals ovate-pandurate to lanceolate-ligulate. Lateral sepals connate in basal 1/2–3/4. Lip fleshy, thick, sessile to clawed, pandurate to oblong-ovate in outline, bipartite. Gynostemium elongate, rather slender, with column part much shorter than anther and two large apical wings. Anther dorsal, erect, operculate, dorsiventrally compressed, oblong ellipsoid, obscurely 2-chambered. Connective narrow, rather thin, forming an apical roof-like projection in front. Pollinia 2, subglobose, porate, hollow inside, hard. Caudiculae sticky, amorphous. Apical clinandrium obscure. Stigma small, oblong elliptic, deeply concave. Rostellum erect, oblong-triangular, subobtusate at apex; remnant distinctly 2-lobed at apex, with small oblique, concave plate on ventral surface, lobes acute, short (Fig. 1).

Key to the species of *Hirtzia*

1. Leaves articulated *H. escobarii*
1. Leaves non-articulated 2
2. Staminodes not twisted, lip prominently clawed
..... *H. dodsoniana*
2. Staminodes twisted, lip sessile 3
3. Lateral sepals connate up to about 1/2 of their length,
petals narrowly ovate-triangular, lip oblong-ovate
..... *H. benzingii*

3. Lateral sepals connate up to about 3/4 of their length,
petals lanceolate-ligulate, lip pandurate *H. barrerana*

Hirtzia escobarii Dodson (Fig. 2)

Orquideologia 20: 8. 1996. — TYPE: Colombia. Antioquia, Municipio La Unión, km 17 road from La Union to Abejorral, 2450 m, 9 Sep. 1984 C. Dodson et al. 15258A (holotype RPSC, lost?). — *Pterostemma escobarii* (Dodson) M.W. Chase & N.H. Williams, Orchids (West Palm Beach) 78: 238. 2009.

Leaves equitant, conduplicate, articulated, up to 3.5 cm long, 0.5 cm wide, acute. Inflorescences up to 4 cm long, 2–4-flowered. Flowers small, sepals greenish-white, petals white, lip white with red callus. Floral bracts up to 1 mm long triangular, acute. Pedicellate ovary up to 5 mm long. Dorsal sepal up to 5.8 mm long, 3 mm wide, ovate-triangular, obtuse at apex. Petals up to 6 mm long, 1.8 mm wide, oblong-falcate, obtuse. Lateral sepals connate for more than 2/3 of their length, free apices broadly ovate-subcircular, curved upwards. Lip up to 6 mm long, 3 mm wide, pandurate; hypochile oblong; epichile indistinctly 3-lobed, concave in apical part; callus a fleshy, pandurate pad. Gynostemium up to 5 mm long, staminodes non-twisted. Flowering in September.

This is the only species in *Hirtzia* with articulated leaves.

DISTRIBUTION: Known only from the type locality in central Andean Cordillera (Fig. 3).

HABITAT: Growing as twig epiphyte in cloud forest at the altitude of about 2450 m a.s.l.

Hirtzia dodsoniana Szlach. & Kolan., sp. nova (Fig. 4)

TYPE: Peru. Pasco, Oxapampa. Km 53 on road between Oxapampa & Paucartambo. Natural vegetation in valley bottom with many small wet spots. Dominated by small trees; grazed. 10°37'S, 75°33'W. Alt. 1950 m a.s.l. 10 May 1992 D. N. Smith & A. Pretel 1483 (holotype MO).

