

Materials towards a revision of the genus *Pseudoliparis* (Orchidaceae, Malaxidinae). 2. Section *Oistochilus*

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Pseudoliparis section *Oistochilus* (Orchidaceae, Malaxidinae) is revised taxonomically. A new nomenclatural combination at the species level is proposed and a lectotype is designated for *Pseudoliparis graminifolia* (Schltr.) Szlach. & Marg.

Key words: Malaxidinae, nomenclature, Orchidaceae, *Pseudoliparis*, taxonomy

My recent investigations of herbarium and liquid-preserved material as well as of iconography and bibliography enabled me to present completed data for *Pseudoliparis* section *Oistochilus* (Orchidaceae, Malaxidinae).

Key to sections of *Pseudoliparis*

1. Dorsal part of gynostemium column with appendage(s) or distinctly convex *Pseudoliparis*
1. Dorsal part of gynostemium column flat and smooth, without appendage or not distinctly convex ... *Oistochilus*

Pseudoliparis Finet section *Oistochilus* (Schltr.) Marg.

Ann. Bot. Fennici 40: 66. 2003. — *Microstylis* (Nutt.) Eaton section *Oistochilus* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 120. (1911) 1914. — *Malaxis* Sol. ex Sw., section *Oistochilus* (Schltr.) Kores, Allertonia 5(1): 46. 1989. — Type: *Pseudoliparis graminifolia* (Schltr.) Szlach. & Marg.

Of the 40 species in the genus *Pseudoliparis*, the section *Oistochilus* contains eight (Margońska 2003). Representatives of the section are rather small, terrestrial plants. Rhizomes are creeping, stem-like, with nodes covered by tubular scales. Roots are filiform, flexuous, pubescent, arising from nodes of rhizome and usually from base of stem.

Leafy stems are erect or ascending, commonly amplexicaul by leaf petioles and sheaths, and by scales (1 to few) at base. Inflorescences are elongate, particularly with age, many-flowered, with relatively small, somewhat fleshy flowers. Petals are usually broad, narrow only exceptionally. Sepals are always 3-veined. The lip outline is of two shapes: (1) sagittate, with the mid-lobe distinctly separated from the lateral lobes by shallow indentation (more common condition); (2) horseshoe-shaped to nearly cordate, with the mid-lobe not distinct from the lateral lobes but grading into them (*P. hippocrepiformis*, *P. moluccana* and *P. wappeana*). Both lip

lamellae are parallel, longitudinal, and between them there is only a shallow depression. Two different forms of gynostemium can be recognized in the section. In one, the gynostemium is explicitly papillose, staminodes are elongate, rostellum is distinctly shorter than staminodes, and anther is narrow (more common condition). In the second type, the surface of gynostemium is very minutely papillose, staminodes are shorter than rostellum and anther, and anther is relatively broad (*P. hippocrepiformis* and *P. moluccana*).

Key to species of the section *Oistochilus*

1. Anther narrow, gynostemium staminodia longer than anther and rostellum 2
1. Anther broad, gynostemium staminodia shorter than anther and rostellum 6
2. Leaf blade ovate to lanceolate, less than four (five) times as long as wide 3
2. Leaf blade narrowly or linear-lanceolate, more than seven times as long as wide 7
3. Leaves oblong ovate to lanceolate; lip with lamellae; gynostemium minutely papillose, except rostellum 4
3. Leaves ovate; lip flat, without lamellae; gynostemium strongly papillose, including rostellum *P. van-royenii*
4. Lip lamellae distinct; staminodes similar length or only slightly longer than anther and rostellum 5
4. Lip lamellae delicate and minute; staminodes at least two times longer than anther and rostellum *P. atrobrachiata*
5. Lip oblong-ovate to oblong-elliptic, mid-lobe not distinct from lateral lobes *P. wappeana*
5. Lip sagittate, mid-lobe separated from lateral lobes by distinct, shallow indentation *P. zippellii*
6. Petals elliptic; lip cordate to slightly sagittate, lamellae straight, auricles abbreviated, rounded *P. moluccana*
6. Petals linear-ligulate; lip horseshoe-shaped, lamellae semi-circular, auricles elongated, obtuse *P. hippocrepiformis*
7. Leaves grass-like; petals obovate, 3-nerved; lip lamellae thickened near their apices *P. graminifolia*
7. Leaves falcately lanceolate; petals ovate-trullate to elliptic-rhombic, 1-nerved; lip flat, without lamellae *P. raciborskii*

Pseudoliparis atrobrachiata (Ridl.) Marg. (Fig. 1)

Ann. Bot. Fennici 40: 63. 2003. — *Microstylis atrobrachiata* Ridl., Trans. Linn. Soc., Bot. 9(1): 160. 1916. — *Malaxis atrobrachiata* (Ridl.) Hunt., Kew Bull. 24: 78. 1970. — *Crepidium atrobrachiatum* (Ridl.) Szlach., Fragm.

Flor. Geobot., Suppl. 3: 124. 1995. — Type: Indonesia. New Guinea, Irian Jaya (Dutch New Guinea), Camp VI A, 17.I.1913 *Boden-Kloss s.n.* (holotype BM!)

Plants 30–35 cm tall, single or sometimes clustered. Rhizome abbreviated, with nodes covered by loose tubular scales. Leafy stem 3.5–4 cm long, (1.6)2–3.4 mm in diam., fusiform, erect, completely covered by leaf petioles and sheaths. Leaves ca. 4; leaf petiole (0.4)0.8–2(2.4) cm long, 0.3–0.5(0.6) cm wide when spread, canaliculate; leaf sheath (0.6)1.2–1.8(2) cm long, (2)2.5–3.8(4.2) mm in diam., loose, tubular, green, sometimes brownish or fawn tinged; leaf blade (3)4–5.2 cm long, 1.2–1.8 cm wide, slightly oblique, oblong ovate to usually lanceolate, attenuate and apiculate at apex, margins crispate, (3)5-nerved, green to dark green above, sea green and paler beneath. Inflorescence 25–28 cm long, erect; raceme 13–15 cm tall, 80–100-flowered, dense; peduncle 10–13 cm long. Sterile bracts usually 1, 3–4 mm long, 0.9–1.6 mm wide, narrowly triangular, reflexed. Floral bracts 2.2–3 mm long, 0.7–1 mm wide, narrowly triangular to lanceolate, apiculate to acuminate, 1-nerved, deflexed, green. Ovary and pedicel 2–3 mm long, sinuate, green to greenish-yellow. Flowers 5.5–6.5 mm in diam., yellow. Dorsal sepal 2.8–3.1 mm long, 1.5–1.8 mm wide, ovate to oblong ovate, obtuse to apiculate. Lateral sepals 2.7–3 mm long, 1.3–1.6 mm wide, oblique, ovate, obtuse to apiculate. Petals 2.2–2.5 mm long, 1–1.3 mm wide, slightly oblique, lanceolate to narrowly elliptic, shortly attenuate, obtuse to acute, 1-veined. Lip relatively small, (2)2.7–2.9 mm long, 1.5–1.7 mm wide, sagittate to pear-shaped in outline; mid-lobe oblong, distinctly apiculate to attenuate at apex, separated from lateral lobes by distinct, shallow indentation; lateral lobes auriculate: 0.5–0.6 mm long, 0.7–0.8 mm wide at base, semiobovate to semiobovate, obtuse at apices, usually convergent; central part with 2 parallel, longitudinal, slightly crispate at margin, thin lamellae, each of them 0.5–0.7 mm long, less than 0.1 mm high, at base fused into basal callus; basal callus 0.2–0.3 mm long, 0.4–0.5 mm wide at base, triangular. Gynostemium 1.4–1.5 mm long, 0.3–0.6 mm wide, erect, whole surface minutely papillose; column pale yellow to white-yellow; staminodes

