

The genus *Disperis* (Orchidaceae) in Madagascar, the Comores, the Mascarenes and the Seychelles

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ABSTRACT

The terrestrial orchid genus *Disperis* in Madagascar and the Comores, the Seychelles and the Mascarenes is revised and a key is provided for the identification of the 22 species that are currently recognised. Six new Madagascan species, *D. bathiei*, *D. bosseri*, *D. ciliata*, *D. lanceolata*, *D. masoalensis* and *D. falcatipetala*, and a new variety of *D. oppositifolia* (var. *mascarenensis*) from La Réunion are described. *Disperis borbonica* from La Réunion is reduced to varietal status within *D. discifera*.

RÉSUMÉ

Le genre *Disperis* (Orchidaceae) à Madagascar, aux Comores, aux Mascareignes et aux Seychelles.

MOTS CLÉS

Orchidaceae,
Disperis,
Madagascar,
Comores,
Mascareignes,
Seychelles.

Le genre *Disperis*, Orchidées terrestres, est révisé pour Madagascar, les Comores, les Seychelles et les Mascareignes. Une clé est proposée pour l'identification des 22 espèces reconnues. Six espèces nouvelles : *D. bathiei*, *D. bosseri*, *D. ciliata*, *D. lanceolata*, *D. masoalensis* et *D. falcatipetala* sont décrites de Madagascar. Une nouvelle variété de *D. oppositifolia* (var. *mascarenensis*) est décrite de La Réunion. *Disperis borbonica* de La Réunion est réduite au rang de variété de *D. discifera*.

Disperis is a genus of about 80 species occurring in tropical and South Africa, Madagascar, the Comoro Islands, the Seychelles, the Mascarene Islands, India and the Malay

Archipelago East to New Guinea. The greatest diversity is in tropical and southern Africa where more than three-quarters of the species are found. Sixteen species were recorded from Madagascar

and the adjacent islands by PERRIER DE LA BATHIE (1939), while 17 were reported from Madagascar by DU PUY et al. (1999). The genus is now considered to comprise 21 species in Madagascar (15 endemic), five in the Comores, four in the Mascarenes (one endemic), and one in the Seychelles. A single species, *D. tripetaloides* is found in Madagascar and all of the archipelagos.

Disperis are small herbaceous orchids, usually terrestrial but occasionally lithophytic or low-level epiphytes. Most are shade dwellers, growing in humus in forest and woodland, but a number of species grow in open grassland. Many are rather insignificant plants with fairly short-lived flowers, and they are almost certainly overlooked and under-recorded.

The majority of the Madagascan species appear to be endemic and, in most cases, only one or a few herbarium specimens are available for study. Species of *Disperis* are difficult to identify and name, particularly from herbarium specimens, because some are superficially similar, differing in their often bizarre lips and appendages which are carried inside the hood formed by the dorsal sepal and petals. These are often difficult to examine and to describe. Reference should be made to the black and white illustrations when trying to identify specimens, although it should be remembered that flowers of herbarium specimens might be distorted and that drawings show only what the artist sees. No good material has been seen of *D. humbertii* and, therefore, no drawings have been made of it. The description of that species is based mainly on PERRIER DE LA BATHIE'S account in the Flore de Madagascar.

DISPERIS Sw.

Kongl. Vetensk. Acad. Nya Handl. 21: 218 (1800); Schlechter, Bull. Herb. Boiss. 6: 911 (1898).

Dryorkis Thouars, Nouv. Bull. Sci. Soc. Philom. Paris 1: 316 (1809).

Dryopeia Thouars, Orch. Iles Afr., 1^{er} tableau a, t. 1-3 (1822) [*Dryopria*]; A. Richard, Monog. Orch. Iles de France et Bourbon: 35 (1828), Extr. Mém. Soc. Hist. Nat. Paris 4.

Small, erect terrestrial, lithophytic or rarely epiphytic herbs with small tubers. Stems with 1 to several cataphylls at the base. Leaves 1 to few, opposite or alternate, sometimes with coloured veins, sometimes absent. Inflorescence racemose or one-flowered. Flowers small, white, yellow, green, pink, lilac or magenta purple. Bracts leaf-like. Dorsal sepal forming with the petals an open or elongate hood, concave or spurred. Lateral sepals free or partly adnate, each with a sac-like spur in the middle or near the inner margin (spur lacking in a few species). Petals hyaline, entire, adnate to the dorsal sepal to form the hood. Lip usually hidden within the hood, often complex, the claw joined to the face of the column and rising above it, curving into the hood or spur, often dilated into a smooth or papillose limb and usually bearing an appendage which varies greatly in shape from species to species. Column complex; rostellum large, 2-lobed, produced in front into two rigid cartilaginous arms with viscidia at their apices; anther loculi distinct, parallel but often well separated; pollinia granules secund, in a double row along the edge of the flattened caudicles; staminodes present in some species; stigma bilobed, the lobes on the rostellum, on either side of the adnate claw of the lip. Capsules cylindrical or ovoid, ribbed, usually developing rapidly, sometimes before the flower has faded.

TYPE. — *Disperis secunda* (Thunb.) Sw., *nom. illeg.* (*Arethusa secunda* Thunb., *nom. illeg.*) *vide* Phillips, Gen. S. Afr. Fl. Pl., ed. 2: 237 (1951).

Artificial key to the species

- 1. Dorsal sepal and petals joined to form a distinct erect tapering spur 1. **D. anthoceros**
- 1'. Dorsal sepal and petals joined to form an open hood 2
- 2. Leaves opposite or subopposite 3
- 2'. Leaves distinctly alternate 7

3. Lateral sepals clearly joined at the base for 1/3-1/2 of their length 4
- 3'. Lateral sepals free more or less to the base 5
4. Hood (dorsal sepal + petals) glabrous 4. *D. oppositifolia*
- 4'. Hood longly ciliate in the summit of the margin and inner face 6. *D. ciliata*
5. Lateral sepals 6-10 mm long, lacking a spur or pouch; hood broader than long 5. *D. latigaleata*
- 5'. Lateral sepals up to 6 mm long, with a spur or pouch; hood longer than broad 6
6. Appendage of lip trilobed; lateral sepals 4-6 mm long 3. *D. similis*
- 6'. Appendage of lip 5-lobed; lateral sepals 3-4 mm long 2. *D. trilineata*
7. Hood distinctly broader than long 8
- 7'. Hood less broad than long, or more or less orbicular 13
8. Lateral sepals joined for about half their length 9
- 8'. Lateral sepals free to base, or joined only very shortly 11
9. Dorsal sepal much shorter than the lateral sepals; lateral sepals very obscurely pouched in middle; lip papillose 20. *D. masoalensis*
- 9'. Dorsal sepal longer than or equalling lateral sepals; lateral sepals pouched; lip pubescent or tomentose .. 10
10. Sepals all of similar length, 8-10 mm; mid-lobe of lip appendage sessile; trichome of the lip appendage formed in part of vesicular stalked hairs 8. *D. hildebrandtii*
- 10'. Dorsal sepal 12-13 mm long; lateral sepals 8-10 mm long; mid-lobe of lip appendage attached to the posterior lobes by a stalk c. 2 mm long; trichome of the lip appendage lacking vesicular stalked hairs 11. *D. lanceana*
11. Lip with a simple, ovate appendage, covered in a dense papillose tomentum 7. *D. discifera*
- 11'. Lip appendage variously lobed; terminal lobe glabrous and furnished with a papillose lobule or with long hairs 12
12. Hood shallow, obovate, 12-15 mm tall, 16-20 mm wide at most but tapering to 2 mm wide at base; terminal lobe of the lip appendage reniform, 2-3 mm long, lacking long hairs on the upper surface 10. *D. perrieri*
- 12'. Hood very concave, c. 8 mm tall, 15 mm wide, not markedly narrowed at base; terminal lobe of the lip appendage tongue-shaped, 3.5-5 mm long, non-stipitate, carrying long hairs on the upper surface 9. *D. ankarensis*
13. Lowermost leaf with a petiole that forms a sheath around the stem 14
- 13'. All leaves sessile or basal leaf sometimes with a very short petiole (*D. discifera*, *D. majungensis*) 16
14. Lateral sepals united at base for quarter to half their length 15. *D. humblotii*
- 14'. Lateral sepals free to the base 15
15. Lateral sepals 8-11 mm long; terminal lobe of the lip appendage reniform, 1.8-3 mm long, papillose on the upper surface 12. *D. saxicola*
- 15'. Lateral sepals 13-14 mm long; terminal lobe of the lip appendage tongue-shaped convex and glabrous on the upper surface, 5.5 mm long 18. *D. bathiei*
16. Lateral sepals up to 5 mm long; lip appendage trilobed, the side lobes conical, inrolled on the margins, the midlobe narrowly triangular, flat on the margins or a little recurved 13. *D. majungensis*
- 16'. Lateral sepals 6 mm long or more; lip appendage different from above 17
17. Leaves distinctly cordate at base 18
- 17'. Leaves rounded (occasionally subcordate) at base 19
18. Lateral sepals free at the base; lip appendage obtriangular, more or less cordate at the base, covered in a short dense papillose indumentum, contracted and elongated in front and carrying a small reniform lobe, 1-1.5 mm long, papillose on the upper surface 16. *D. tripetaloides*
- 18'. Lateral sepals strongly united at the base; lip appendage bifid in the basal part with arching arms c. 1.5 mm long, pubescent-papillose on the curve, elongated in front by a glabrous stalk, 2 mm long, carrying at its summit an ovoid lobe, 1-1.5 mm long, papillose on the upper surface 17. *D. cordata*
19. Base of leaves clasping the stem 21. *D. bosseri*
- 19'. Base of leaves not clasping stem 20
20. Lateral sepals fused in basal half 22. *D. falcitipetala*
- 20'. Lateral sepals free to the base 21
21. Leaves narrowly ovate or ovate, 5.8-6.2 cm long, 1.8-3.6 cm wide; apical free part of the lip 7 mm long, oblong, more or less deeply notched at the base, narrowing above then dilated at the tip into a subrhombic lobe, densely white-tomentose on its upper side 14. *D. erucifera*
- 21'. Leaves lanceolate, narrow, 1.8-3.6 cm long, 0.7-1.5 cm wide; apical free part of the lip 5-5.5 mm long, with two lateral rounded and papillose lobes, narrowing in front in a glabrous 2 mm long stalk, carrying at its tip a rounded ovate lobe papillose on its upper side and bearing a protuberance at its base 19. *D. lanceolata*

1. *Disperis anthoceros* Rchb.f.

Otia Bot. Hamb. 2: 103 (1881); Schlechter, Bull. Herb. Boiss. 6: 951 (1898); Rolfe, Fl. Trop. Africa 7: 292 (1898); Fl. Cap. 5, 3: 311 (1913); Pole-Evans, Fl. Plants S. Afr., t. 327 (1929); Summerhayes, Fl. W. Trop. Africa, ed. 2, 3: 205 (1968); Verdcourt, Fl. Trop. E. Africa, Orchidaceae: 229 (1968); Williamson, Orch. S. Centr. Africa: 100, t. 87 (1977); Stewart et al., Wild Orch. S. Africa: 198 (1982); Geerinck, Fl. Afr. Centr., Orchidaceae 1: 230 (1984); la Croix et al., Orch. Malawi: 153 (1991); la Croix & Cribb, Fl. Zamb., Orchidaceae 1: 234, tab. 74, fig. 4 (1995). — Type from Ethiopia.

— *Disperis anthoceros* var. *humbertii* (H. Perrier) la Croix, **comb. et stat. nov.**

Disperis humbertii H. Perrier, Not. Syst. (Paris) 8: 35 (1939); in Humbert H. (ed.), Fl. Madag., 49^e fam., Orchidées 1: 180 (1939); Du Puy et al., Orch. Madag.: 134 (1999). — Type: *Humbert 14212*, Madagascar, forest of Analavelona (holo-, P!, photo K!).