Plant small, about 6 cm tall. Leaves 13, non-articulate, equitant, conduplicate, up to 4 cm long, 0.4 cm wide. Inflorescence 3 cm long, 2–3-flowered, arising from leaf axils. Flowers white with purple marks. Floral bracts about

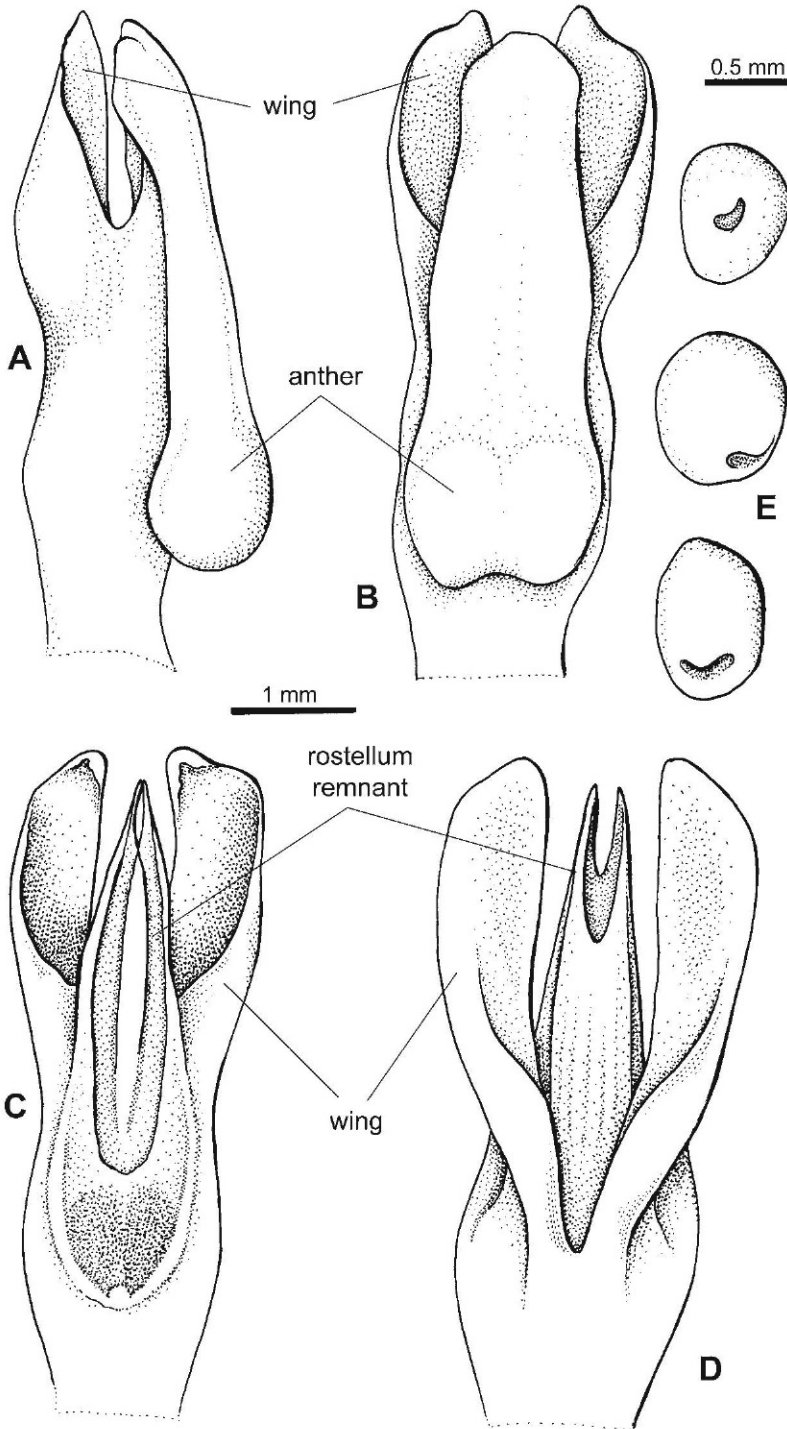


Fig. 1. Gynostemium of *Hirtzia benzingii*. — **A**: Side view. — **B**: Back view. — **C**: Back view, anther removed. — **D**: Bottom view, pollinarium removed. — **E**: Pollinia, various views (J. & L. Orchids, K).