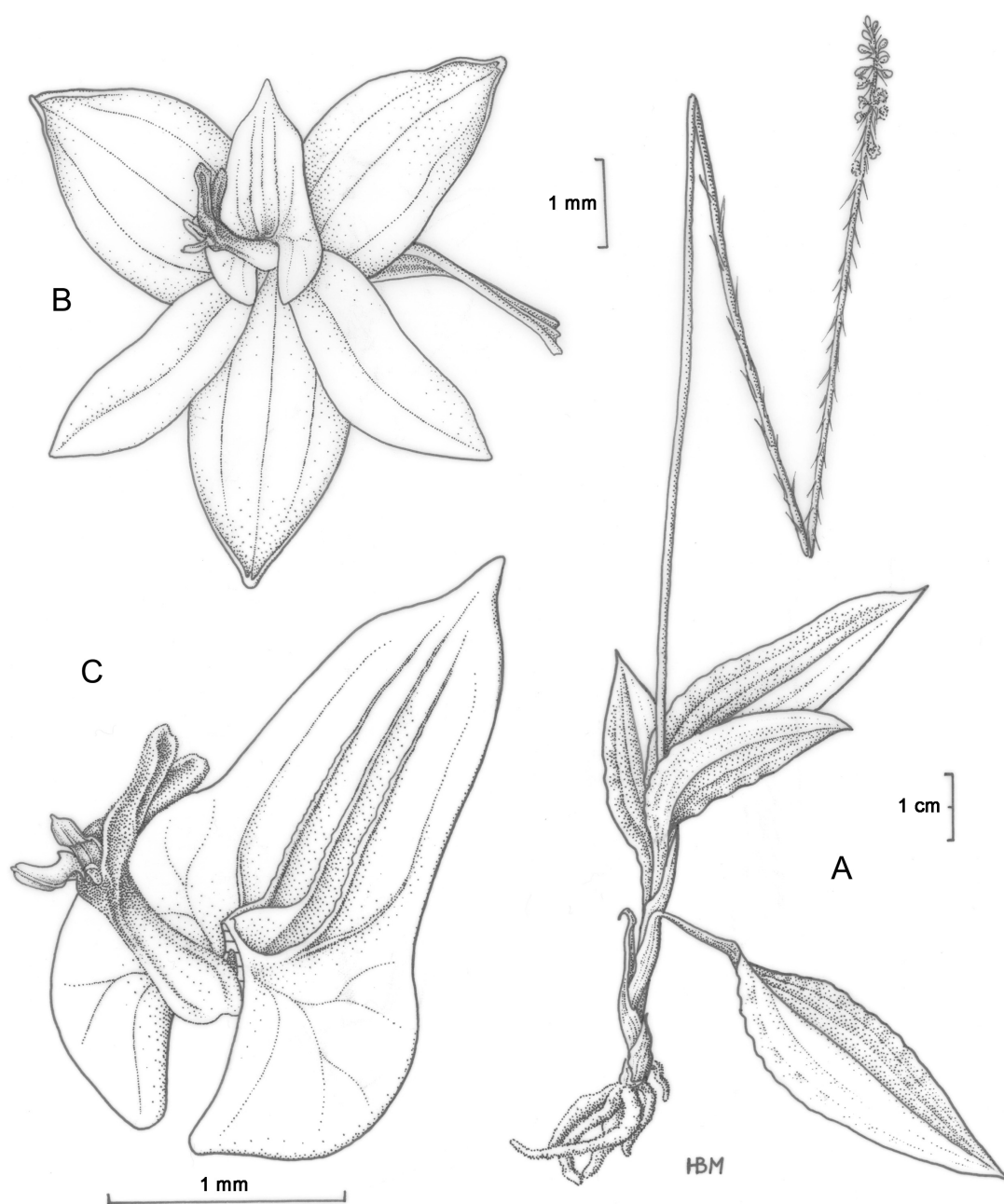


Fig. 1. *Pseudoliparis atrobachiata* (from original diagnosis and type, BM). — **A:** Plant. — **B:** Flower. — **C:** Lip and gynostemium.

0.8–0.9 mm long, 0.3–0.4 mm wide, almost two times longer than anther, oblong, nearly truncate to rounded at apex, distinctly folded back from the anther, deeply blackish green; anther ca. 0.5 mm long, 0.25–0.35 mm wide, pale yellow to

white-yellow; rostellum 0.4–0.5 mm long, ca. 0.3 mm wide, oblong, apiculate, erect, greenish to dark green; stigma relatively small. Fruit 7–8 mm long, 2.6–3 mm in diam., oblong obovate, fawn to yellowish.

DISTRIBUTION: New Guinea. Probably endemic.

ECOLOGY: Terrestrial; in forest; flowering in January.

REPRESENTATIVE SPECIMENS EXAMINED: Known so far only from type collection.

NOTES: This species is easily distinguished by the relatively small lip and its short auricles, a distinctly erect gynostemium, and elongate staminodes at least twice as long as anther.

***Pseudoliparis graminifolia* (Schltr.)
Szlach. & Marg. (Fig. 2)**

Adansonia ser. 3, 21(2): 277. 1999. — *Microstylis graminifolia* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 121. (1911) 1914. — *Malaxis graminifolia* (Schltr.) Hunt., Kew Bull. 24: 80. 1970. — *Crepidium graminifolium* (Schltr.) Szlach., Fragm. Flor. Geobot., Suppl. 3: 126. 1995. — Lectotype (designated here): Papua New Guinea. Morobe Distr. (Kaiser Wilhelms Land), the Mount Gomadjidi, on the Waria River, V. 1909 *Schlechter 19352* (L!, holotype B+, isotype BO).

Plant 10–35 cm tall, erect or ascending, gracile, sometimes loosely clustered. Rhizome short, cauliform, with nodes covered by loose tubular scales. Leafy stem (0.6)1–4(5) cm long, (1)2–3.2 mm in diam., erect, rather delicate, almost covered by leaf bases. Leaves (3)4–7; leaf petiole (0.3)0.6–1(1.4) cm long, (2)3–5(6) mm wide when spread, canaliculate; leaf sheath (0.7)1–1.3(1.5) cm long, (1.4)2.6–5(6.4) mm in diam., very loose, inflated, pale green, yellowish or fawn tinged; leaf blade (2)4–11(13) cm long, 0.2–0.7(1) cm wide, oblique, narrowly lanceolate, grass-like, distinctly attenuate and acuminate at apex, cuneate at base, 1-nerved, bright green to green above, paler beneath. Inflorescence (13)15–25(30) cm long, erect, at least twice as tall as the top of the leaves; raceme (5)10–15 cm tall, (40)60–100-flowered, dense; peduncle (8)15–10 cm long. Sterile bracts few, 5–15 mm long, 1.2–2.5 mm wide, narrowly triangular to lanceolate, reflexed, except the lowest. Floral bracts 2–6 mm long, 0.5–1.2 mm wide, narrowly triangular to lanceolate, acute, amplexicaul, 1-nerved, deflexed, green. Ovary and pedicel 2.5–3.8 mm long, sinuate, green,

sometimes with pinkish tint. Flower 5–6 mm in diam., pinkish. Dorsal sepal (2.5)2.7–3.5 mm long, (1.2)1.4–1.7 mm wide, ovate to oblong ovate, obtuse, 3-veined. Lateral sepals (2.3)2.5–3.4 mm long, 1.3–1.8 mm wide, oblique, ovate, obtuse to subacute. Petals (2.2)2.5–3 mm long, 0.9–1.2 mm wide, slightly oblique, obovate to narrowly obovate, apically rounded, slightly cuneate at base. Lip (2.5)2.7–3 mm long, (2.7)2.7–3.5 mm wide, sagittate in outline; mid-lobe 1.3–1.6 mm long, 1.1–1.6 mm wide at base, distinctly apiculate at apex, separated from lateral lobes by shallow indentation; lateral lobes distinctly auriculate: (0.7)0.9–1.2 mm long, 0.7–1 mm wide at base, falcate, obtuse at apices, usually slightly divergent; central part with 2 parallel, longitudinal, lamellae, apically convexed and incurved, each of them 1.1–1.6 mm long, 0.1–0.15 mm high, ca. 0.1 mm thick, at base fused into a basal callus; basal callus 0.2–0.3 mm long, 0.4–0.5 mm wide at base, triangular. Gynostemium (1.5)1.7–2 mm long, (0.5)0.7–0.9 mm wide, erect or only slightly arcuately recurved, whole surface minutely papillose; column green, yellowish when old, paler at base; staminodes 0.5–0.8 mm long, 0.3–0.4 mm wide, nearly twice as long as anther, oblong, usually truncate at apex, darker and intensively coloured; anther 0.3–0.5 mm long, 0.2–0.3 mm wide, yellow; rostellum 0.25–0.48 mm long, triangular; stigma relatively small. Fruit 2–3.5 mm long, 1.1–3 mm in diam., oblong obovate, yellowish to fawn.

DISTRIBUTION: New Guinea. Probably endemic. Alt. 200–920 m.

ECOLOGY: Terrestrial; on humus, in forest, especially in shady rain forest, sometimes near tracks; flowering from May to June; fruiting from June to July.

REPRESENTATIVE SPECIMENS EXAMINED: **Papua New Guinea.** Nunumai, 1952 *Continell 343* (K); Nauro/Enodi Divide, 1935 *C. A. Carr 16612* (BM).

NOTES: Easily distinguished from congeners by the obovate to spatulate petals and linear, apical curve of lip lamellae, and especially by the narrow, grass-like leaves, a feature rather rare within the genus.