Slender terrestrial herb 8-15 cm tall. Tubers 2, c. 8 × 5 mm, ovoid. Leaves two, opposite, sessile, set about the middle of the stem, 13-22 × 11-16 mm, ovate, acute. Inflorescence 1-2-flowered; bracts leafy, c. 7 × 4 mm. Flowers white; pedicel and ovary 7-9 mm long. Dorsal sepal joined to petals to form a slender, erect spur 7-9 mm long from apex of spur to top of ovary; lateral sepals 7 × 3.5 mm, obliquely ovate, joined at the base for from quarter to half of their length, each with a sac-like spur c. 1 mm long, around the middle. Petals c. 7 × 4.5 mm, falcate, adnate to the dorsal sepal. Lip joined to column at base, then with a linear claw which almost reaches the tip of the spur, then is bent back for c. 1 mm, bearing at its apex an appendage of 2 fimbriate lobules 1-1.5 mm long.

DISTRIBUTION. — Madagascar; endemic. This variety of the African species is known only from a single collection. The typical variety is widespread in tropical Africa.

HABITAT. — In ravine with bamboos, on basalt and sandstone.

MATERIAL STUDIED. — MADAGASCAR: *Humbert 14212*, forest of Analavelona, N of Fiherenana, 950-1250 m, Mar. 1934 (P).

The flowers of *Disperis humbertii* differ from those of *D. anthoceros* only in being slightly smaller. In the typical form of *D. anthoceros*, the spur is 12-20 mm long, while in var. *grandiflora* Verdc. from Tanzania, the spur is 23-30 mm long.

2. *Disperis trilineata* Schltr.

Feddes Repert. Spec. Nov. Regni Veg. Beih. 33: 112 (1925); H. Perrier in Humbert H. (ed.), Fl. Madag., 49^e fam., Orchidées 1: 181 (1939); Du Puy et al., Orch. Madag.: 136 (1999). — Type: *Perrier de la Bâthie 15705*, Madagascar, Sambirano valley (holo-, P!, photo K!).

Slender terrestrial herb 5-15 cm high. Tubers 2, oblong, villous. Leaves 2, at about the middle of the stem, opposite or subopposite, 1.5-4 × 0.8-1.8 cm, ovate, acute, with 3 pale longitudinal veins. Inflorescence 1-3-flowered; bracts 4 × 5 mm, broadly ovate. Flowers dull pink or violet, rather small; pedicel and ovary c. 11 mm long. Dorsal sepal 3-4 mm long, linear; lateral sepals 3-4 mm long, free more or less to the base, obliquely elliptic, each with a conical short spur around the middle. Petals 3-4 mm long, elliptic, with the median vein prominent on the outer surface, adnate to the dorsal sepal to form an open hood. Lip 4 mm long, fused to the column at base then with an obcuneiform claw bearing at the top a 5-lobed appendage, the side lobes short and farinose-tomentose, the mid-lobe larger, lanceolate and glabrous. Rostellum suborbicular, completely covering the anther. — Fig. 1.

DISTRIBUTION. — Madagascar, Comores.

HABITAT. — In humus in moist forest; c. 400 m.

MATERIAL STUDIED. — MADAGASCAR: *Perrier de la Bâthie 15705*, Sambirano, sides of the valley, Jan. 1923 (P!). — COMORES: *Humboldt 1484*, Anjouan, 9 Mar. 1896 (P!).

This is a small delicate species of dark and humid forests at low elevation, found once in Madagascar and once on Anjouan in the

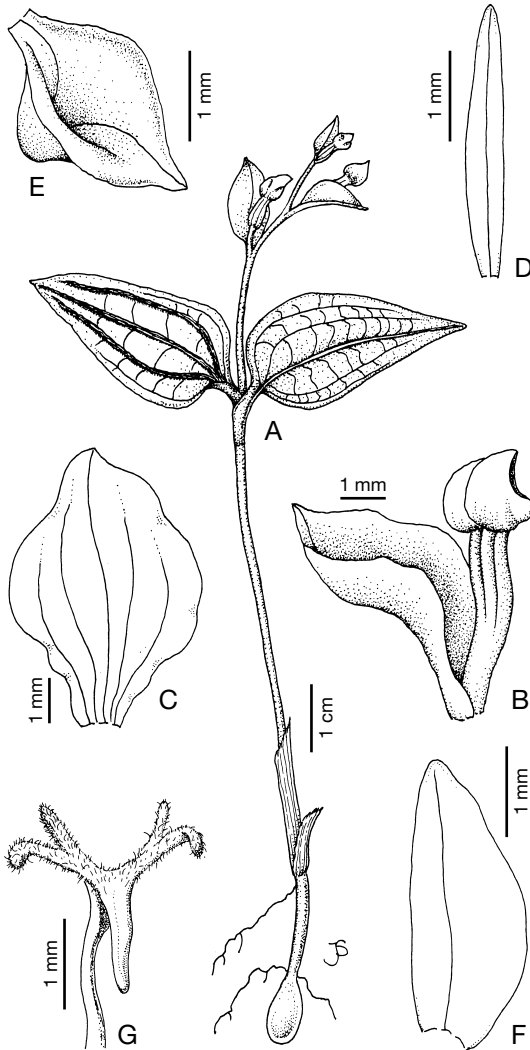


Fig. 1. — *Disperis trilineata*: A, flowering plant; B, immature flower and bract; C, bract; D, dorsal sepal; E, lateral sepal; F, petal; G, lip. (A-F, Perrier de la Bâthie 15705, P; G, Humblot 1484, P).

Comores. The leaf is dull green on the upper side with three main rose-pink veins, the lower surface is red-purple.

3. *Disperis similis* Schltr.

Feddes Repert. Spec. Nov. Regni Veg. Beih. 33: 111 (1925); H. Perrier in Humbert H. (ed.),

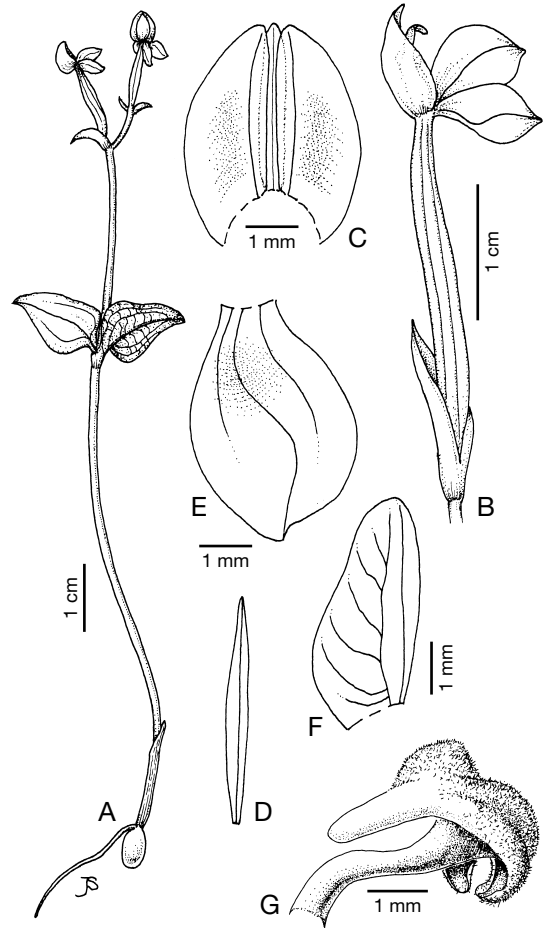


Fig. 2. — *Disperis similis*: A, flowering plant; B, flower and bract; C, hood; D, dorsal sepal; E, lateral sepal; F, petal; G, lip. (Perrier de la Bâthie 14345, P).

Fl. Madag., 49^e fam., Orchidées 1: 181 (1939); Du Puy et al., Orch. Madag.: 136 (1999). — Type: Perrier de la Bâthie 14345, Madagascar, massif of Andringitra (lecto-, P!, chosen here, photo K!).

Slender terrestrial herb 8-27 cm high. Leaves two, opposite or subopposite, sessile, borne at about the middle or below the middle of the stem, 1.5-4.5 × 0.7-2.2 cm, ovate or lanceolate-ovate, rounded at base. Inflorescence 1-4-flowered; bracts 4-10 × 2-8 mm, ovate, distinctly shorter than the ovary. Flowers pink; pedicel and ovary 9-10 mm long. Dorsal sepal 4-5 × 0.8 mm,

narrowly linear; lateral sepals 4-6 × 3 mm, free more or less to the base, obliquely oblong-lanceolate, each with a sac-like spur around the middle. Petals hyaline, adnate to the dorsal sepal. Lip linear where it is joined to the column, then somewhat dilated, with a 3-lobed appendage at the apex, the 2 side lobes diverging and curved, pubescent, the mid-lobe triangular, shorter than the side lobes, glabrous, obtuse at the apex. Rostellum arms c. 2 mm long. — Fig. 2.

DISTRIBUTION. — Madagascar; endemic.

HABITAT. — In humus in mossy forest; 1500-2000 m.

MATERIAL STUDIED. — MADAGASCAR: *Bosser 19029*, S of Ambositra, P.K. 300, 1500 m, Jan. 1963 (P!); *Perrier de la Bâthie 14345*, massif of Andringitra, c. 1800 m, Jan. 1922 (P!); *Perrier de la Bâthie 14589*, massif of Andringitra, 1800 m, Feb. 1922 (P!); *Perrier de la Bâthie 15704*, Mt. Tsaratanana, 2000 m, Jan. 1923 (P!); *Perrier de la Bâthie 16873*, Manerinerina, on the Tampoketsa between the Ikopa and the Betsiboka, Dec. 1924 (P!).

This species approaches *D. oppositifolia* but it is distinguished by its flower which is smaller and has lateral sepals that are not strongly united at the base, and a trilobed appendage to the lip that has pubescent lateral lobes shorter than the glabrous midlobe.

4. *Disperis oppositifolia* Sm.

Cycl. 11, no. 6 (1819); Lindley, Gen. Sp. Orch. Pl.: 371 (1839); S. Moore in Baker, Fl. Mauritius Seych.: 331 (1877); J. de Cordemoy, Fl. La Réunion: 254 (1895); Schlechter, Bull. Herb. Boiss. 6, 12: 954 (1898) & Feddes Repert. Spec. Nov. Regni Veg. Beih. 33: 109 (1925); H. Perrier in Humbert H. (ed.), Fl. Madag., 49^c fam., Orchidées 1: 182 (1939); Du Puy et al., Orch. Madag.: 135 (1999). — *Dryopeia oppositifolia* (Sm.) Thouars, Orch. Iles Afr., t. 1 (1822); A. Richard, Monogr. Orch. Iles de France et Bourbon: 35 (1828); Bojer, Hort. Mauritius: 311 (1837). — Type: *Smith s.n.*, La Réunion (holo-, LINN!).

Slender terrestrial herb 6-25 cm high; tubers oblong. Leaves 2, opposite, borne on upper half of stem, 1.5-5.5 × 0.8-2 cm, lanceolate or ovate, acute, with a short petiole. Inflorescence 1-3-

flowered; bracts c. 6 mm long. Flowers off white to pale pink with purple lines on the upper part of the petals; pedicel and ovary 9-12 mm long. Dorsal sepal 4.5-6(-7) × 0.5 mm, linear; lateral sepals 5-10 × 3-4 mm, joined at the base for a third to a half of their length, each with a small, sac-like spur. Petals 4.5-6(-7) × 3-3.5 mm, broadly falcate, adnate to the dorsal sepal to form a shallow hood, cordate at the base. Lip clawed, with a 3-lobed appendage, slightly pubescent, the mid-lobe short, triangular, the side lobes linear, curving back, longer than the mid-lobe but sometimes a little enlarged and rounded at the apex, 1.5-2 mm long. Rostellum arms slender up to 1.5 mm long. — Figs. 3, 7D.

DISTRIBUTION. — Madagascar, the Comoro and the Mascarene Islands.

HABITAT. — Moisture-loving species of humid forests at low and intermediate elevations; terrestrial or on rocks by streams, sometimes in moss on the base of tree trunks, also found in riparian forest with *Pandanus* sp., and sometimes in pine plantations; sea level-1200 m.