2.5 mm long. Pedicellate ovary 10 mm long. Dorsal sepal 6 mm long, 3 mm wide, ovate-pandurate, apex with obtuse apiculus, 3-veined.

Petals 6 mm long, 2 mm wide, oblong-pandurate, apex obtuse, 3-veined. Lateral sepals connate in basal 3.5 mm, 7.5 mm long, 3 mm

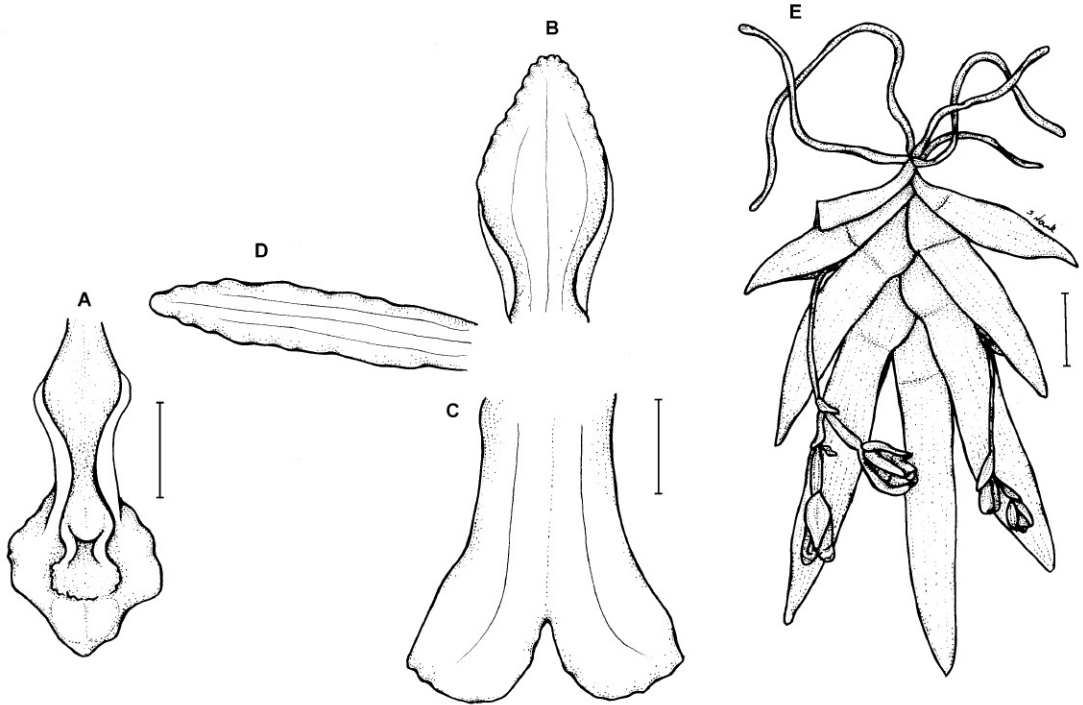


Fig. 2. *Hirtzia escobarii*, dissected perianth. — **A:** Lip. — **B:** Dorsal sepal. — **C:** Lateral sepals. — **D:** Petal. — **E:** Habit. Scale bars = 2 mm (**A–D**), 5 mm (**E**). Redrawn by S. Nowak from Dodson (1996).

wide, ovate, apex obtuse, divergent, 2-veined. Lip 6.7 mm long, fleshy, thick, long-clawed, pandurate; claw 1.4 mm long; hypochile 3.8 mm long, 1.8 mm wide, oblong, 3-veined, with margins pubescent along basal fourth, apical part squeezed, with a pubescent fleshy pad; epichile transversely elliptic, concave apex obtuse. Gynostemium about 5 mm long. Stamminodes not twisted. Capsule not seen. Flowering in May.