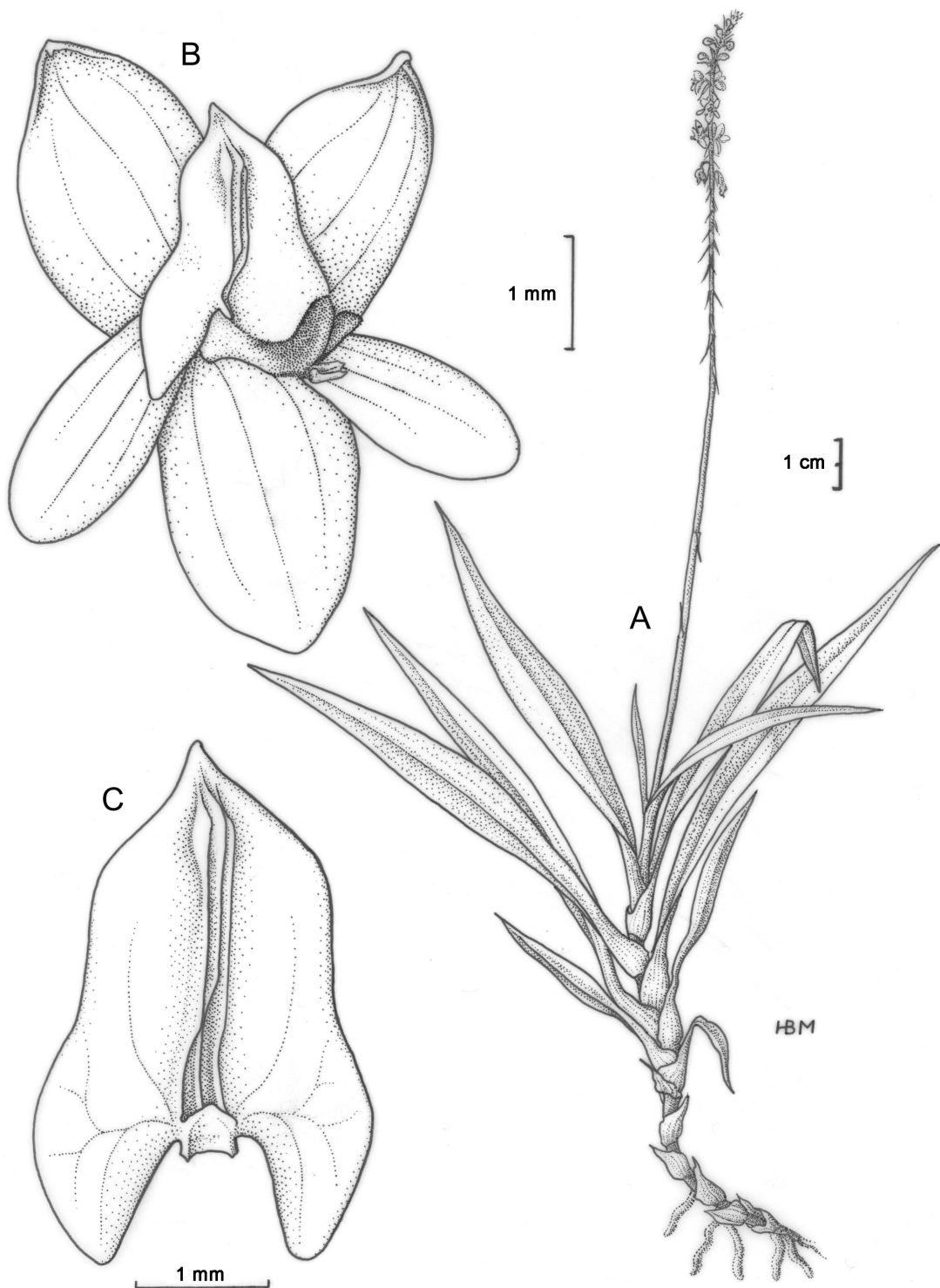


Fig. 2. *Pseudoliparis graminifolia* (A from Continenll 343, K; B and C from original diagnosis and type). — A: Plant. — B: Flower. — C: Lip.

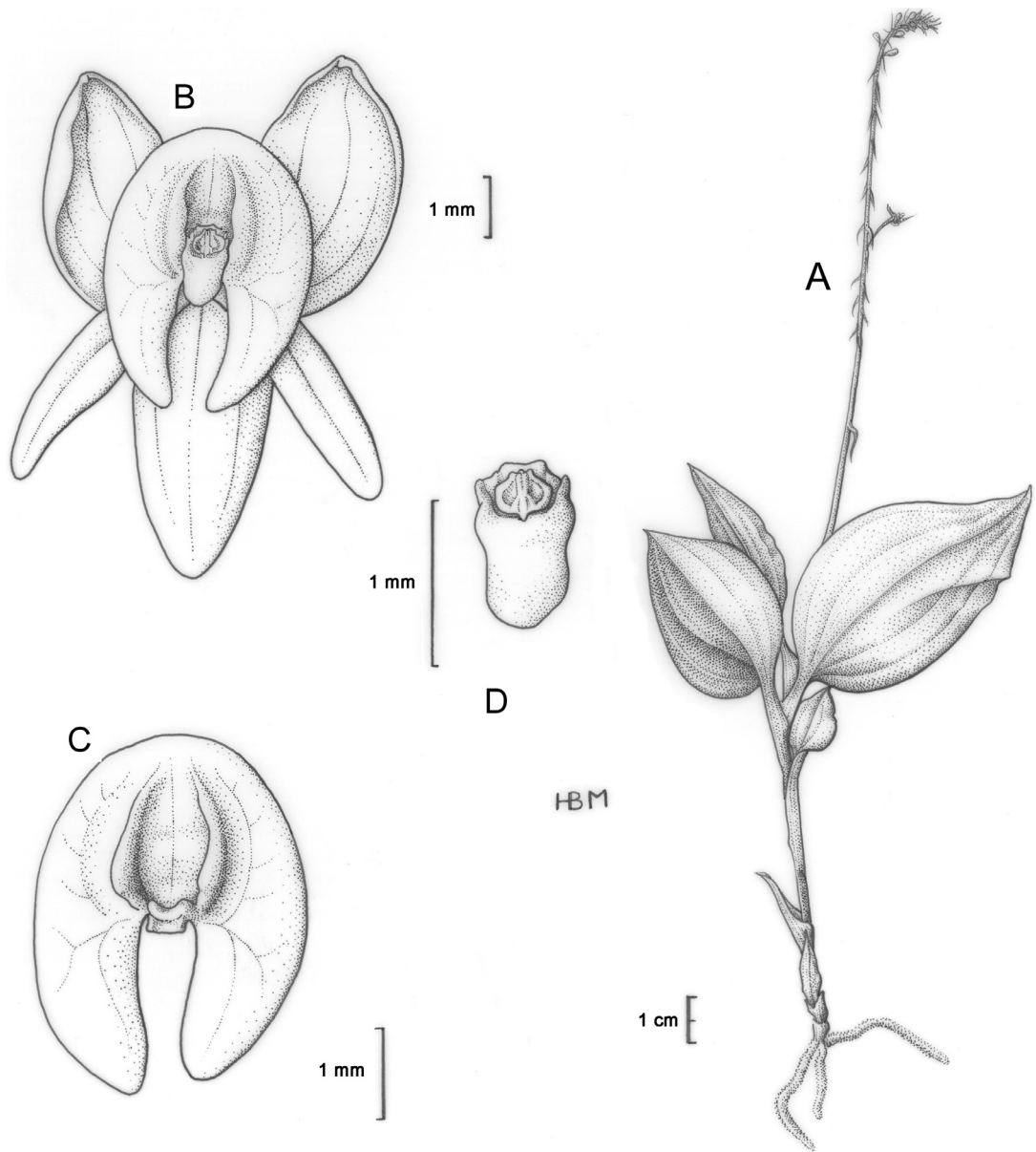


Fig. 3. *Pseudoliparis hippocrepiiformis* (from original diagnosis and type, K). — A: Plant. — B: Flower. — C: Lip. — D: Gynostemium.

Pseudoliparis hippocrepiiformis
(J.J. Wood) Marg., *comb. nova* (Fig. 3)

Malaxis hippocrepiiformis J.J. Wood, Orchid Rev. 89(1053): 209. 1981 — *Crepidium hippocrepiiformis* (J.J. Wood) Marg., Pol. Bot. J. 46(1): 69. 2001. — Type: Papua New Guinea, Eastern Highlands Prov., Kainantu Sub-prov., above Habi'ina Villages, on lower slopes of Mt. Piora, 6°43'S 145°58'E, 7.IX.1975 Sands, Pattison & Wood SANDS 1740 (holotype K!; isotype K!-spirit. coll.).

Plants 24–38 cm tall. Rhizome abbreviated, creeping, with nodes covered by tubular scales. Leafy stem 7–8 cm long, 0.2–0.4 cm in diam., erect, with 1 or 2 scarious, acuminate sheaths. Leaves 3–4; leaf petiole 0.3–0.8 cm long, 0.3–0.5 cm wide when spread, canaliculate; leaf sheath 0.4–0.7 cm long, 3–6 mm in diam., tubular, green, sometimes fawn tinged; leaf blade 1.7–6.4 cm long, 1.2–4 cm wide, oblique, ovate-

elliptic to narrowly elliptic, acute at apex, margin undulate, 3-nerved, dark green above, greyish-green beneath. Inflorescence 17–30 cm long, erect, pale green; raceme 7–10 cm tall, 40–60-flowered, subdense; peduncle 10–20 cm long. Bracts narrowly elliptic, acuminate, reflexed, pale green. Sterile bracts often 0.6–0.7 cm long, 1–1.4 mm wide. Floral bracts 0.3–0.5 mm long, 0.6–1 mm wide. Ovary and pedicel 4–5 mm long, sinuate, pale apple-green. Flowers 6–7 mm in diam. Tepals pale apple-green. Dorsal sepal 4.5–5 mm long, 1.8–2 mm wide, oblong-elliptic to oblong, obtuse, with revolute margins. Lateral sepals 3.4–3.6 mm long, 2.4–2.5 mm wide, oblique, ovate, obtuse. Petals 4.3–4.5 mm long, 0.7–0.8 mm wide, slightly oblique to sinuate, linear-ligulate, obtuse, somewhat cuneate at base, 1-veined. Lip 3.8–4.1 mm long, 3.3–3.5 mm wide, horseshoe-shaped, minutely papillose, pale apricot, lamellae dark green; mid-lobe broadly semi-orbicular, rounded at apex, not distinct from lateral lobes; lateral lobes auriculate: 1.8–2.1 mm long, 1.3–1.5 mm wide at base, relatively elongate, falcate, obtuse, convergent; central part with 2 semi-circular, subparallel, longitudinal lamellae, each of them 0.6–0.7 mm long, 0.1–0.2 mm high, 0.1–0.15 mm thick, between them a shallow recess, lamellae at base fused into basal callus; basal callus 0.2–0.3 mm long, 0.3–0.4 mm wide at base, semi-orbicular. Gynostemium 0.9–1.1 mm long, 0.5–0.6 mm wide, whole surface very minutely papillose, pale apple-green; column gently curving forward over lip callus, paler at base; staminodes abbreviated, oblong, obtuse at apex, darker coloured; anther 0.35–0.37 mm long, 0.37–0.38 mm wide, pale apricot; rostellum slightly longer than staminodes, broadly retuse, laterally connected with staminodes.