MATERIAL STUDIED. — MADAGASCAR: *Baron 129* & *4288*, C Madagascar (K!); *Bosser 19028*, S of Ambositra, P.K. 300, Jan. 1964 (P!); *Carlson 427*, Toamasina, Nosy Mangabe, Bay of Antongil (K, MO, P!); *Decary 10482* & *10485*, col de Maningotra, 500-700 m, Fort-Dauphin Distr., 4-5 Sep. 1932 (P!); *Jard. Bot. Tananarive 5651*, Amboangy, Befandriana, 24 Dec. 1942 (P!); *Jard. Bot. Tananarive 6500*, la Mandraka, Feb. 1941 (P!); *J. Hermans 3813*, Fianarantsoa Prov., RN 33 from Ivato to Ambatofinandrahana, in pine forest at edge of inselberg, 14 Jan. 1996 (K!); *J. & C. Hermans 24/96-6*, Antananarivo Prov., Angavokely, station forestière, c. 1500 m, 24 Jan. 1996 (K!); *J. & C. Hermans 26/96-4*, 68 km from Antananarivo, just past Mandraka dam, 26 Jan. 1996 (K!); *Humbert 13912*, basin of the Mananara, tributary of the Mandrare, between Andohahela and Elakelaka, at Aniampanga (left side of Ankaramy) upstream of Mahavavo, 700-800 m, Jan.-Feb. 1934 (P!); *Lance 38*, Masoala Peninsula, headwaters of Andranotsorabe, W of Andrembona, 470 m, 19 Sep. 1993 (K!); *Lewis & Razafimandimbison 661*, Toamasina, East coast, Betampona Réserve Naturelle Intégrale, 40 km N of Toamasina, 275-650 m, 28 Sep. 1993 (K!, MO!, P!); *Parker s.n.*, C. Madagascar, comm. Aug. 1880 (K!); *Perrier de la Bâthie 1861* (no. 83 de Schlechter), woods of Sambirano Valley, 800 m (P!); *Perrier de la Bâthie 11845*, Mt. Vatovavy, basin of Mananjary, Aug. 1911 (P!); *Prance & Andriantiana*

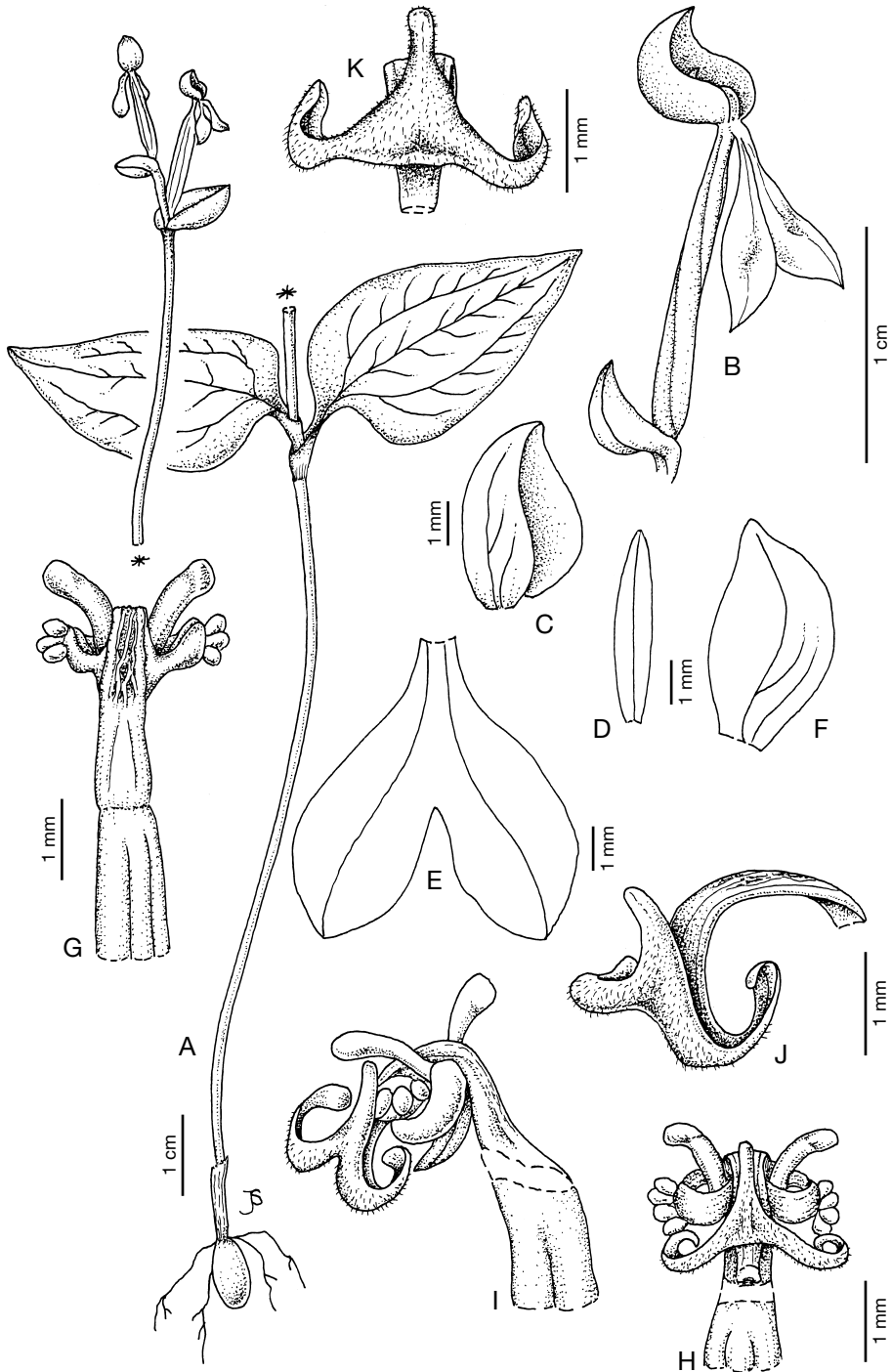


Fig. 3. — *Disperis oppositifolia*: **A**, flowering plant; **B**, flower and bract; **C**, hood, side view; **D**, dorsal sepal; **E**, lateral sepals; **F**, petal; **G**, column and lip, front view; **H**, column and lip, back view; **I**, column and lip, side view; **J**, lip, side view; **K**, lip, back view. (Schatz 2735, K).

30764, buffer zone of Mananara Avaratra, Antanambe Biosphere Res., hills around Mahavohobe R., 25 Oct. 1994 (K!); *F. Rakotondrainibe 3343*, Antsiranana Prov., Andapa Distr., RNI of Marojejy, 8 km NW of Manantenina, 480 m, 8 Oct. 1996 (P!); *Schatz 2735*, Toamasina, Nosy Mangabe, 5 km S of Maroantsetra, 0-330 m, 20-25 Sep. 1989 (K!, MO!, P!); *Thérézien s.n.*, Kitsamby Forest, 20 km from Soavinandriana, Itasy, Jan. 1964 (P!). — COMORES: *Humboldt 1228*, Combani Forest, Mayotte, 13 July 1894 (P!); *Kirk s.n.*, without exact loc. (K!); *Tinguy 944*, Mt. M'tsapere, 500 m, Mayotte, 8 Sep. 1989 (P!). — MAURITIUS: *Ayres s.n.*, Nov. 1861 (K!); *Blackburn s.n.*, without exact loc., rec. 17 July 1863 (K); *Boivin s.n.*, Mt. Pouce, Sep. 1849 (P!); *Brouard & Mulnier* in MAU 11463, Mt. Bambous, 24 Oct. 1964 (MAU!); *Bruguères 36*, without loc. (P-JU!); *Colville Barclay 315*, Bassin Blanc crater, 1400 ft., 28 Oct. 1967 (K!); *Commerson 235*, without loc. (P!, P-JU 3889!); *Edgerley* in MAU 13049, Bassin Blanc, 8 Oct. 1967 (MAU!); *Gueho* in MAU 11419, Kanaka (MAU!); *Gonan s.n.*, La Roau (K!); *Herb. L.C. & A. Richard s.n.*, without loc. (P!); *Vaughan 1762*, Macabe (K!, MAU!); *Vaughan 3032*, Bassin Blanc (K!, MAU!); *Vesco s.n.*, 1850 (P!). — LA RÉUNION: *Cadet 1623*, Mare Longue, St. Philippe, 25 Sep. 1968 (P!, REU!); *Cadet 3739*, le Grand Brûlé, 120 m (REU!); *Cadet 6188*, Mare Longue, St. Philippe, 300 m (REU!); *Cadet 6543*, le Grand Brûlé forest (REU!); *Dumont D'Urville*, without loc. (P!); *Herb. Desvaux*, without loc. (P!); *de Cordemoy s.n.*, Bras Panon (MARS!); *Thouars s.n.*, without loc. (G!, P!).

The flowers of this species are white, pale rose or lilac or white with sepals striped with red, magenta or mauve. The terminal appendage of the lip is variable. The mid-lobe is often short and triangular, but it can be elongated into a point at the glabrous tip (*Dumont-D'Urville*, La Réunion). The two side lobes are curved, rounded at the tips or more or less spatulate at the end. The pubescence is always papillose and short on the two lateral lobes and the base of the mid-lobe, but the tip of the latter can be glabrous.

In many localities this orchid is more or less robust and the size of the flower is variable. It can be locally common, often being found in small colonies.

— ***Disperis oppositifolia* var. *mascarenensis***
Bossler, var. nov.

A varietate typica appendice labelli trilobati longe ciliato, lobo medio supra glabro et lobis lateralibus ad apicem rotundatis satis distinguenda. — Figs. 61, 7E.

TYPUS. — *Bosser 21622*, La Réunion, Ravine Grande Chaloupe, Mt. St. Denis, 17 Mar. 1974 (holo-, P!).

DISTRIBUTION. — La Réunion and Mauritius, endemic to the Mascarenes. Found only in Ravine Grande Chaloupe on La Réunion, where the typical variety also grows. From Mauritius a single specimen, *Commerson s.n.*, has been seen. The presence of var. *mascarenensis* on Mauritius is therefore doubtful.

HABITAT. — Under trees in light, semi-dry forest of the west; c. 500 m.

MATERIAL STUDIED. — LA RÉUNION: *Bosser 21622*, Ravine Grande Chaloupe, Mt. St. Denis, 17 Mar. 1974 (P!); *Bosser 22369*, Ravine Grande Chaloupe, 7 Mar. 1978 (P!); *Friedmann 2136*, Ravine Grande Chaloupe, Mar. 1973 (P!). — MAURITIUS: *Commerson 235*, without loc. (P!).

The morphology of the flower of this variety is very similar to that of typical *D. oppositifolia* with the elongated lateral sepals united and contracted into a narrow cuneiform base. However, the features of the terminal appendage of the lip are distinctive. This appendage is also trilobed but it has longer papillae; the upper side of the mid-lobe is glabrous and lacks any short, dense, papillose hairs. Moreover, rounded side lobules frame the base of the mid-lobe. The inflorescence also has many more flowers, up to 12.

5. *Disperis latigaleata* H. Perrier

Not. Syst. (Paris) 8: 36 (1939); in Humbert H. (ed.), Fl. Madag., 49^e fam., Orchidées 1: 183 (1939); Du Puy et al., Orch. Madag.: 135 (1999). — Type: *Humbert 13440*, Madagascar, Mt. Itrafanaomby (Ankazondrano) (lecto-, P, chosen here, photo K!).