This species is easily distinguished from the other *Hirtzia* species by its ovate-pandurate dorsal sepal, long-clawed lip, ciliate margins of the basla part of lip, and transversely elliptic lip epichile. Unlike in *H. barrerana* and *H. escobarii*, the lateral sepals of *H. dodsoniana* are connate almost to the middle. Also *H. escobarii* has non-twisted staminodes, but the leaves of that species are articulated.

DISTRIBUTION: Known exclusively from eastern slopes of Central Andes (Fig. 3). The distance between the only locality of *H. dodsoniana* and the nearest known population of other *Hirtzia* species is about 1000 km.

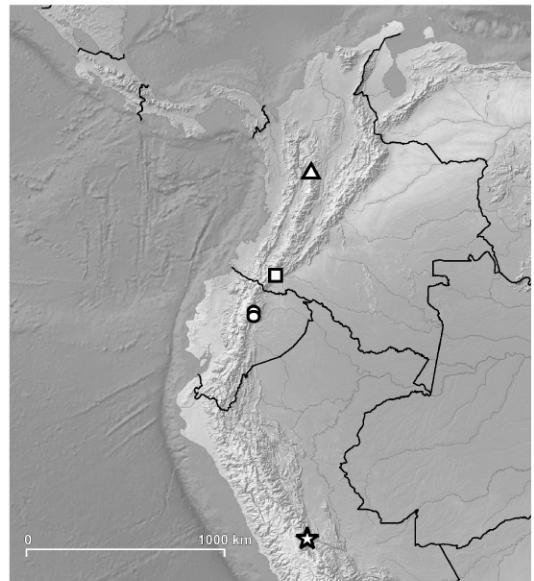


Fig. 3. Distribution of *H. barrerana* (square), *H. benzingii* (circle), *H. escobarii* (triangle) and *H. dodsoniana* (star).

HABITAT: It grows epiphytically on small trees in wet grasslands at the altitude of 1950 m a.s.l.