DISTRIBUTION: New Guinea. Probably endemic. Alt. 2125 m.

ECOLOGY: Terrestrial; amongst leaf litter in shade, in mixed mountain forest, including representatives of *Lithocarpus* and *Nothofagus*; flowering in September.

REPRESENTATIVE SPECIMENS EXAMINED: Known so far only from type collection.

NOTES: Wood (1981) described the species based on specimens collected by Sands

et al. (K, K-spirit. coll.), and placed it within *Malaxis*. He indicated its relationship with *M. leavis* and *M. seleniglossae* (= *Pseudoliparis leavis* and *P. seleniglossae*; Szlachetko & Margońska 1999). However, he did not unambiguously place his new species in the section *Pseudoliparis*.

In an earlier article (Margońska & Szlachetko 2001) I transferred the species into genus *Crepidium*. However, based on the presence of lip lamellae, narrower, ovate anther, absence of appendages on dorsal surface of gynostemium, and absence of the lip cavity typical for *Crepidium*, I concluded that it belongs in section *Oistochilus* of *Pseudoliparis*.

***Pseudoliparis moluccana* (J.J. Sm.) Marg. (Fig. 4)**

Ann. Bot. Fennici 40: 63. 2003. — *Microstylis moluccana* J.J. Sm., Bull. Inst. Bot. Buitenz. 7: 2. 1900. — *Malaxis moluccana* (J.J. Sm.) Ames & C. Schweinf., Orchidaceae 6: 73. 1920. — Type: Indonesia. Moluccas Archipelago, Ambon Island, J.J. Smith 617 (syntype BO); Ternate Island, J.J. Smith s.n. (syntypes BO, L!).

Plants (10)17–30(40) cm tall. Rhizome elongated, with nodes covered by loose, tubular scales. Leafy stem (2.6)7–15 cm long, (0.2)0.4–0.6(1) cm in diam., apically, ascending, creeping in older part. Leaves (4)6–8(11); leaf petiole (0.2)0.4–0.8(1) cm long, (0.2)0.3–0.4(0.6) cm wide when spread, canaliculate; leaf sheath (0.4)0.6–1(1.4) cm long, (5)7–8(10) mm in diam., slightly loose, tubular, green, sometimes fawn tinged; leaf blade (1.5)3–5(7) cm long, (0.8)1.3–2(2.5) cm wide, oblique, often ovate to lanceolate, attenuate and apiculate at apex, 3-nerved, shiny, greyish-green above, paler beneath. Inflorescence (7.8)10–17(22) cm long, erect, pale green; raceme (3.8)4.5–8(15) cm tall, 20–50(60)-flowered, dense, long flowering; peduncle (3.9)5–8(10) cm long. Sterile bracts often 1, 5.5–7.5 mm long, 1.8–2 mm wide, linear-triangular, acute, reflexed, pale green. Floral bracts (1.5)2.5–3(3.5) mm long, 0.9–1 mm wide, narrowly triangular to lanceolate, acute to shortly apiculate, acute, 1-nerved, deflexed, green to pale green. Ovary and pedicel 4.5–8 mm long, sinuate, green. Flowers 4–5.5

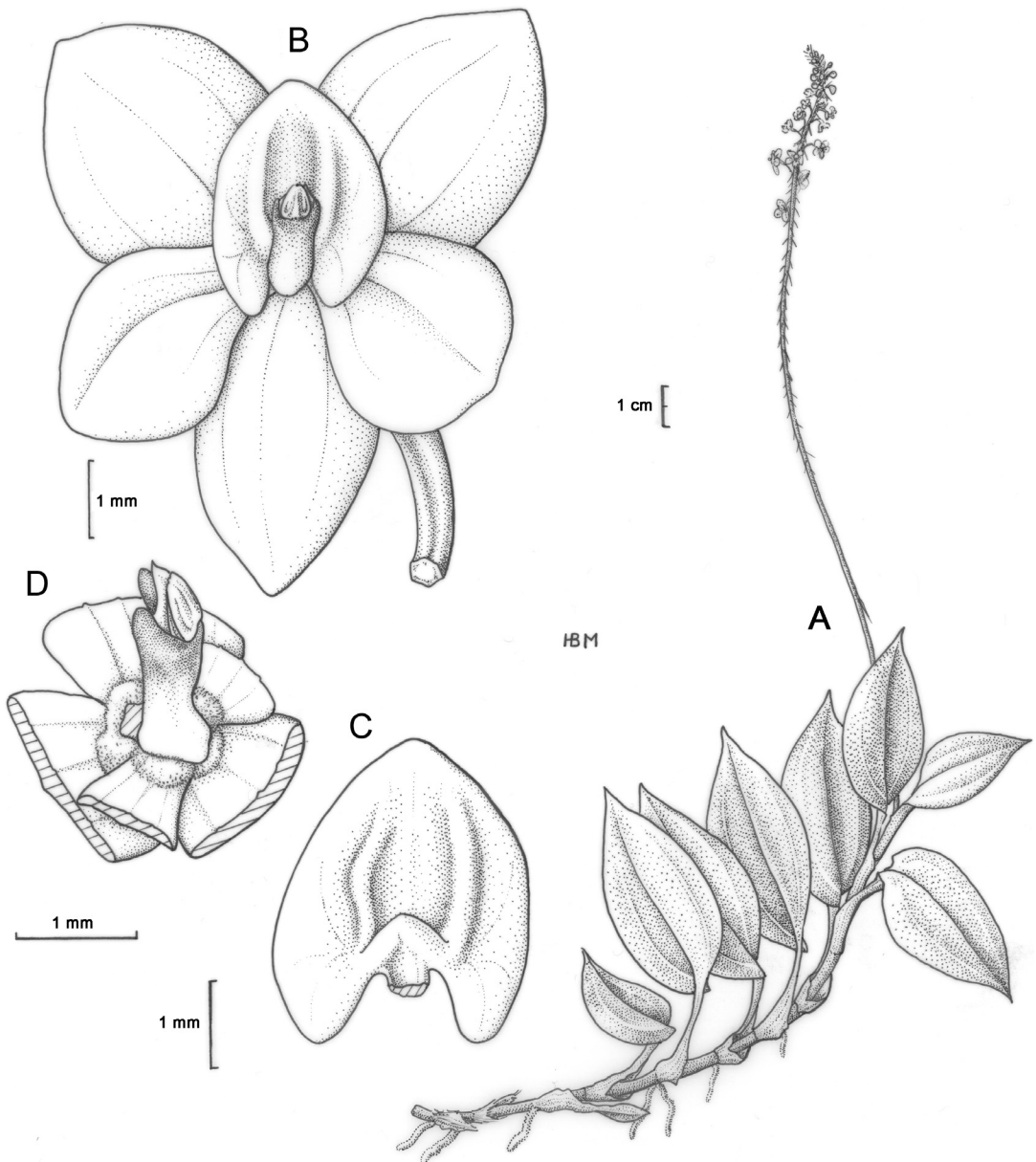


Fig. 4. *Pseudoliparis moluccana* (**A** from Dennis BSIP 8508; **B** and **C** from original diagnosis and type, BO; **D** from Robinson K 196, K spirit. coll.). — **A**: Plant. — **B**: Flower. — **C**: Lip. — **D**: Gynostemium with bases of tepals.

mm in diam., lime-yellow, yellow to yellow with purple reddish tint. Tepals often with papillose convexities at base. Sepals with blueish or greenish tint near apices, sometimes purplish tinged (probably when older). Dorsal sepal (3.3)3.5–3.7 mm long, 1.8–2.2(2.5) mm wide, ovate to oblong ovate, obtuse, with revolute margins. Lateral sepals (2.8)3–3.3 mm long, 2–2.3(2.6) mm wide,

oblique, ovate, obtuse to rarely subacute. Petals 2.8–3 mm long, 1.9–2.2(2.4) mm wide, slightly oblique, elliptic, subacute to acute, cuneate at base, 1-veined, brighter coloured than sepals. Lip (2)2.5–3 mm long, (1.1)1.5–1.9 mm wide, often cordate to rarely slightly sagittate; mid-lobe obtuse to apiculate at apex, not distinct from lateral lobes; lateral lobes auriculate: 0.6–1.2 mm

long, (0.5)0.6–0.8(1) mm wide at base, abbreviated, falcate, obtuse to rounded at apices; central part with 2 subparallel, longitudinal lamellae, each of them 0.8–1.2 mm long, 0.1–0.3(0.4) mm high, ca. 0.1 mm thick, between them shallow gutter, lamellae at base fused into basal callus; basal callus 0.2–0.3 mm long, 0.3–0.4 mm wide at base, triangular. Lip deeper yellow than tepals to orange, darker orange, ochre to maroon at central part. Gynostemium (1)1.4–1.8 mm long, 0.5–0.9 mm wide, erect, whole surface very minutely papillose; column paler at base; staminodes 0.4–0.5 mm long, 0.3–0.4 mm wide at base, slightly shorter than anther, oblong, obtuse at apex, intense dark green; anther 0.5–0.6 mm long, 0.35–0.45 mm wide, yellow, turning darker (red to maroon) with age; rostellum slightly longer than staminodes, triangular, acute, laterally connected with staminodes; stigma in relatively large pocket. Fruit 6–7 mm long, 3–3.5 mm in diam., oblong obovate, fawn to brownish.