Slender terrestrial or epiphytic herb (10-)14-21 cm tall. Leaves 2, opposite, borne on the upper half of the stem, 1.6-6 × 1-2 cm, lanceolate or ovate, acute, rounded at the base, pale green, one of the pair much larger than the other. Inflorescence 1-4-flowered; bracts 6-12 × 2-7 mm. Flowers violet or white tinged with pink; pedicel and ovary 8-13 mm long. Dorsal sepal 6-8 × 1 mm, linear; lateral sepals free to

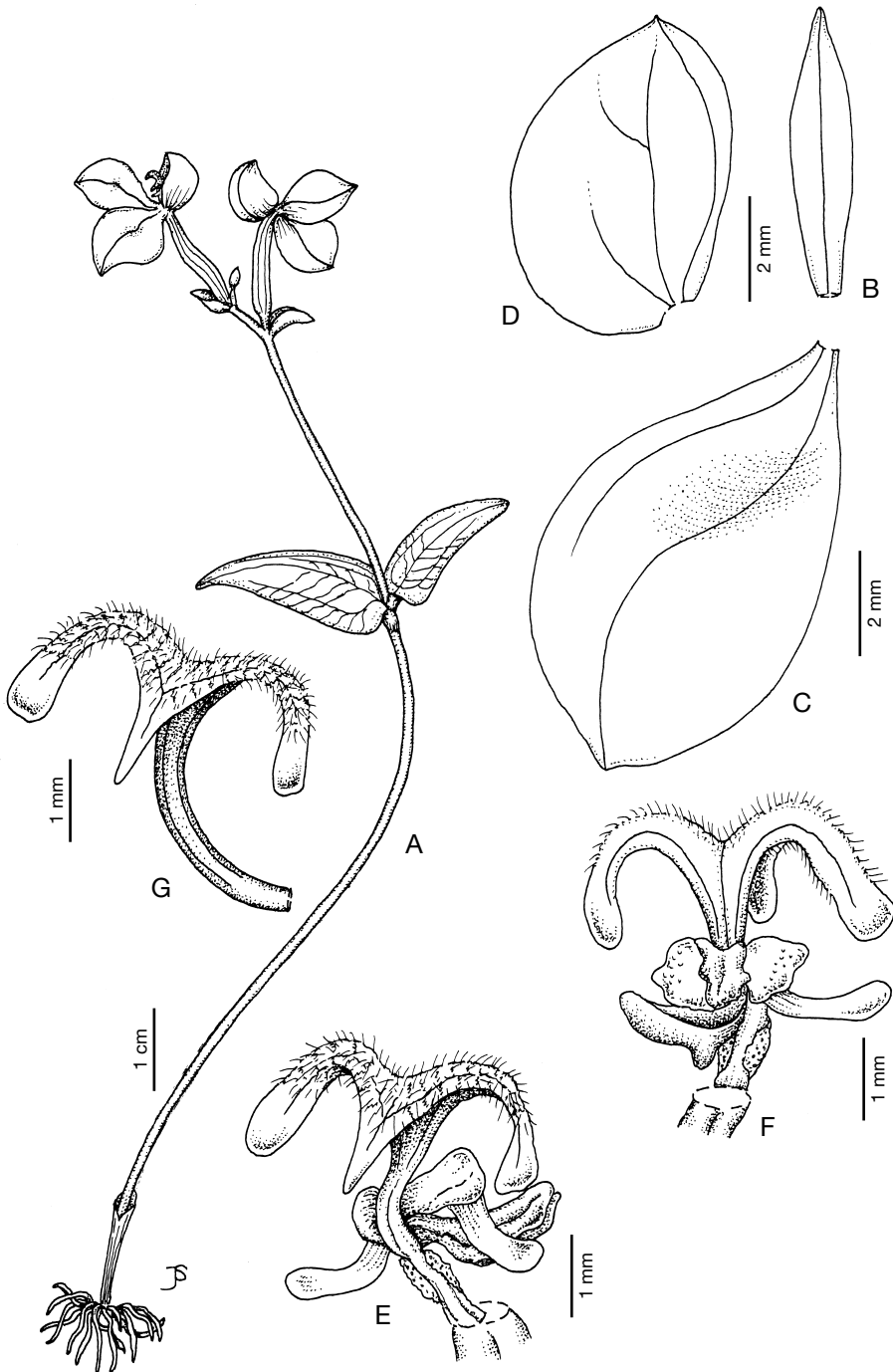


Fig. 4. — *Disperis latigaleata*: **A**, flowering plant; **B**, dorsal sepal; **C**, lateral sepal; **D**, petal; **E**, column and lip, front view; **F**, column and lip, back view; **G**, lip. (Humbert 13440, P).

base or a little united, 6-10 × 5-7 mm, semi-orbicular, apparently lacking a spur or pouch. Petals 5-7 × 4.5-5 mm, very concave, adnate to the dorsal sepal and forming a broad hood with it. Lip with a claw c. 4 mm long, the basal half joined to the column, bearing a 3-lobed appendage in front; mid-lobe pendent, pubescent on top except for the subspathulate apex which is glabrous, glabrous below; side lobes slightly shorter than the mid-lobe, cylindrical, slightly thickened and rounded at the tips, slightly curved, pubescent on both surfaces. Rostellum arms c. 1.3 mm long, spathulate. — Fig. 4.

DISTRIBUTION. — Madagascar; endemic.

HABITAT. — Growing in shade, terrestrial or on moss-covered boulders, on river sides, in forest on laterite and gneiss; epiphytic; 600-1950 m.

MATERIAL STUDIED. — MADAGASCAR: *Humbert 13440*, Mt. Itrafanaomy (Ankazondrano) and its SW flanks (High Mandrare), 1600-1950 m, Dec. 1933 (P!); *Kotozafy & Randriamanantena 252*, Ranomafana National Park, Parcelle 2, Maranony, S of Ambomiera, 880-1100 m, 18-20 Sep. 1993 (K!, MO!, P!); *Rakoto, Randriamantena & Rafamontanantsoa in S. Malcomber et al. 1565*, Fianarantsoa Prov., Ranomafana National Park, Parcelle 1, SW of Miazanomy, 600 m, 22-23 Sep. 1992 (K!, MO!, P!).

This species resembles *D. oppositifolia*, but differs in having a wider hood, in the lateral sepals being free to the base and lacking a spur, in the mid-lobe of the lip appendage being as long as or slightly longer than the side lobes, and in the spathulate lobes of the rostellum. The markedly uneven size of the leaves also seems to be characteristic (all species with opposite leaves tend to have one slightly larger than the other) but with so few specimens available, it is not possible to be sure that this is consistent.

6. *Disperis ciliata* Bosser, sp. nov.

Affinis *Disperis latigaleatae* H. Perrier *sed petalis ad marginem ad apicemque longe ciliatis, et lobo mediale labelli triangulare satis differt.*

TYPUS. — *Humbert & Capuron 25002*, Madagascar, mountains N of Mangindrano (High Maevarano, near

the summits of Ambohimiravavy (Central-North), 1800-2000 m, 19 Jan.-12 Feb. 1951 (holo-, P!; iso-, K!, MO!, P!). Known only from the type collection.

A terrestrial herb, 15-20 cm tall. Stem slender glabrous. Leaves 2, opposite, inserted shortly above the middle of the stem, lanceolate, acute, rounded at the base and retracted into a short petiole, 2-4.5 × 0.8-2 cm. Inflorescence 2-5-flowered; bracts ovate, acute, those at the base largest, leafy, up to 8 × 5 mm. Flowers rose-coloured; pedicel and ovary 7-10 mm long. Dorsal sepal narrowly lanceolate to linear, acute, 7 × 1.5 mm, glabrous, with a median nerve and two fine lateral ones. Lateral sepals obliquely and broadly ovate, obtuse, connate at the base for about 2.5 mm, lacking a spur or gibbosity, 7.5 × 5.5 mm. Petals broadly and obliquely ovate, 6-6.5 × 4.5 mm, rounded at the tips, with the margins and apical part longly ciliate, adnate to the dorsal sepal to form a very concave hood of 6 × 6 mm. Lip 3-3.5 mm long; basal part linear, attached to the column for 1.7-1.9 mm; terminal part enlarged into a trilobed appendix, the lateral lobes linear, curved, involute on the margins, dilated-claviform at the apex, more or less 2 mm long; mid-lobe triangular, of the same length or a little longer than the side lobes, the upper face of the 3 lobes densely covered with a short papillose pubescence. Rostellar arms 1.7-1.8 mm long, slightly curved and spathulate at the apex. — Fig. 6D.

DISTRIBUTION. — Madagascar; endemic.

HABITAT. — Under trees in humid montane forest on laterite of gneiss, transition to lichen-rich forest; 1700-1900 m.

Because of its habit and the general appearance of its flowers, this species recalls *D. latigaleata*. It can be readily distinguished, however, by its ciliate petals and by the terminal appendage of its lip in which the midlobe is relatively short and covered by a short papillate pubescence while in *D. latigaleata* that lobe is lengthened into a linear glabrous extension which is slightly dilated at the tip. The lip appendage also resembles that of some forms of *D. oppositifolia*, but the flower is glabrous, with the lateral sepals more extensively connate and contracted at the narrow base.

7. *Disperis discifera* H. Perrier

Not. Syst. (Paris) 5: 222 (1936); in Humbert H. (ed.), Fl. Madag., 49^e fam., Orchidées 1: 184 (1939); Du Puy et al., Orch. Madag.: 134 (1999). — Type: *Perrier de la Bâthie 16081*, Madagascar, Mt. Tsaratanana, Apr. 1924 (lecto-, P!, selected here, photo K!).

Slender terrestrial herb 10-30 cm high. Tubers 2, ovoid, but plants sometimes produce stolons with additional tubers at the end. Leaves 2-4, alternate, sessile, the lowest at about the middle of the stem, 2.2-6 × 0.8-2 cm, ovate or lanceolate, acute, clasping the stem at the base, purple below. Inflorescence 1-3-flowered; bracts leaf-like, 10-33 × 4-8 mm. Flowers clear rose pink with two lines of green or brown spots on the basal part of the hood; pedicel and ovary (12)14-19 mm long. Dorsal sepal 8-12 × 1-2 mm, linear; lateral sepals 11-13 × 4.5-7 mm, joined for a short distance at the base, obliquely obovate, each with a sac-like spur c. 1.5 mm long. Petals 8-12 × 4-6 mm, more or less oblong or wedge-shaped, joined to the dorsal sepal to form a shallow hood, broadly rounded or truncate at the tip, concave or apiculate. Lip with a narrow claw c. 3.8 mm long, adnate to the column at the base then bent over and bearing at the tip an ovate appendage 2.8-3 mm long, 1.5-2 mm wide, with a dense papillose yellow pubescence above, glabrous below, with a glabrous apiculus at the tip. Rostellum large, 3.5-4 × 4-6 mm, with hyaline, linear arms 2 mm long. — Fig. 7C.

DISTRIBUTION. — Madagascar; endemic.

HABITAT. — In moist forest, in shade and open areas; 800-2250 m.

MATERIAL STUDIED. — MADAGASCAR: *Bosser 15440*, Tampoketsa, Ankazobe, May 1962 (P!); *Bosser 18412*, Lakato road, July 1963 (P!); *Bosser 20253*, Manjakatempo, Ankaratra, 5 May 1970 (P!); *Herb. Jard. Bot. Tananarive 3700*, Ambatoloana, 8 June 1938 (P!); *Humbert 30276*, massif of Ankaratra, Manjakatempo forest, 27 Apr. 1955 (P!); *Jongkind & Solo Rapanarivo 886*, Fianarantsoa, 1 hour walking from Antoetra, in open place in disturbed natural forest on East side of hill, 1700 m, 13 May 1993 (K!, MO, P!); *Malcomber & Hemingway 2462*, Antsiranana, E of Ambanja, Réserve Naturelle Intégrale 4 (Tsaratanana), 1100-1600 m, fl. 8-

12 May 1993 (K!, MO, P!); *Perrier de la Bâthie 16081, 16488, 16489*, Mt. Tsaratanana, in dense forest c. 1400 m, May 1924 (P!); *Pettersson & Nilson 580*, Angavokely, Mt. Ambatolava, 13 Mar. 1992 (P!, UPS); *Rababoto in Rés. Nat. 6431*, Mangindrano, Bealanana, Rés. Nat. no. 4, 15 May 1954 (P!); *Rakoto & Turk 62*, SE of Fianarantsoa, Tolongoïna FR, Parcelle A5, 1115 m, 14 June 1992 (K!, MO, P!); *Rakoto & Turk 90*, Fianarantsoa, Ranomafano National Park, Parcelle 1, Ambohimera, 800-1315 m, fl. 18 June 1992 (K!, MO, P!); *Rakotovo in Rés. Nat. 6546*, Ivohibe, Rés. Nat. no. 5, 25 July 1954 (P!); *Rakotovo in Rés. Nat. 12109*, Manakambahiny E, Ambatondrazaka, 27 June 1962 (P!); *Sajy in Rés. Nat. 5215*, Marovato, Ambanja, Rés. Nat. no. 4, 15 Apr. 1953 (P!).

— *Disperis discifera* var. *borbonica* (H. Perrier) Bosser, **comb. et stat. nov.**

Disperis borbonica H. Perrier, Not. Syst. (Paris) 5 (3): 228 (1936). — Type: *Delteil s.n.*, La Réunion, without exact loc. (holo-, P!).