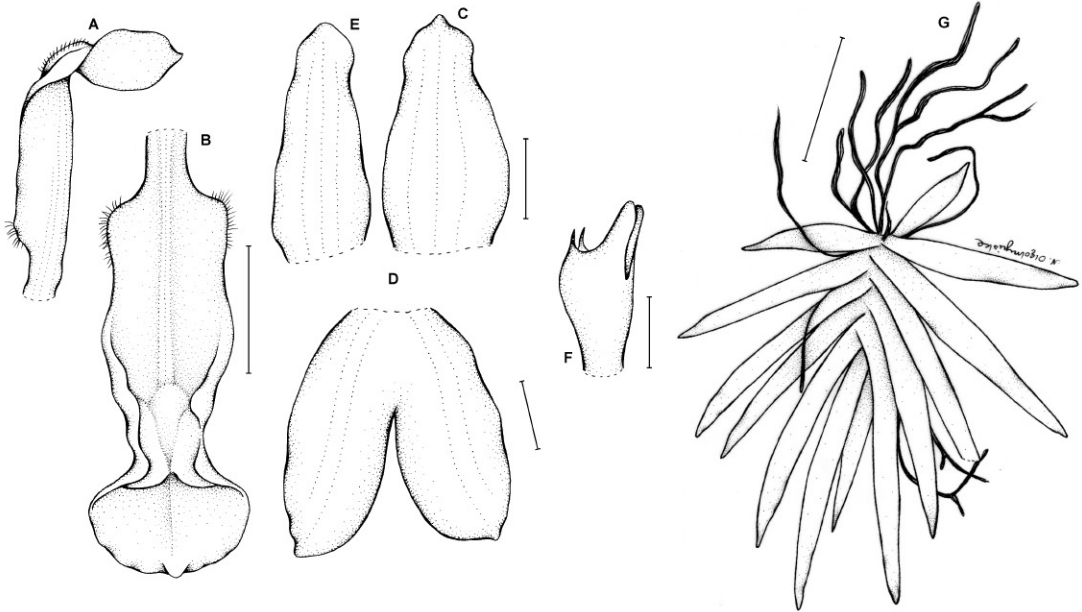


Fig. 4. *Hirtzia dodsoniana*, dissected perianth. — **A** and **B**: Lip, various views. — **C**: Dorsal sepal. — **D**: Lateral sepals. — **E**: Petal. — **F**: Gynostemium. — **G**: Habit. Scale bars = 2 mm (**A–F**), 2 cm (**G**). **A–F** drawn by A. Król (from the holotype), **G** drawn by N. Olędzrzyńska (from the holotype).

Hirtzia benzingii Dodson (Fig. 5)

Icon. Pl. Trop. 10: t. 924. 1984. — **TYPE**: Ecuador. Prov. Napo, Cosanga, km 112 Quito-Tena, 1850 m, 17 June 1983 *Dodson et al.* 14029 (holotype SEL!; isotypes MO!, ECU!). — *Pterostemma benzingii* (Dodson) M.W. Chase & N.H. Williams, *Orchids* (West Palm Beach) 78: 238. 2009.

Leaves equitant, conduplicate, non-articulated, up to 5 cm long, 0.5 cm wide, acuminate at apex. Inflorescences up to 5 cm long, 3–5-flowered. Flowers small, tepals yellow barred with dark red, lip white. Floral bracts 2.5–3 mm long, triangular. Pedicellate ovary up to 5.5 mm long. Dorsal sepal 4.5–5 mm long, 2–3 mm wide, ovate-triangular to ovate, obtuse. Lateral sepals 4.5 mm long, 2.1 wide, connate in basal 1/2–2/3, free apices ovate, divergent. Petals up to 5 mm long, 1.2–2 mm wide, narrowly ovate-triangular to ligulate, acute. Lip 3–5 mm long, 1.5–2 mm wide, oblong-ovate in outline, concave in apical part; callus a fleshy pad. Gynostemium 3–5 mm long. Stamines slightly twisted. Flowering in June.

This species is characterized by narrowly ovate-triangular to ligulate petals and an oblong-ovate lip.

DISTRIBUTION: Known exclusively from eastern slopes of Ecuadorian Andes (Fig. 3).

HABITAT: Growing as twig epiphyte along the embankments in montane wet forest at the altitude of about 1850 m a.s.l.

REPRESENTATIVE SPECIMEN EXAMINED: **Ecuador**. Prov. Napo, Baeza, *Dodson & Dodson 16540* (RPSC).

Hirtzia barrerana Kolan. & Szlach. (Fig. 6)

Syst. Bot. 39: 36. 2014. — **TYPE**: Colombia. Dept. Putumayo, Valle de Sibundoy, mountains, north-west from Colón, 2113 m, 28 Aug 2012 *Kolanowska & Barrera 407* (holotype COL!; drawing and photo UGDA).

Leaves equitant, conduplicate, non-articulated, 2–5.7 cm long, 0.3–0.8 cm wide. Inflorescences up to 3.5 cm long, subdensely few-flowered. Flowers small, greenish-yellow with white lip and yellow callus. Floral bracts up to 5 mm long, triangular. Pedicellate ovary up to 8 mm long. Dorsal sepal 4.8–6.8 mm long, 2.9–3 mm wide, ovate-elliptic, rounded or shortly bifid at apex. Lateral sepals 7–7.2 mm long, ovate-ligulate, connate for 1/2–3/4 of their length in a