DISTRIBUTION: Taiwan, Moluccas, New Guinea, Solomon Islands. Alt. 30–1 000 m.

ECOLOGY: Terrestrial; on humus, volcanic soil, in lowland to mountain forest, casuarina forest to mossy rain forest; flowering from July to November; fruiting from August to January.

REPRESENTATIVE SPECIMENS EXAMINED: **Taiwan.** Tobago Island, Botel (Lam-Hau), Mount Ta-Sen, Tatung Camp, Linn 46 (G. Seidenfaden's drawing!, as *Malaxis* sp.). **Solomon Islands.** Choiseul Island, 1986 Mitchell 50 (K, K-spirit. coll.); Guadalcanal Island, Mount Galago, 1982 Robinson K 192 (K-spirit. coll. 4432); 1982 Robinson K 196 (K-spirit. coll. 4431); Guadalcanal Island, 1965 Dennis 2051 (K, K-spirit. coll. 28920); Kolombangara Island, SE, W of Vila River, 1967 Dennis & Collectors BSIP 8508 (K, L, SING); New Georgia, S part, Kolo River Valley, Kolo River Estuary up to New Munt/Mube Camp, junction of Hube-Balolo Rivers, 1986 Wickison 61 (K, K-spirit. coll. 50891); Rendova Island, track from Ughele Village to Rendova Peak, 1991 Lewis 18 (K); San Cristobal Island, 1965 Dennis 2357 (K-spirit. coll. 28929, L); 0.5 mile up Pegato River, 1965 Hunt RSS 2220 (K, L); Santa Ysabel Island: Allardyce Harbour, Hillside 40', Susui BSIP 8263 (K, L, SING); Cockatoo Anchorage, 1965 Hunt RSS 2646 (K, L); Moloforu Bay, 1966 Beer's Collectors BSIP 7364 (K, L). Cf.: **Indonesia.** Moluccas Archipelago, Ambon Island, jung VI, Teysmann s.n. (BO); without locality and collector, cult. in Hort. Bog. A, B, C (BO).

NOTES: I obtained G. Seidenfaden's drawing of T. P. Linn's specimen no. 46 (as *Malaxis*

sp.) from Taiwan. However the determination of the specimens is beyond any doubt, and this species has the widest distribution within the genus. *Pseudoliparis moluccana* is known from Micronesia and New Guinea, but it has not been reported from the Philippines. Specimens belonging to this species are sometimes wrongly determined as *P. latipetala* (e.g. Lewis & Cribb 1991). A comparison of the original description of *Microstylis moluccana* (= *Pseudoliparis moluccana*), Smith's drawing (also kept in K!) with Smith's original diagnoses and drawing of *Microstylis latipetala* (= *Pseudoliparis latipetala*) reveals clear differences between these two taxa. All specimens cited by Lewis and Cribb (1991) are characterized by short and small staminodes and flat dorsal portion of gynostemium, without any appendage. These are characteristic features of *P. moluccana*.

Pseudoliparis raciborskii Szlach. & Marg. (Fig. 5)

Adansonia ser. 3, 21(2): 279–282. 1999. — Type: Indonesia. New Guinea, Irian Jaya (Dutch New Guinea), Vogelkop Peninsula, W Kebar Valley, near Senop Village, 10.IX.1961 van Royen & Sleumer 7306 (holotype L!).

Plants 9–35 cm tall. Rhizome several cm long, with nodes covered by widely infundibular scales. Roots appearing from the nodes of rhizome and base of stem. Leafy stem 2.4–4.8 cm long, up to 0.1 cm in diam., fusiform, erect or ascending. Leaves 4–7; leaf petiole 0.2–1.2 cm long, 0.3–0.5 cm wide when spread, canaliculate; leaf sheath 1–2 cm long, 4–7 mm in diam., green to flavescent; leaf blade 2.1–9.4 cm long, 0.4–1.1 cm wide, slightly falcate, lanceolate to linear-lanceolate, acute to shortly apiculate, usually 3-nerved, green above, pale beneath. Inflorescence 7.3–28.5 cm long, erect, paler coloured; raceme 3.3–19 cm tall, 60–100-flowered, dense; peduncle 4–9.5 cm long. Sterile bracts usually 1, 5–10 mm long, 1.2–2.3 mm wide, reflexed. Floral bracts 2–10 mm long, 0.7–1 mm wide, linear-lanceolate to narrowly triangular, acute, 1-nerved, deflexed, pale green. Ovary and pedicel 2–2.3 mm long, sinuate, pale green. Flowers 5.8–6.8 mm in diam., greenish brown, brownish yellow to yellowish. Dorsal sepal 3.1–3.6 mm long, 1.6–2.1 mm

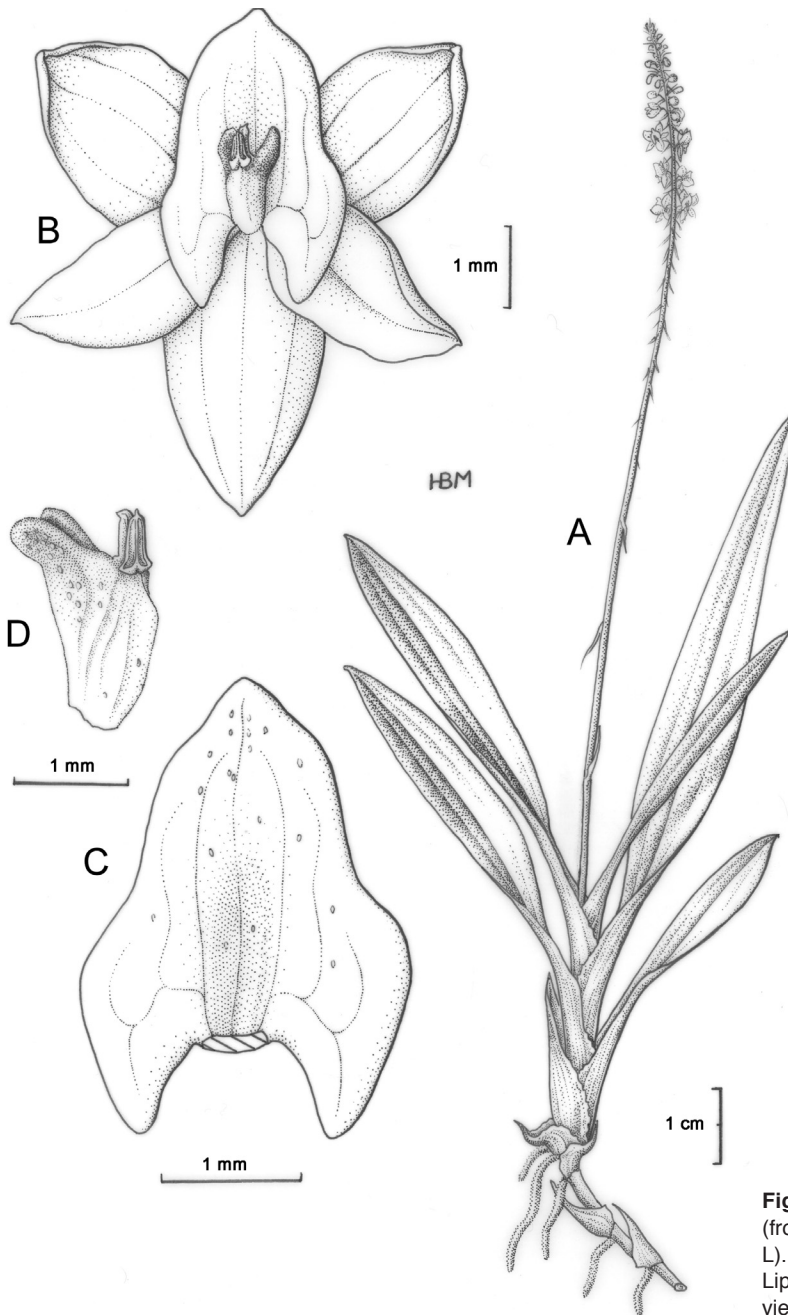


Fig. 5. *Pseudoliparis raciborskii* (from original diagnosis and type, L). — **A:** Plant. — **B:** Flower. — **C:** Lip. — **D:** Gynostemium, lateral view.

wide, oblong ovate to elliptic-ovate, subacute. Lateral sepals 3–3.4 mm long, 1.8–2.5 mm wide, oblique, ovate, acute to subacute. Petals 2.9–3.2 mm long, 1.5–2 mm wide, oblique, ovate-truncate to elliptic-rhombic, acute to subapiculate, 1-veined. Lip 3–3.8 mm long, 2.3–2.8 mm wide, ovate to sagittate in outline; mid-lobe obtuse to

apiculate at apex, separate from lateral lobes by gentle indentation; lateral lobes with short auricles: 0.4–0.6 mm long, 0.7–1.2 mm wide at base, falcately triangular, obtuse at apices, convergent or rarely divergent; central part of lip ecallose. Gynostemium 1.7–2 mm long, 0.7–1.2 mm wide, slightly arcuately recurved, minutely and gently

papillose; column yellowish green; staminodes 0.7–1 mm long, 0.3–0.4 mm wide, only slightly longer than anther, oblong, obtuse to truncate at apex, darker and intensively green; anther 0.4–0.6 mm long, 0.2–0.3 mm wide, pale yellow. Fruit 4–6 mm long, 2–3.8 mm in diam., obovate, softly nodulate, fawn to brownish.