A slender moisture-loving, terrestrial plant, 10-30 cm tall. Leaves two, alternate, lanceolate, rounded and amplexicaul at the base, acute at the apex, sessile, 1.6-4 cm long, 0.6-2 cm wide, inserted on the middle part of the stem. Inflorescence with 1-3 flowers. Flowers pale rose with green marks at the base of the hood. Hood 6-7 × 7-8 mm, concave, rounded or subquadrate at apex. Lateral sepals 6.5-7.5(-8) mm long. Lip with an ovate-acute apical appendage, 1.5-1.8 mm long, 1-2 mm wide, covered on its upper side by short yellow papillae, the apex with a short glabrous point. — Fig. 5.

DISTRIBUTION. — Madagascar, La Réunion.

HABITAT. — Under trees in humid forests and ericaceous scrub, in Madagascar in the Ankaratra massif it also grows in pine (*Pinus patula*) plantations; 1200-2350 m.

MATERIAL STUDIED. — MADAGASCAR: *Goldblatt & Schatz 9014*, Ankaratra Massif, W of Ambatolampy, 2350 m, 31 Mar. 1989 (G!, K!, MO, P!); *Kotozafy, Randriamantena & Randrianasolo 18*, Ranomafana National park, parcelle 1, Ampasina, NE of Amboditanimena, 1200 m, 11-25 Aug. 1993 (MO, P!); *Perrier de la Bâthie 16487*, Mt. Tsaratanana, 2200 m, Apr. 1924 (P!); *François in Perrier de la Bâthie*

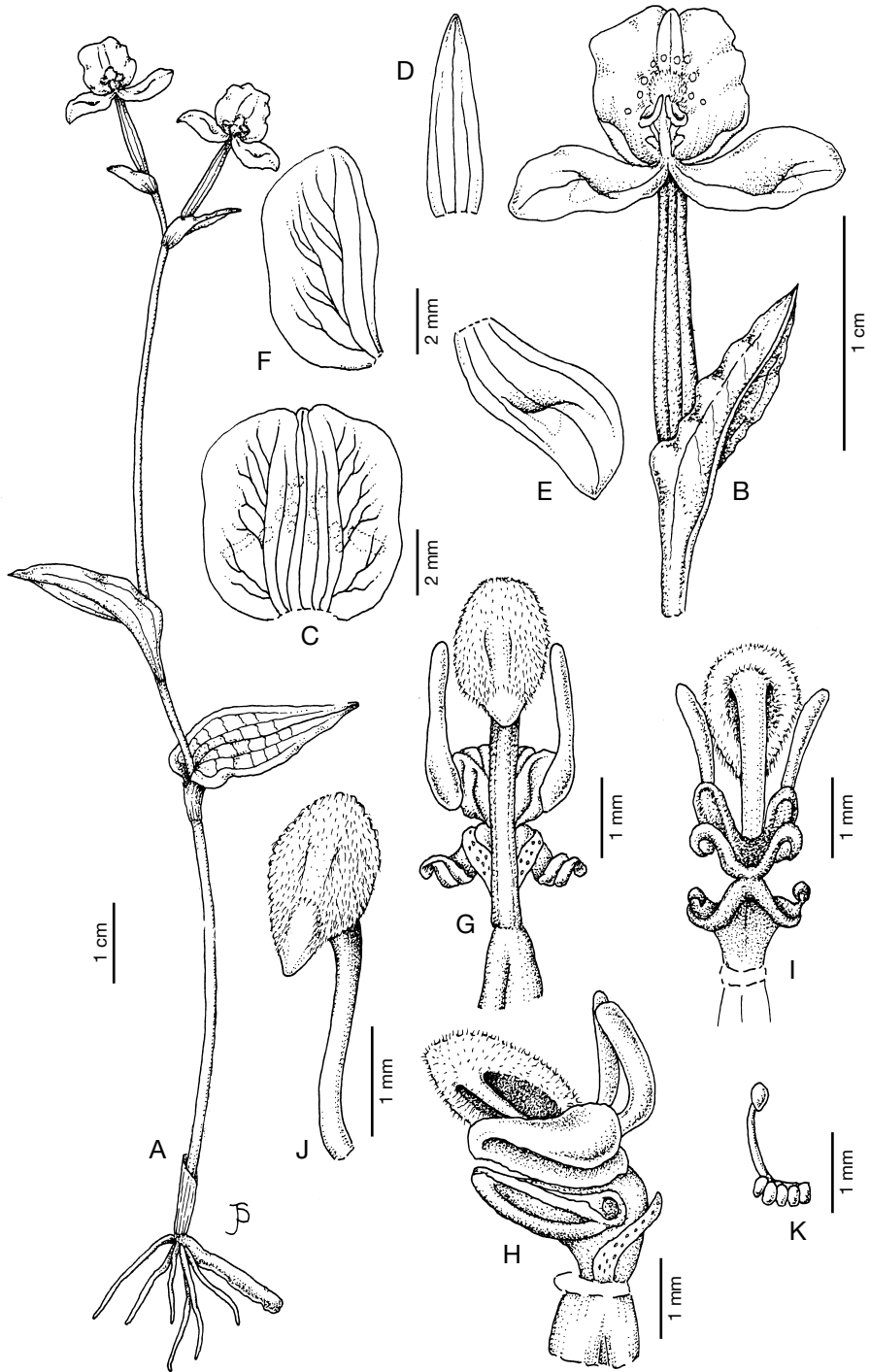


Fig. 5. — *Disperis discifera* var. *borbonica*: **A**, flowering plant; **B**, flower and bract; **C**, hood, front view; **D**, dorsal sepal; **E**, lateral sepal; **F**, petal; **G**, column and lip, front view; **H**, column and lip side view; **I**, column and lip, back view; **J**, lip; **K**, pollinarium. (Goldblatt & Schatz 9014, K).

16530, la Mandraka, Feb. 1924 (P!). — LA RÉUNION: *de Cordemoy s.n.*, Fougères plain (MARS, P!); *Delteil s.n.*, without exact loc. (P!); *de l'Isle 118*, Grand Bélouve (P!).

This variety is very similar in habit and lip morphology to the typical *D. discifera*, but its flowers are much smaller. The two varieties are sympatric in the Ankaratra Massif. This variety has not been found recently in La Réunion, the collections from there are all over a century old.

8. *Disperis hildebrandtii* Rchb.f.

Otia Bot. Hamb: 73 (1881); Bot. Zeitung (Berlin) 39: 449 (1881); Schlechter, Bull. Herb. Boiss. 6: 929 (1898); Feddes Repert. Spec. Nov. Regni Veg. Beih. 33: 108 (1925); H. Perrier in Humbert H. (ed.), Fl. Madag., 49^e fam., Orchidées 1: 184, (1939); Du Puy et al., Orch. Madag.: 134 (1999). — Type: *Hildebrandt 3158*, Madagascar, Lokobé, Nosy-Bé (holo-, W; iso-, BM, K!, P!).

Slender terrestrial herb 7-25 cm tall. Tubers c. 10-20 × 5-10 mm, ovoid. Leaves 1-3, alternate, in upper half of stem, 1.5-7 × 0.5-2 cm, lanceolate, acute, clasping the stem at the base. Inflorescence 1-3(-6)-flowered; bracts leafy, 14-40 × 3-10 mm. Flowers erect or suberect, pale rose in colour; pedicel and ovary 4-9 mm long. Dorsal sepal 8-10 × 1 mm, linear; lateral sepals 8-10 × 3-6 mm, joined in the basal half, semi-ovate, each with a deep spur near the middle. Petals 8-11 × 3-5 mm, adnate to the dorsal sepal and forming a broad, concave hood about 10 mm tall and 12 mm wide; the apex of the petals slightly overtops the dorsal sepal. Lip joined to the column at base, narrowly cylindrical above that and then enlarged, bearing at the top a 3-lobed appendage, the 2 lateral lobes short, 1.5-2 mm long, thick, erect but slightly curved, densely covered with a short pubescence of papillose hairs, the mid-lobe 5 mm long, pendent, arched, tongue-shaped, without a stalk to the side lobes, with a short pubescence of small papillose hairs on the sides and beneath, and carrying on the upper surface longer dense calvate-vesicular hairs. Rostellum 2.2 × 1.5 mm, with arms

1.7 mm long, spatulate at the tip. — Figs. 6C, 7A.

DISTRIBUTION. — Madagascar; Comores.

HABITAT. — Quite frequent in the understorey of humid to semi-dry woodland and forest in the N-NE and Centre of Madagascar and on Mayotte, on laterite soils derived from gneiss or from basalt; 90-1400 m.

MATERIAL STUDIED. — MADAGASCAR: *Cremers 1438*, road to Lakato, near Périnet, 16 Feb. 1971 (P!); *Decary 15290*, Ankazomanga, Vakinankaratra, 6 Dec. 1939 (K!, P!); *Hildebrandt 3158*, Nosy-Bé, Lokobé Mt., Sep. 1879 (K!, P!, W!); *Humbert 23199*, valley of Androranga, tributary of Bemarivo (NE), between Doany and Anketsahely, 400-700 m, 10-12 Feb. 1949 (P!); *Humbert 28201*, *ibid.*, Ravine Beamalokakely, 300-400 m, 10 Dec. 1949 (P!); *Humbert & Capuron 24226bis*, valley of Andalangy, tributary of the Androranga, basin of the Bemarivo of the NE, 700-800 m, 12-14 Nov. 1950 (P!); *Humbert & Capuron 25337*, Mts. to the N of Mangindrano (High Maevarano), towards the summits of the Ambohimirahavavy, valley of Ambatohafo, 1200 m, 19 Jan.-12 Feb. 1951 (P!); *Humbert 32144*, near Diego-Suarez, Ambre forest, 1000 m, 23 Dec. 1959-18 Jan. 1960 (K!, P!, TAN!); *Perrier de la Bâthie 15193*, Sambizano forests, Oct. 1922 (P!); *Perrier de la Bâthie 15708*, Mt. Tsarantanana, 1000-1400 m, Jan. 1923 (P!); *Seyrig 485*, Belambo forest, N of Ampandranda, 1000 m, Jan. 1943 (P!). — COMORES: *Labat & Pascal 2900*, Mayotte, massif of Benara, N slope in climbing on the Lima Tchourembo, 350 m, 8 Dec. 1996 (P!); *Labat et al. 3284*, Mayotte, Chiconi, Sohoa Forest Res., 90 m, 24 Nov. 2000 (G!, K!, Mayotte, P!); *Tinguy 977, 1035*, Mayotte, Choungi, 6 Oct. 1989 (P!); *Tinguy 1056*, Mayotte, 2 Nov. 1989 (P!).

The flowers are white, lined or striped with pale rose-pink or rose-purple. LABAT provides more details of specimens from Mayotte which have white sepals touched with rose, a green spur, the rest white with two rose-violet bands, a lip with two rose lateral lobes and a white hairy terminal appendage. The vesicular hairs of the lip appendage are very characteristic.