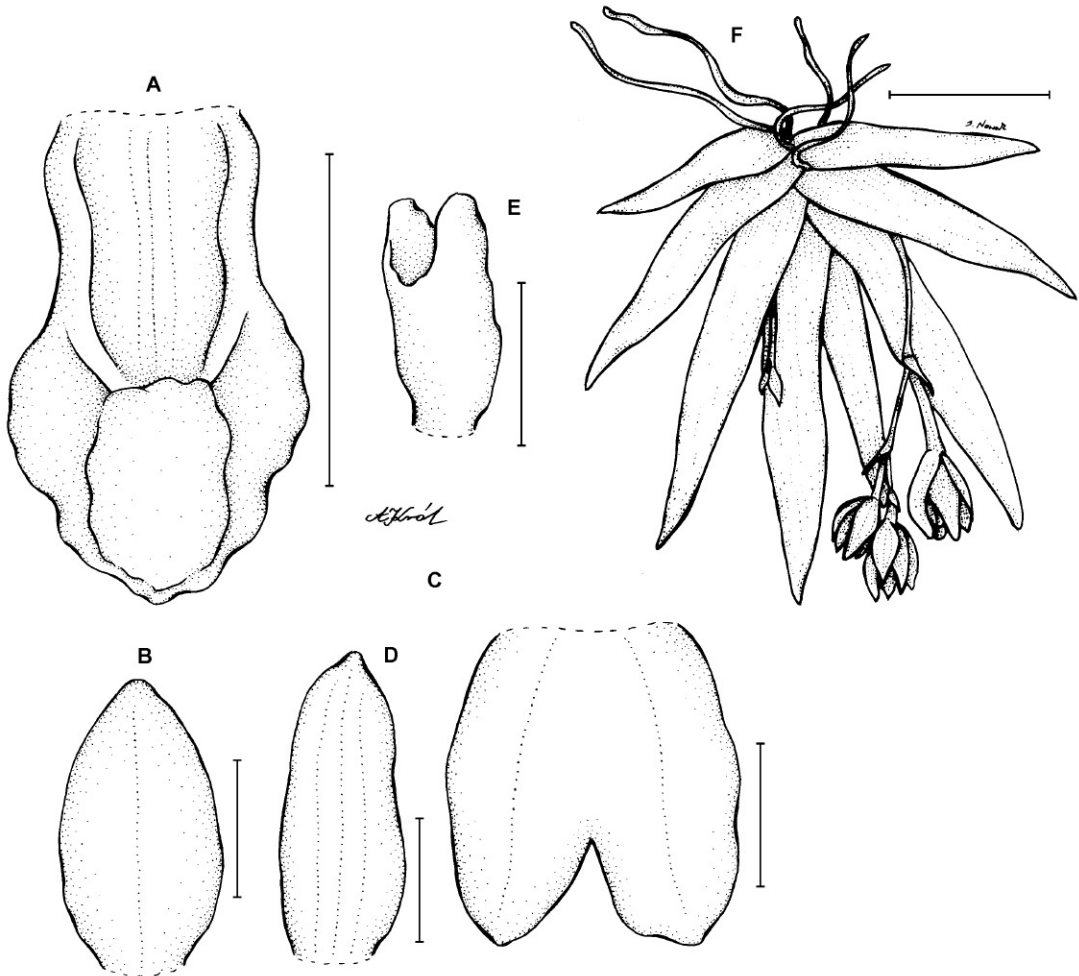


Fig. 5. *Hirtzia benzingii*, dissected perianth. — **A:** Lip. — **B:** Dorsal sepal. — **C:** Lateral sepals. — **D:** Petal. — **E:** Gynostemium. — **F:** Habit. Scale bars = 2 mm (A–E), 1 cm (F). A–E drawn by A. Król (Dodson & Dodson 16540, RPSC), F redrawn by S. Nowak from Dodson and Dodson (1984).

synsepal, about 5.5 mm wide in lower part, subquadrate in outline, concave at base. Petals 5.1–6.6 mm long, 1.9–2 mm, lanceolate-ligulate, apex rounded. Lip 5.5–6.5 mm long, 2.9–3 mm, truncate at base, pandurate; hypochile obovate; epichile suborbicular, inconspicuously 3-lobulate, lobules rounded, concave below callus, margins slightly undulate; callus a three knobbed fleshy pad in center of epichile. Gynostemium up to 4.3 mm long. Staminodes slightly twisted. Flowering in January and August.