DISTRIBUTION: New Guinea, D'entrecasteaux Islands. Alt. 30–600 m.

ECOLOGY: Terrestrial; on humus in leaf litter, sometimes on rocks, usually amongst minute mosses, in rain forest and primary forest; flowering from March to April (Normanby Island) and from October to November, fruiting from April to May on Normanby Island, elsewhere in November.

REPRESENTATIVE SPECIMENS EXAMINED: **Papua New Guinea.** D'entrecasteaux Islands, Normanby Island, mountains behind Waikaiuna Bay, 1956 *Brass* 25567 (paratype L); near Waikaiuna, 1956 *Brass* 25624 (L).

NOTES: *Pseudoliparis raciborskii* is easily distinguished by e.g. the rather small size of plants, falcately lanceolate leaves, and relatively elongate inflorescence.

***Pseudoliparis van-royenii* Szlach. & Marg.**
(Fig. 6)

Adansonia ser. 3, 21(2): 281–282. 1999. — Type: Indonesia. New Guinea, Irian Jaya (Dutch New Guinea), Vogelkop Peninsula, Aifat River Valley, path from Surum to Son Vil-lage, 26.X.1961 *van Royen & Sleumer* 7505 (holotype L!).

Plants 25–30 cm tall, in cluster. Rhizome several cm long, with nodes covered by loose, tubular scales. Leafy stem 1.4–3.6 cm long, 1.6–4.2 mm in diam., fusiform, erect, nearly completely covered by leaf bases and scales. Leaves 3–5; leaf petiole 0.2–0.8 cm long, 3.6–5.0 mm wide when spread, canaliculate; leaf sheath 1–2 cm long, 2–6.5 mm in diam., green, sometimes with flavescent tint; leaf blade 2.7–4.8 cm long, 1.5–2.4 cm wide, ovate, attenuate and apiculate at apex, usually 3-nerved, greyish-green above, paler beneath. Inflorescence up to 25.6 cm long, erect; raceme ca. 14.2 cm tall, ca. 40-flowered,

dense; peduncle ca. 11 cm long. Sterile bracts usually 1, 7–7.8 mm long, 2–2.2 mm wide, triangularly auriculate at base, reflexed. Floral bracts 3–3.5 mm long, 0.9–1.3 mm wide, narrowly triangular to linear-lanceolate, acute to shortly apiculate, obscurely auriculate at base, 1-nerved, deflexed, green. Ovary and pedicel 3.5–4.5 mm long, sinuate, green. Flowers 6–6.5 mm in diam., creamy, lip yellow. Dorsal sepal 4–4.2 mm long, 1.8–2 mm wide, oblong ovate to oblong, obtuse, with revolute margins, particularly apical. Lateral sepals 3.5–3.7 mm long, 2–2.2 mm wide, oblique, ovate, shortly apiculate. Petals 3.3–3.5 mm long, 1.4–1.5 mm wide, broadly lanceolate to narrowly rhombic, attenuate, acute, slightly cuneate at base, 1-veined. Lip 3–3.5 mm long, 2.4–2.7 mm wide, sagittate in outline; mid-lobe distinctly apiculate at apex, separated from lateral lobes by a deep indentation; lateral lobes distinctly auriculate: 1.2–1.4 mm long, 0.9–1.2 mm wide at base, sinuate, subacute at apices, usually divergent; central part of lip ecallose and flat; basal callus 0.3–0.4 mm long, 0.5–0.6 mm wide at base, lingulate. Gynostemium 1.9–2.1 mm long, 0.7–1.2 mm wide, only slightly arcuately recurved, whole surface including rostellum distinctly papillose, papillae relatively large; column green, yellowish at base; staminodes 1–1.1 mm long, 0.3–0.5 mm wide, only slightly longer than anther, oblong, truncate at apex, darker and intensively green; anther ca. 0.6 mm long, 0.2–0.35 mm wide, yellow; stigma relatively small. Fruit 8.5–9 mm long, 3–3.6 mm in diam., oblong obovate, fawn to brownish.

DISTRIBUTION: New Guinea, probably endemic. Alt. ca. 720 m.

ECOLOGY: Terrestrial; on clayey soil, on forest litter, in oak forest; flowering from September to October, fruiting in October.

REPRESENTATIVE SPECIMENS EXAMINED: Known so far only from type specimen.

NOTES: The species seems to be closely related to *Pseudoliparis zippelii*, from which it differs by the broader, ovate leaves, and the distinctly papillose gynostemium (including rostellum) surface.

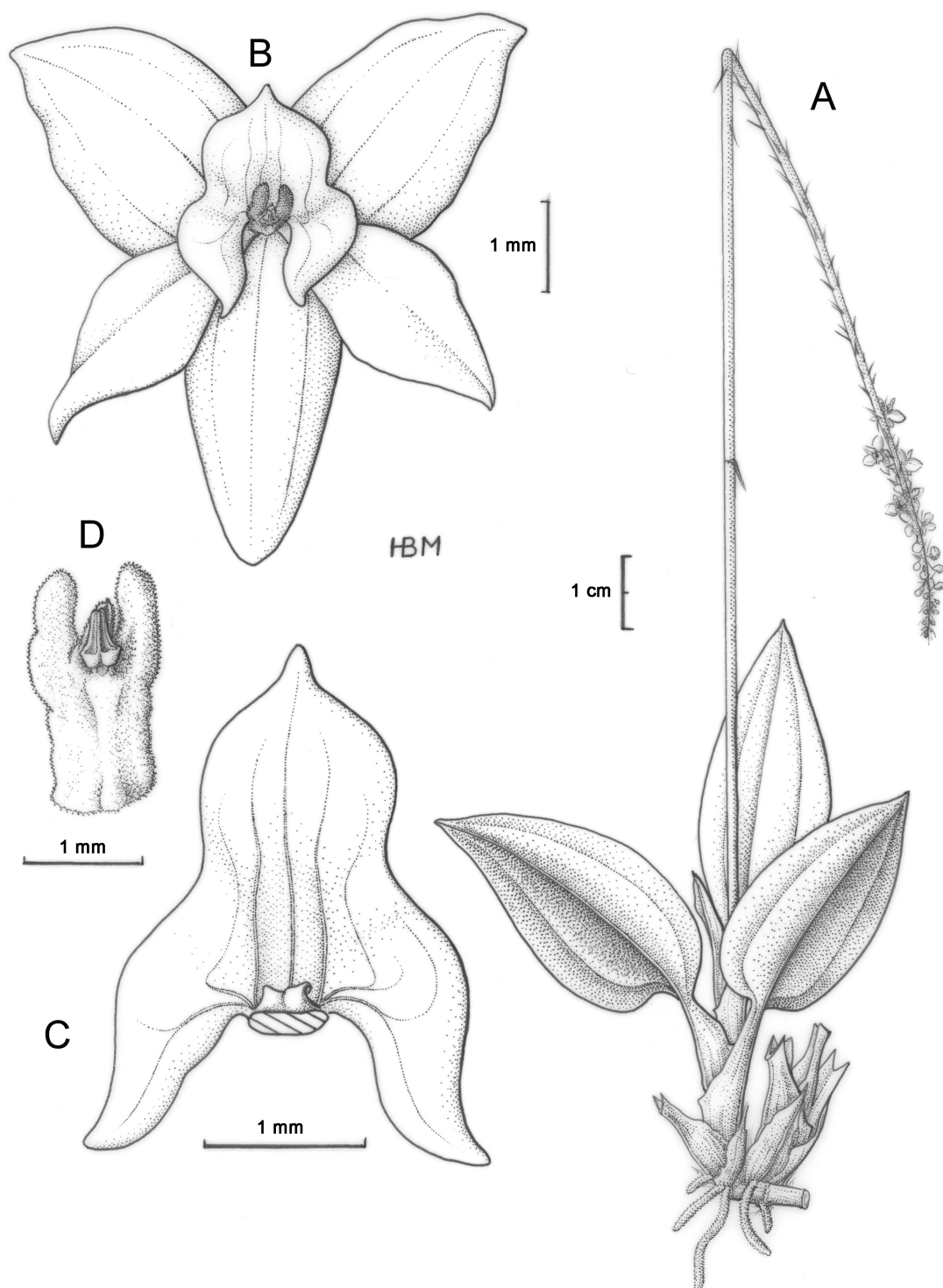


Fig. 6. *Pseudoliparis van-royenii* (from original diagnosis and type, L). — **A:** Plant. — **B:** Flower. — **C:** Lip. — **D:** Gynostemium.