9. *Disperis ankarensis* H. Perrier

Not. Syst. (Paris) 8: 129 (1939); in Humbert H. (ed.), Fl. Madag., 49^e fam., Orchidées 1: 186 (1939);

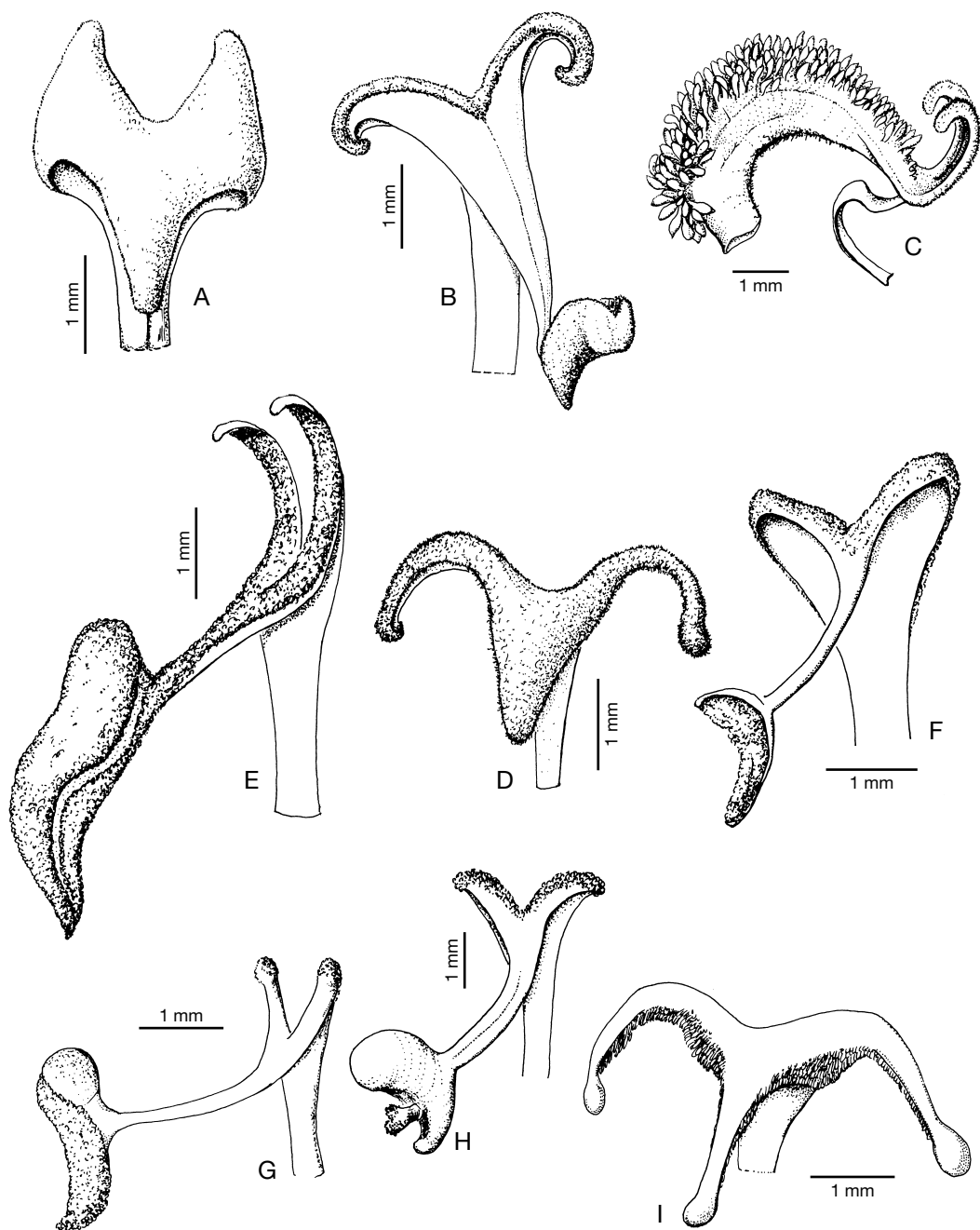


Fig. 6. — Appendage of lip: **A**, *Disperis majungensis* (Perrier de la Bâthie 13038); **B**, *Disperis cordata* (Cadet C11, in alcohol); **C**, *Disperis hildebrandtii* (Hildebrandt 3158); **D**, *Disperis ciliata* (Humbert & Capuron 25002); **E**, *Disperis lanceana* (Lance s.n.); **F**, *Disperis saxicola* (Bossier 17168); **G**, *Disperis humblotii* (Humblot 1592); **H**, *Disperis perrieri* (Humbert & Capuron 25758); **I**, *Disperis oppositifolia* var. *mascarenensis* (Bossier 21622).

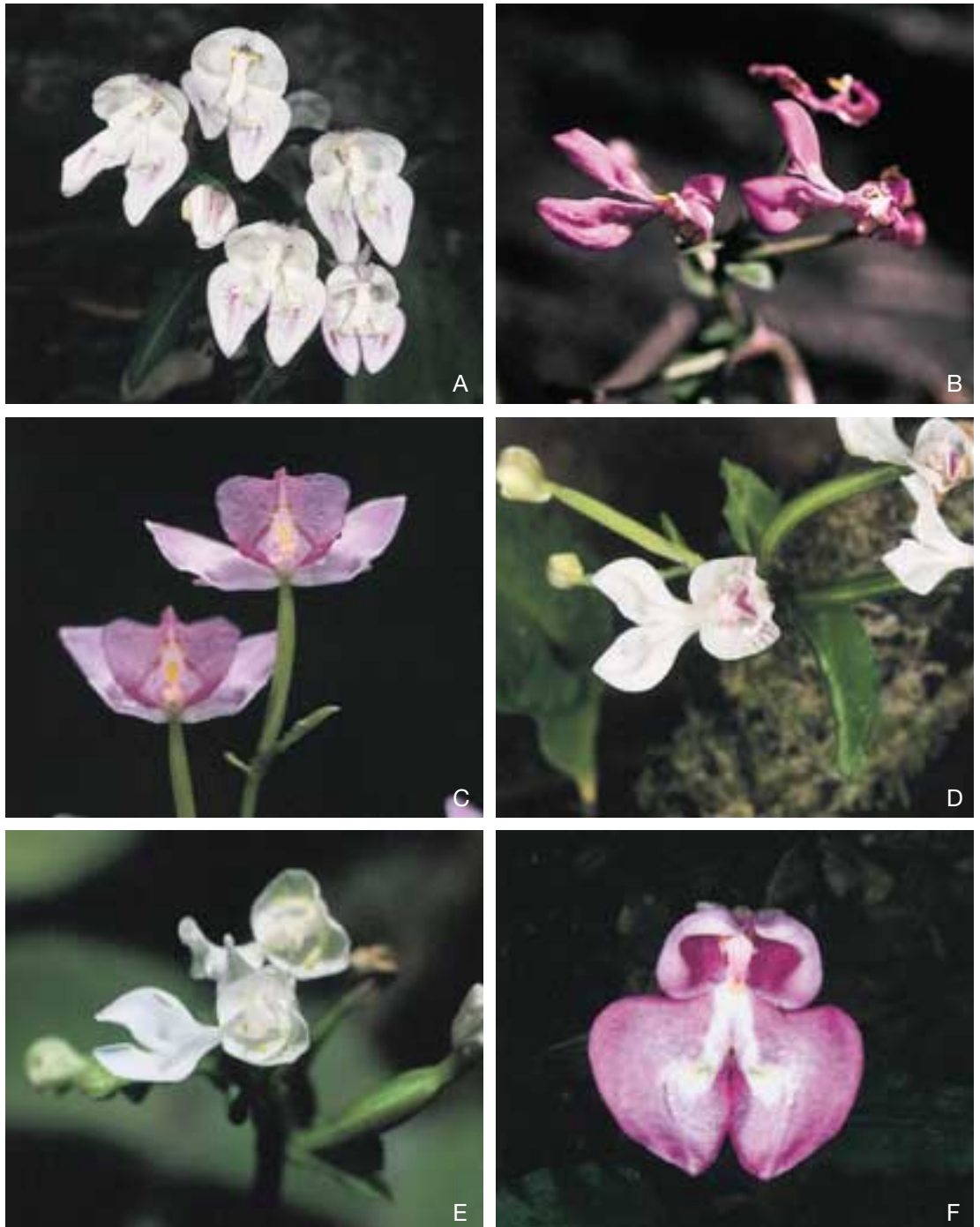


Fig. 7. — Flowers of *Disperis* species: **A**, *D. hildebrandtii*; **B**, *D. saxicola*; **C**, *D. discifera*; **D**, *D. oppositifolia* var. *oppositifolia*; **E**, *D. oppositifolia* var. *mascarenensis*; **F**, *D. masoalensis*. (A, D, F, photos J.-N. LABAT; B, C, E, photos J. BOSSER).

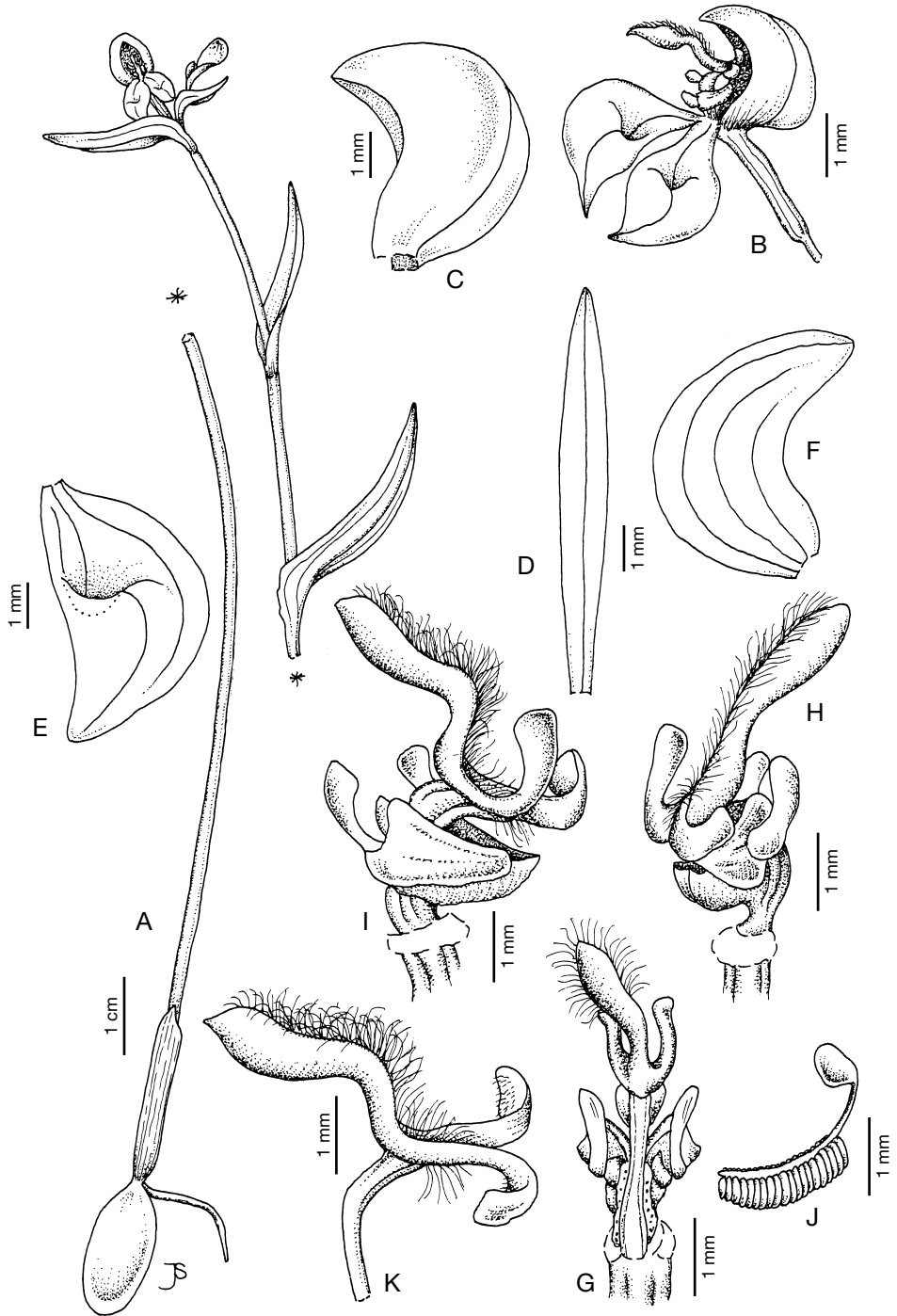


Fig. 8. — *Disperis ankarensis*: **A**, flowering plant; **B**, flower; **C**, hood, side view; **D**, dorsal sepal; **E**, lateral sepal; **F**, petal; **G**, column and lip, front view; **H**, column and lip, back view; **I**, column and lip, side view; **J**, pollinarium; **K**, lip. (Humbert 18986, P).

Du Puy et al., Orch. Madag.: 133 (1999). — Type: *Humbert 18825* (= *Humbert 18986*), Madagascar, Ankarana, N of Ambilobé, Jan. 1938 (holo-, P!, photo K!). Known only from the type collection.

Slender terrestrial herb 14-18 cm high. Tubers 2, up to 2×1.2 cm, ovoid, villous. Leaves 2, in the upper half of the stem, alternate, $3.5-5 \times 0.5-1$ cm, narrowly lanceolate or linear-lanceolate, forming a funnel-shaped sheath at the base that clasps the stem. Inflorescence 1-3-flowered; bracts leafy, $18-32 \times 3-4$ mm. Flowers with green sepals, veined with pink, petals pink; pedicel and ovary 8-9 mm long. Dorsal sepal 8 mm long, linear, forming with the petals a broad, very concave hood c. 8 mm high and 15 mm wide; lateral sepals 7×3 mm, joined near the base, falcate, the tips curling in, each with a sac-like spur in the basal half. Petals hyaline. Lip erect part joined to the column for most of its length with only a short free part; appendage 3-lobed; mid-lobe 3.5-5 mm long, fleshy, tongue-shaped, rounded at the apex, slightly sigmoid in profile, not stalked, carrying long hairs on the upper surface and short papillae beneath; side lobes 2-3 mm long, linear-oblong, glabrous or with short papillae on the upper surface, arching and curving to the side, narrower than the mid-lobe and twisted at the tips. Rostellum lobes very broad and thick with hyaline, spatulate arms, twisted and geniculate at the base. — Fig. 8.