This species is characterized by a subquadrate synsepal, lanceolate-ligulate petals, and lip shape.

DISTRIBUTION: The range of this species is restricted to southern Colombian Andes (Fig. 2).

HABITAT: It grows as a twig epiphyte in the edge of the humid montane forest on mossy trunk and branches of *Tibouchina lepidota* (Melastomataceae) and *Psidium* sp. (Myrtaceae) at the altitudes of about 2100–2300 m a.s.l.

REPRESENTATIVE SPECIMENS: **Colombia.** Dept. Putumayo, Mountains near Santiago, 29 Aug 2012 *Kolanowska & Barrera s.n.* (COL, UGDA); km 42 Pasto to Sibundoy, *Dodson et al. 17013* (RPSC).

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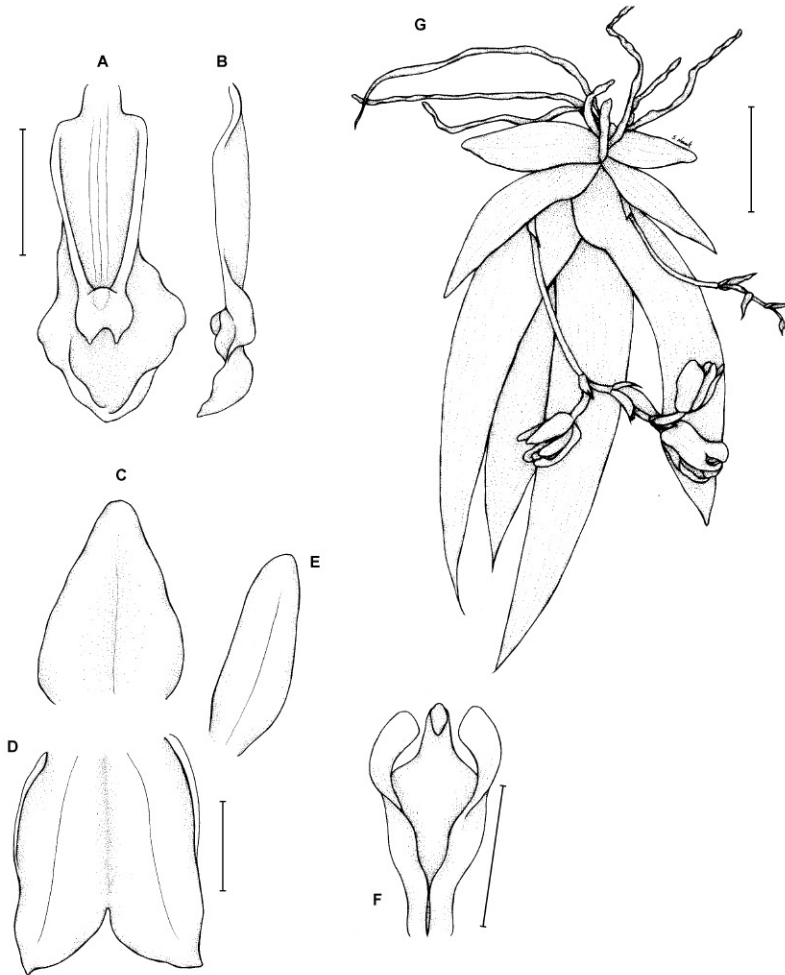


Fig. 6. *Hirtzia barrerana*, dissected perianth. — **A** and **B**: Lip, various views. — **C**: Dorsal sepal. — **D**: Lateral sepals. — **E**: Petal. — **F**: Gynostemium. — **G**: Habit. Scale bars = 2 mm (**A–F**), 1 cm (**G**). Drawn by S. Nowak (from the holotype).

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