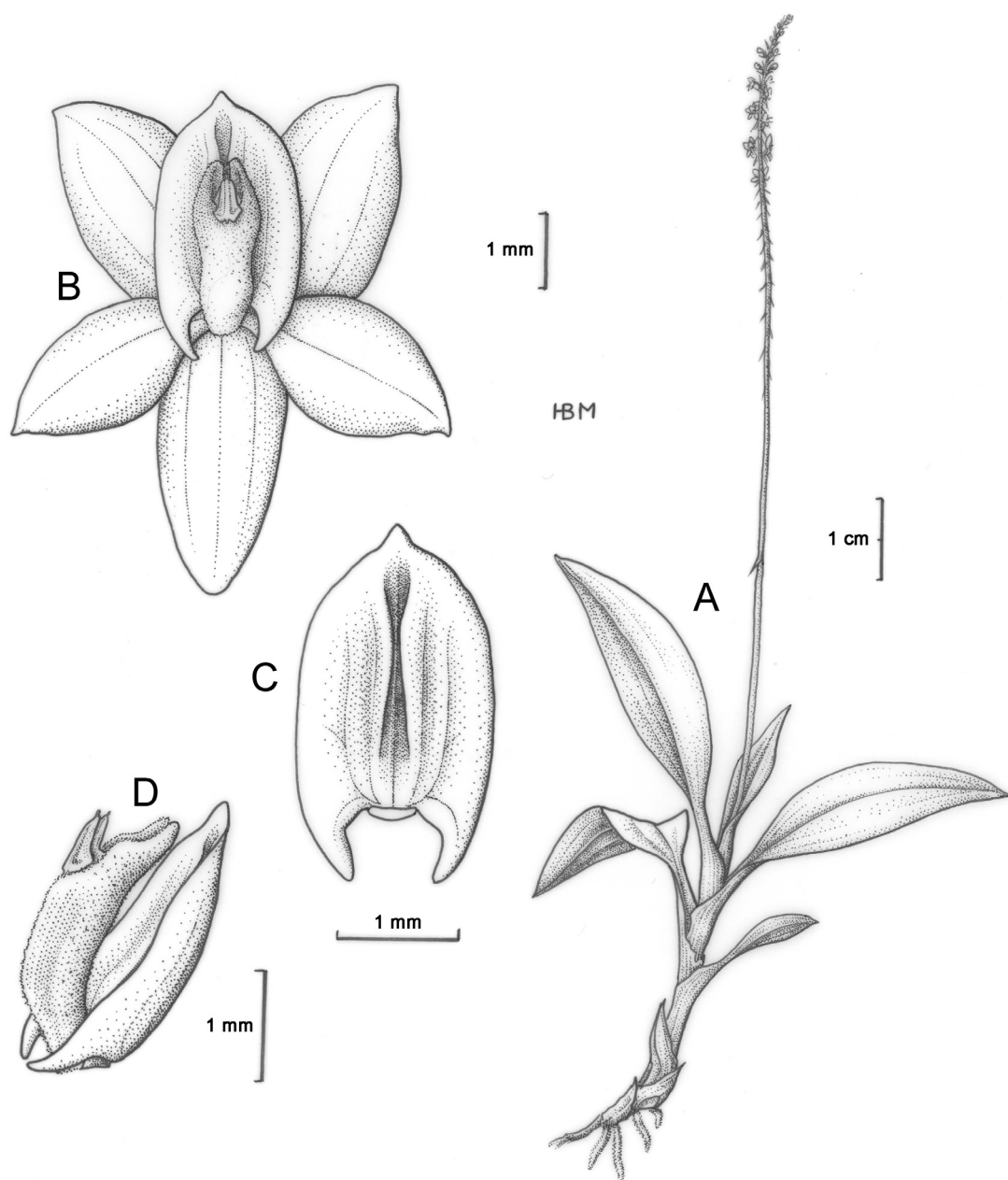


Fig. 7. *Pseudoliparis wappeana* (from original diagnosis and type, L). — **A:** Plant. — **B:** Flower. — **C:** Lip. — **D:** Lip and gynostemium, lateral view.

***Pseudoliparis wappeana* (J.J. Sm.) Marg.**
(Fig. 7)

Ann. Bot. Fennici 40: 64 ("wapeana", orth. err.). 2003.
— *Microstylis wappeana* J.J. Sm., Meded. Herb. Leid. 23:

3. 1915. — *Malaxis wappeana* (J.J. Sm.) Hunt, Kew Bull. 24: 85. 1970. — *Crepidium wappeanum* (J.J. Sm.) Szlach., Fragm. Flor. Geobot., Suppl. 3: 133. 1995. — Type: Indonesia. New Guinea, Irian Jaya (Dutch New Guinea), Geelvink-Bai, Jabi Mountain, near Wappe, Janowski 317 (holotype L!; isotypes BO, BO-spirit. coll.).

Plants 13–16 cm tall. Rhizome few cm long, with nodes covered by tubular scales. Roots appearing from the basal nodes of stem. Leafy stem 3–3.75 cm long, fusiform, erect. Leaves 4–6; leaf petiole and sheath 1.1–2.5 cm long; leaf blade 1.6–3.5 cm long, 0.8–1.2 cm wide, oblique, ovate to oblong ovate, apiculate, usually 5-nerved, green above, paler grey-green beneath. Inflorescence 10–12 cm long, erect, pale green; raceme 6–7 cm tall, many-flowered, subdense to dense; peduncle 4–5.5 cm long, with usually 1, reflexed sterile bracts. Floral bracts ca. 3.5 mm long, 0.7–1 mm wide, lanceolate to triangular-lanceolate, acute to acuminate, 1-nerved, deflexed, pale green. Ovary and pedicel 3–4 mm long, sinuate, pale apple-green. Flowers ca. 4.5–5.5 mm in diam., yellow. Sepals and petals with lateral margin slightly down curved. Dorsal sepal ca. 3.5 mm long, 1.5–1.6 mm wide, ovate to oblong ovate, obtuse. Lateral sepals ca. 3.4 mm long, 1.6–1.7 mm wide, oblique, ovate to oblong ovate, obtuse. Petals ca. 3.5 mm long, 1.7–1.8 mm wide, oblique, ovate-rhombic to trullate, subacute to subapiculate, basally cuneate, 1-veined. Lip 3–3.2 mm long, 1.7–1.8 mm wide, oblong ovate to oblong elliptic; mid-lobe apiculate at apex, not distinct from lateral lobes; lateral lobes with short auricles: 0.6–0.7 mm long, 0.5–0.7 mm wide at base, semi-lunate, falcate, acute at apices, convergent; central part of lip with 2, parallel and longitudinal lamellae, each of them: 1.6–1.8 mm long, 0.1–0.2 mm high, 0.05–0.1 mm thick, convergent, between them a longitudinal, shallow recess; basal callus small, obtuse at apex. Gynostemium 2.2–2.3 mm long, 0.6–0.8 mm wide, arcuately recurved, distinctly papillose, especially in basal part; staminodes 0.8–0.9 mm long, 0.4–0.5 mm wide, slightly longer than anther, slightly falcate, obtuse at apex, darker coloured; anther 0.6–0.7 mm long, ca. 0.3 mm wide, pale yellow. Fruit obovoid, fawn.

DISTRIBUTION: New Guinea, probably endemic.

ECOLOGY: Terrestrial; on forest litter, in shade.

REPRESENTATIVE SPECIMENS EXAMINED: **Indonesia**. New Guinea, Irian Jaya (Dutch New Guinea), Jabi Mountain, near Wappe, *Gjellerup s.n.* (BO); *s. prec. loc.*, *s. coll.* 124 (BO).

NOTES: Smith (1909) suggested a close relationship with *Pseudoliparis zippelii*. However, *P. wappeana* can be easily distinguished by its broader leaves, flowers which are always yellow, mid-lobe being not distinct from lateral lobes, abbreviated auricles of lateral lobes, and the two characteristic, longitudinal, convergent lamellae of lip.

***Pseudoliparis zippelii* (J.J. Sm.) Marg.**
(Fig. 8)

Ann. Bot. Fennici 40: 64 (“zippeli”, orth. err.). 2003. — *Microstylis zippelii* J.J. Sm., Bull. Dep. Agric. Indes Neerl. 39: 17. 1910. — *Microstylis platycheila* Kraenzl., K. Schum. & Laut., Fl. Deutsch. Schutzg. Suds.: 24. 1901. (non *M. platycheila* Rchb. f., Seem. Fl. Vit. 302. 1868.). — *Microstylis moluccana* var. *sagittata* J.J. Sm., Nova Guinea 8: 32. 1909. — *Malaxis moluccana* var. *sagittata* (J.J. Sm.) Ames & C. Schweinf., Orchidaceae 6: 73. 1920. — *Malaxis zippelii* (J.J. Sm.) Hunt, Kew Bull. 24: 86. 1970. — *Crepidium zippelii* (J.J. Sm.) Szlach., Fragm. Flor. Geobot., Suppl. 3: 133. 1995. — Types: Indonesia. New Guinea, Irian Jaya (Dutch New Guinea), Fundortsangabe, *Zippelius s. no.* (Herb. Lugd., Bat. n. 904 85-190, present depositary?); B. Sijep, Wichmann’s Expedition (1903), *Djibdja 140* (present depositary?); Noord River near Mundung and Reiger Rivers, 06.1907. *Versteeg 1207* (syntypes BO; isosyntypes BO-spirit. coll., L).