NOTE. — The description given in the Flore de Madagascar does not seem to match the drawing on the type sheet (which is described here).

DISTRIBUTION. — Madagascar; endemic.

HABITAT. — Terrestrial in semi-dry forest of the W, growing in the humus amongst calcareous rocks; c. 300 m.

This species is only known from the type. The flower shows affinities with *D. hildebrandtii* but it is distinguished readily by the nature of the hairs of the terminal appendage of the lip.

PERRIER DE LA BÂTHIE, in his protolog, cited a single specimen (*Humbert 18825*). However, the only specimen at P is *Humbert 18986* with the same locality and date. There is a single collection as can be seen from the fact that HUMBERT's field

book is clearly annotated across from *n°18986* "c'est le *n°18825*".

10. *Disperis perrieri* Schltr.

Ann. Inst. Bot.-Géol. Colon. Marseille ser. 3, 1: 160 (1913); Feddes Repert. Spec. Nov. Regni Veg. Beih. 33: 109 (1925); H. Perrier in Humbert H. (ed.), Fl. Madag., 49^e fam., Orchidées 1: 187 (1939); Du Puy et al., Orch. Madag.: 136 (1999). — Type: *Perrier de la Bâthie 1924* (no. 39 of Schlechter), Madagascar, Manongarivo Massif, 1000-2000 m (holo-, P!, photo K!).

Slender terrestrial herb 12-30 cm tall. Tubers 3-4, small, ovoid, oblong or linear. Leaves 2-4, alternate, rather irregularly spaced, $2.8-5 \times 0.9-1.2$ cm, lanceolate, acute, clasping the stem at base, decreasing in size towards top of stem. Inflorescence 1-2-flowered; bracts lanceolate, acute, up to 8 mm long. Ovary and pedicel up to 10 mm long. Dorsal sepal 10×1 mm, linear; lateral sepals $8.5-10 \times 3.5-4$ mm, semi-ovate, free almost to base, each with a small, sac-like spur around the middle. Petals 12×6 mm, narrowing abruptly at base, longer than the dorsal sepal with which they form an open, obcordate hood 12-15 mm tall, 16-20 mm wide above the middle but only about 2 mm wide at the base. Lip glabrous, 4.5 mm long, adnate to the column for 2 mm at the base and edged there with a crenate membrane; free part narrow at first then gradually enlarging to form a wide V, branches of the V elongate, c. 2 mm long, rounded at the tips, a little hooked, this V prolonged by a linear one-nerved stipe, 3 mm long, 0.2-0.3 mm wide, bearing a terminal fleshy reniform appendage, 2-3 mm long, concave above and bearing a small papillose lobe in the middle. Rostellum arms short, c. 1 mm long. — Fig. 6H.

DISTRIBUTION. — Madagascar; endemic.

HABITAT. — In humus and amongst lichens in damp woodland on gneiss; 1000-2250 m.

MATERIAL STUDIED. — MADAGASCAR: *Humbert & Capuron 25758*, Ambilobé Distr., Marivorahona Massif, SW of Manambato, 2000-2244 m, 18-26 Mar. 1951 (K!, P!); *Perrier de la Bâthie 1924* (no. 39 of Schlechter), Manongarivo Massif, in damp woodland, 1000-2000 m, May 1909 (P!).

This is a rare species that has only been collected twice in the NW of the island. Following the notes of PERRIER DE LA BÂTHIE and HUMBERT, the stems are reddish, the leaves are dull green above with a paler median nerve and the under side is red. The lateral sepals are mauve or rose-coloured and the petals are rose-flushed or mauve on the back, paler on the inner surface. The hood is green on the back with three keels in relief, within on the inner face are a series of olive or brownish radiating lines.

11. *Disperis lanceana* H. Perrier

Not. Syst. (Paris) 5: 223 (1936); in Humbert H. (ed.), Fl. Madag., 49^e fam., Orchidées 1: 188 (1939); Du Puy et al., Orch. Madag.: 135 (1999). — Type: *Lance s.n.*, without locality 1871 (holo-, P!, photo K!). Known only from the type collection.

Slender terrestrial herb 10-15 cm high. Tubers c. 20 × 6-11 mm, oblong to fusiform. Leaves 2-3 in upper half of stem, alternate, 3-3.5 × 1.2-1.3 cm, lanceolate to ovate, acute, clasping the stem at the base. Inflorescence 2-3-flowered; bracts 15-22 × 5 mm, lanceolate, longer than the ovary and pedicel and usually also than the flowers. Flowers pink, relatively large; pedicel and ovary 9-15 mm long. Dorsal sepal 12-13 × 0.8 mm, narrowly linear. Hood subcircular, deeply concave, 10-12 mm long, 14-15 mm wide, a little hollowed out at the summit. Lateral sepals united for almost their entire length, forming an circular synsepal, slightly hollowed at the apex, 8-9 mm long, 10-12 mm wide, bearing in the middle two short saccate spurs and dotted along the margins with dull purple. Petals 10-13 × 5 mm, obliquely ovate, joined to the dorsal sepal to form a hood which is broader than tall. Lip with a narrow claw, the terminal part trilobed, the two lateral posterior lobes linear, more or less 2 mm long, slightly arched, tomentose-papillose on their margins; the terminal lobe fleshy, tongue-shaped, gibbous in front, narrowing and obtuse at the apex, tomentose-papillose above and below, glabrous on the flanks, 3.5-4.5 mm long, stipitate, the stipe more or less 1.5 mm long, tomentose-papillose along the

mid-line. Rostellum arms 1.5 mm long, spatulate. — Fig. 6E.

DISTRIBUTION. — Madagascar; endemic.

HABITAT. — Habitat not recorded.

This species resembles *D. hildebrandtii* in its habit. It is readily distinguished by the terminal appendage of its lip which is stalked not sessile and by the indumentum of that appendage which lacks the vesicular hairs that are characteristic of *D. hildebrandtii*.

12. *Disperis saxicola* Schltr.

Feddes Repert. Spec. Nov. Regni Veg. Beih. 33: 110 (1925); H. Perrier in Humbert H. (ed.), Fl. Madag., 49^e fam., Orchidées 1: 189 (1939); Du Puy et al., Orch. Madag.: 136 (1999). — Type: *Perrier de la Bâthie 12650*, Madagascar: on Itomampy, 700 m, basin of Mananara, June 1919 (iso-, P!, photo K!).

Terrestrial herb 6-25 cm high; tubers 2, elongate. Leaves 3, alternate, the lowest just above the middle of the stem, the lamina 2.4-6 × 1-2.8 cm, ovate, acute, rounded to subcordate at the base, upper leaves amplexicaul, the basal with a short petiole c. 3 mm long that forms a sheath round the stem 6-7 mm long. Inflorescence 2-5-flowered; bracts lanceolate or ovate, acute, up to 10 mm long. Flowers purplish or pink; ovary and pedicel 7-9 mm long. Dorsal sepal 8 mm long, narrowly linear; lateral sepals free to the base, 8-11 × 5 mm, obliquely elliptic, each with a sac-like spur at about the middle. Petals 5-8 × 2-3.2 mm, adnate to the dorsal sepal and forming an oblong hood 6-8 mm high, 4.5 mm wide. Lip joined to the column for 2 mm, the margin more or less dilated on each side to form 2 lobes, the free part suddenly enlarged into a heart-shaped lamina 3 mm high and wide, papillose pubescent towards the top but glabrous at the base, with a glabrous stipe arising from the sinus on the anterior side bearing a kidney-shaped appendage 1.5-2.5 mm long, papillose pubescent on upper surface, slightly recurved. Rostellum broad with 2 short arms c. 1 mm long. — Figs. 6F, 7B.

DISTRIBUTION. — Madagascar; endemic.

HABITAT. — In humus in dense forest, and among shaded rocks; 400-1000 m.

MATERIAL STUDIED. — CE MADAGASCAR: *Benoist 1131*, Périnet, Sep. 1951 (P!); *Bosser 17168*, “Chutes de la mort”, road Moramanga to Anosibe, Aug. 1963 (P!); *Catag 4284*, without loc. (P!); *Decary 5054*, Vondrozo, Farafangana Prov., 3 Sep. 1924 (P!); *Decary 14228, 14260, 14294*, Sakaleona valley, 13-14 June 1939 (P!); *Decary 18016*, Beforona 10 July 1942 (P!); *Humbert, Capuron & Cours 24813bis*, Anjanaharibe, W Andapa, Dec. 1950-Jan. 1951 (P!); *Lantz*, Mpasimbolabe, July 1881 (P!); *Perrier de la Bâthie 12650*, Itomanpy valley, June 1919 (P!); *Rés. Nat. 6546bis*, Ivohibe, RN 5, July 1954 (P!).

The type of *D. saxicola*, *Perrier de la Bâthie 12650* in P, comprises two specimens, on one of which, PERRIER DE LA BÂTHIE has noted “type of SCHLECHTER”. Both are very young plants in which the flowers are in bud. But SCHLECHTER, in his protologue, described an expanded flower the characters of which are not observable in the two specimens on the P sheet. Therefore, it seems probable that there was another specimen in Berlin that has subsequently disappeared or been destroyed. The two specimens in P should be considered as isotypes.

The herbarium specimens that PERRIER DE LA BÂTHIE attributed to this species agree well with SCHLECHTER’s protologue. The species is very close to *D. humblotii* in its habit, leaves, stature and the form of its flowers. However, in *D. saxicola* the two lateral sepals are free almost to the base and the shape of the terminal appendage of the lip is slightly different. *Disperis saxicola* also approaches *D. lanceolata* in its habit, but the latter has very small and narrow leaves that are not markedly petiolate.

13. *Disperis majungensis* Schltr.

Feddes Repert. Spec. Nov. Regni Veg. Beih. 33: 108 (1925); H. Perrier in Humbert H. (ed.), Fl. Madag., 49^e fam., Orchidées 1: 190 (1939); Du Puy et al., Orch. Madag.: 135 (1999). — Type: *Perrier de la Bâthie 13038*, Madagascar, Majunga (holo-, P!, photo K!).

Slender terrestrial herb 10-13 cm tall; tubers 16-20 × 12 mm, globose or ovoid. Leaves 2, sessile or with a short 2-3 mm long petiole, alternate, borne at about the middle of the stem, 2-4.3 × 1.2-2 cm, ovate, acute, dark green above, red below. Inflorescence 1-3-flowered; bracts (5-)8-16 × 6-8 mm, leafy. Flowers violet; pedicel and ovary 14 mm long. Dorsal sepal 6 × 0.8 mm, linear; lateral sepals free more or less to base, more or less 5 mm long, deeply saccate, with an obtuse spur 1.5 mm long. Petals 5.5-6 × 2-3 mm, more or less semicircular, adnate to the dorsal sepal and forming a shallow hood c. 5-6 mm long, 4.5 mm wide, with the dorsal sepal protruding slightly between the petals. Lip 4.5 mm long over all, with a claw 3 mm long, the basal 2 mm fused to the column; appendage 3-lobed, like a trident, the side lobes erect, 1.5-1.8 mm long, conical with inrolled margins, like the fingers of a glove, densely shortly papillose-pubescent; mid-lobe triangular, obtuse, 2-2.3 mm long, flat, often bent over to the front, densely shortly papillose-pubescent. Rostellum arms 3 mm long, not enlarged at the tips. — Fig. 6A.

DISTRIBUTION. — Madagascar; endemic.

HABITAT. — In humus, in rocky wood on calcareous soil; sea level-100 m.

MATERIAL STUDIED. — W MADAGASCAR: *Morat 4842*, Antsingy of Antsalova, Res. Nat. no. 9, Jan. 1975 (P!); *Perrier de la Bâthie 13038*, near Majunga, not far from the sea, Feb. 1920 (P).