Plants (11)18–30(40) cm tall, single, sometimes clustered. Rhizome several to dozens of cm long, nodes covered by loose tubular scales. Leafy stem (1.3)3.5–5(6) cm long, (2)4–6 mm in diam., fusiform, erect, mostly covered by leaf bases and scales. Leaves (2)4–5(7); leaf petiole (0.4)0.8–1.5(2.2) cm long, (0.3)0.5–0.7(0.9) cm wide when spread, canaliculated; leaf sheath (0.5)0.8–1.5(2) cm long, (5)7–8(10) cm in diam., loose, tubular, green, sometimes brownish or fawn tinged; leaf blade (2)8–10(13) cm long, (0.9)1.5–2.5(3.5) cm wide, distinctly oblique, oblong ovate to often lanceolate, distinctly attenuate and apiculate at apex, 3–5-nerved, green to dark green above, paler beneath. Inflorescence (10)15–20(35) cm long, erect; raceme (2)5–12 cm tall, (40)60–100-flowered, dense; peduncle (8)10–23 cm long. Sterile bracts usually 1, 6–12 mm long, 1.4–2.2 mm wide, narrowly triangular, reflexed. Floral bracts 3–5.5 mm long, 0.7–1.5 mm wide, narrowly triangular to lanceolate, acute to shortly apiculate, 1-nerved, deflexed, green. Ovary and pedicel 3–4 mm long, sinu-

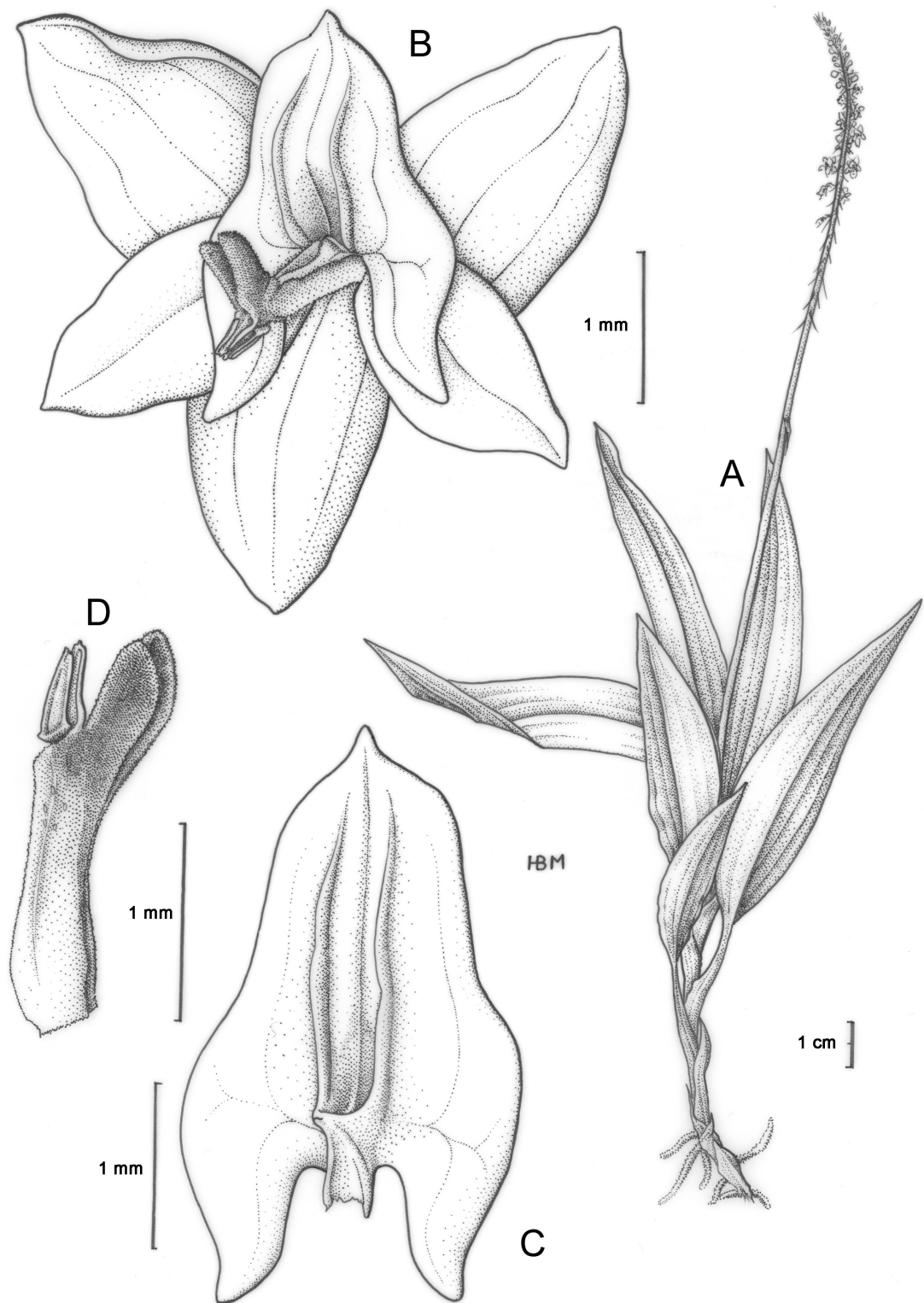


Fig. 8. *Pseudoliparis zippelii* (from original diagnosis and type, BO; Schlechter 14299, K). — **A**: Plant. — **B**: Flower. — **C**: Lip. — **D**: Gynostemium, lateral view.

ate, green. Flowers 5–6 mm in diam., tepals usually white with pearly shine, sometimes with pale brownish tint, lip yellow-brown to ochre-yellow, sometimes with pink tint, callus often pink to purplish. Dorsal sepal (3)3.5–4.5 mm long, (1.3)1.8–2.3 mm wide, oblong ovate to oblong, obtuse, with revolute margins. Lateral sepals (2.5)2.9–3 mm long, (1.7)1.9–2.1 mm wide, oblique, ovate, obtuse to subacute. Petals (2.2)2.5–3 mm long, 0.9–1.2 mm wide, slightly oblique, broadly lanceolate to narrowly elliptic, attenuate, acute, slightly cuneate at base, 1-veined. Lip (2.5)3–3.5 mm long, (1.8)2–2.3 mm wide, sagittate in outline; mid-lobe distinctly apiculate at apex, separate from lateral lobes by explicit indentation; lateral lobes distinctly auriculate: (0.8)1–1.2 mm long, 0.7–1 mm wide at base, sinuate, subacute at apices, usually divergent; central part with 2 parallel, longitudinal, thin lamellae, each of them: 1.3–1.7 mm long, 0.1–0.2 mm high, at base fused into basal callus; basal callus 0.3–0.4 mm long, 0.5–0.6 mm wide at base, triangular. Gynostemium (1.6)1.8–2.1 mm long, (0.6)0.8–1 mm wide, erect or only slightly arcuately recurved, whole surface minutely papillose; column blue, green-blue, yellowish when old, paler at base; staminodes 0.6–0.8 mm long, 0.3–0.5 mm wide, slightly longer than anther, oblong, usually truncate at apex, darker and intensively coloured; anther 0.5–0.6 mm long, 0.25–0.35 mm wide, yellow; stigma relatively small. Fruit 8–9 mm long, 3–3.5 mm in diam., oblong obovate, fawn to brownish.

DISTRIBUTION: Moluccas, New Guinea, Bismarck Archipelago. Alt. 5–500 m.

ECOLOGY: Terrestrial; on humus, on muddy ground; in shady and wet places; in primary and rain forest; flowering from December to June, fruiting between January and July.

REPRESENTATIVE SPECIMENS EXAMINED: **Indonesia.** New Guinea, Irian Jaya (Dutch New Guinea), Noord River, near Alkmaar, Lorentz's Expedition (1909), *von Romer* 522; *Rachmat* s. no., Cult. in Hort. Bog. no. 138; Moluccas, Ceram Island,

Batu Kapiran, Wahi, 1910 *Rutten* 152 (BO, K), *Kornassi* 752 (BO). **Papua New Guinea.** Gulf Distr., Kerema Subdistr., Iori Village area, 1971 *Stone* 10147- LAE 53447 (K, L, LAE); Morobe Distr., Finschhafen Subdistr., near Gao River, 1966 *Millar* NGF 22629 (K, L), near Jaduna on Waria River, 1909 *Schlechter* 19280 (B+, BO); (Kaiser Wilhelms Land), Madang Distr., Ramu Subdistr., Ramu River, 1902 *Schlechter* 13889 (B+, BM, K), Boroai, 1907 *Schlechter* 17069 (B+, BO), low ridges N of Walium Station, 1979 *Sohmer & Katik* 11344, LAE 75154 (K, L, LAE); Koitaki, 1935 *C. E. Carr* 10026 (BM, L); Konstantinhafen, 1902 *Schlechter* 14299 (B+, BM, K); Admiralty Islands, Manus Island, near Buyang II village, ca. 10 km inland from N coast in Estern Manus, 1975 *Sands, Pattison & Wood* SANDS 2587 (K, K-spirit. coll.). Cf.: **Papua New Guinea.** (Kaiser Wilhelms Land) Sepik Distr., Torricelli Mountain, 1902 *Schlechter* 14596 (B+); *s. prec. loc.*, von *Leeuwen* 9793 (BO); *s. prec. loc.*, *Ramen* 522 (BO); *s. prec. loc.*, *s. coll. & n.*, cult. in Hort. Bog. (BO).

NOTES: Originally Smith (1909) recognized the taxon as a variety of *Microstylis moluccana*, but later as a separate species.

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