This species is readily recognised by its very characteristic lip appendage. It is a rare species, collected only twice, the localities being very remote from each other.

14. *Disperis erucifera* H. Perrier

Not. Syst. (Paris) 5: 226 (1936); H. Perrier in Humbert H. (ed.), Fl. Madag., 49^e fam., Orchidées 1: 191 (1939); Du Puy et al., Orch. Madag.: 134 (1999). — Type: *Perrier de la Bâthie 17509*, Madagascar, Montagne des Français, Diego-Suarez, Antsiranana (holo-, P!, photo K!).

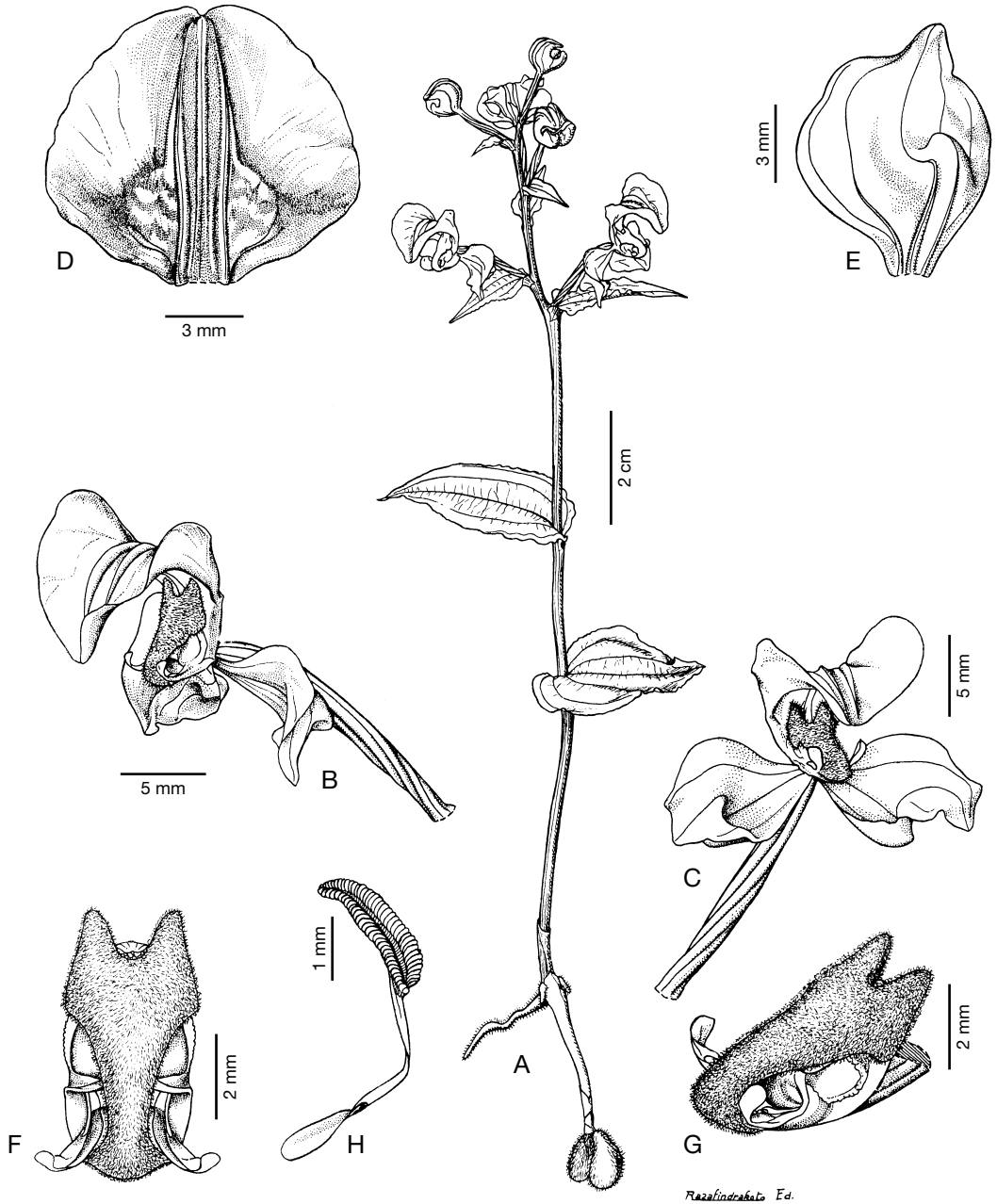


Fig. 9. — *Disperis erucifera*: A, flowering plant; B, flower, side view; C, flower, front view; D, hood; E, lateral sepal; F, column and lip, front view; G, column and lip, side view; H, pollinarium. (Morat 3080, P).

Slender terrestrial herb 10-28 cm high, with a violet stem. Leaves sessile, 2-4, alternate, 5.8-6.2 × 1.8-3.6 cm, ovate to lanceolate, acute or

apiculate, the base rounded and not clasping the stem, green above with 3 violet veins, violet below. Inflorescence 1-6-flowered; bracts leafy, to

19 × 4 mm, lanceolate, acute. Flowers violet or deep mauve-pink, relatively large; pedicel and ovary 12-15 mm long. Dorsal sepal 11 × 1-1.5 mm, linear, arched; lateral sepals 7-10 × 3-4 mm, more or less semicircular, acute, free almost to base, each with a sac-like spur. Petals 11-12 mm long, semi-ovate, with an oblong auricle on the outer side near the base, joined to the dorsal sepal to form a hood. Free part of the apical lip c. 7 mm long, covering the column, more or less notched at the base, narrowed above, then dilated into a round or subrhombic lobe, densely tomentose on the upper surface. Rostellum 3 × 4 mm, with linear arms 3 mm long. — Fig. 9.

DISTRIBUTION. — Madagascar; endemic.

HABITAT. — Calcareous rocks and limestone crevices in shade, in leaf debris and humus; 30-350 m.

MATERIAL STUDIED. — **W MADAGASCAR (North Sector):** *Bardot-Vaucoulon 427*, Lac Vert area, Ankarana Massif, Diego-Suarez Prov., 3 Mar. 1991 (P!); *Capuron s.n.*, without exact loc. (P!); *Cours 5467*, Misoramahalana forest, Marovato-Anketraka village, Anivorano North, Diego-Suarez Distr., 200 m, 2 Jan. 1960 (P!); *Du Puy & Andriantiana M715*, Antsiranana Prov., SE of Antsiranana (Diego-Suarez), NW margin of Montagne des Français, near road to Ramena and Orangea, 210 m, 12 Mar. 1994 (K! P!); *Humbert & Cours 32688*, Diego-Suarez Prov., calcareous hills and plateaux of N Ankarana, N of Ambohipiraha road, 30-350 m, 24 Jan.-29 Feb. 1960 (K!, MO, P!, TAN, WAG); *Humbert & Cours 32689*, id. (P!); *Lewis et al. 1115*, Diego-Suarez Prov., Ankarana, close to Camp des Anglais, 180 m, 18 Feb. 1994 (MO, P!); *Morat 3080*, Ankarana, Diego-Suarez, fl. at Tsimbazaza, Antananarivo, Feb. 1970 (P!); *Morat 3110*, cliffs of Ankarana, on calcareous rubble, Jan. 1969 (P!); *Perrier de la Bâthie 17509*, Montagne des Français, Diego-Suarez, Jan. 1926 (P!); *Poisson 96*, Montagne des Français, rec. 19 Nov. 1932 (P!); *Rakotomalaza et al. 130*, Reserve of Ankarana, track to Lac Vert, 180 m, 18 Feb. 1994 (K!, MO, P!).

A common species of calcareous substrates in the north and north-east of the island. The leaves are purple on their underside and their upper face has three white or rose-coloured nerves. The plants, therefore, can be confused with *D. trilineata* when not in flower.

15. *Disperis humblotii* Rchb.f.

Flora 68: 377 (1885); Schlechter, Bull. Herb. Boiss. 6: 954 (1898), *in syn.*; H. Perrier in Humbert H. (ed.), Fl. Madag., 49^e fam., Orchidées 1: 191 (1939); Du Puy et al., Orch. Madag.: 135 (1999). — Type: *Humblot s.n.*, Comores (holo-, W!).

Disperis comorensis Schltr. in Engler, Bot. Jahrb. Syst. 24: 429 (1897); Bull. Herb. Boiss. 6: 946 (1898); Feddes Repert. Spec. Nov. Regni Veg. Beih. 33: 107 (1925); H. Perrier, Not. Syst. (Paris) 5: 227 (1936); in Humbert H. (ed.), Fl. Madag., 49^e fam., Orchidées 1: 192 (1939); Du Puy et al., Orch. Madag.: 134 (1999). — Type: *Bang s.n.*, Comores, in Herb. Schlechter (holo-, B delet.); *syn. nov.*

A slender glabrous, terrestrial herb, 10-22 cm tall. Leaves 2-3, alternate, set around the middle of the stem, lamina narrowly ovate to ovate, acute at the apex, cordate at the base, 2-4 × 1-2 cm, the lower one long petiolate, petiole 4-7 mm long, the upper leaf sessile. Inflorescence 2-10-flowered; bracts lanceolate or ovate, acute, generally shorter than the ovary, 5-8 mm long. Flower rose-coloured or white. Dorsal sepal narrow, one-nerved, forming an oblong hood with the petals, 6-7 × 2.5-3 mm. Lateral sepals narrowly ovate, 9-10 × 2.5-3 mm, slightly falcate, obtuse at the apex, adnate in the basal quarter to half their length, 3-4-nerved, bearing an obtuse conical spur, 0.6-0.7 mm long, in the basal third. Petals linear-ligulate, 6-7 mm long. Lip 2 mm long, basal part linear, united to the column; terminal part 3-lobed; the two lateral lobes slightly divergent, oblong, 1.2-1.5 mm long, rounded at the tips, concave on the inner face, outer face papillose-pubescent; mid-lobe stalked, fleshy, saddle-shaped, 1.5-2.8 mm long, obtuse at the tip, rounded and gibbous at the base, upper surface shortly papillose-pubescent, but the gibbous base is quite glabrous; stipe linear, glabrous, flat, 2 mm long, attached to the basal third to the terminal appendage Rostellar arms short, 0.8 mm long, spatulate at tips. stigma transverse, subreniform. — Fig. 6G.

DISTRIBUTION. — Madagascar, Comores.

HABITAT. — Under trees in humid forest at intermediate elevations; 700-1400 m.

MATERIAL STUDIED. — MADAGASCAR: *Decary 12*, Ambohimanga, 25 Aug. 1920 (P!); *Humbert & Cours 17804*, Andrangovolo Massif, SE of Lake Alaotra, Res. Nat. no. 3 of Zahamena, basin of the Onibe, 1200-1400 m, Oct. 1937 (P!); *Perrier de la Bâthie 11880*, Analamazaotra, Périnet 800 m, July 1913 (P!); *Perrier de la Bâthie 17740*, Ambre forest, 700 m, Aug. 1926 (P!). — COMORES: *Benson 84*, Niombadjou, Grande Comore, 15 Aug. (P!); *Bernard s.n.*, M'zoudi hill, Anjouan, 27 Aug. 1903 (P!); *Bosser s.n.*, Anjouan, 1963 (P!); *Humblot s.n.*, without exact loc. (W); *Humblot 1592 (592)*, without exact loc. (P!).

REICHENBACH (l.c.) did not cite a number for the type specimen of this obscure species, and the flower on the sheet in the REICHENBACH herbarium in Vienna is in poor condition. However, in his protologue, REICHENBACH gave the characteristics of the lip that correspond well with the herbarium material from Madagascar and the Comores cited above under *D. humblotii*. He said of the lip: “lamina mediana bene unguiculata, oblonga, velutina basi superiore excepta”. This last detail is characteristic of this species. With regard to *D. comorensis*, we have not seen the type, *Bang s.n.*, which was in SCHLECHTER'S herbarium (B) which was destroyed, but the description of the lip is sufficiently clear for us to concur that it belongs to the same species: “*labello...antice tertia parte bifido, segmentis erectis, obtusis, medio antice in processum arcuato-ascendingem graciliter unguiculatum, subpeltatum, lamina carnosae, sigmoidea, utrinque obtusa papillosa*”. Although he did not mention the glabrous basal part of the terminal appendage of the lip, the term sigmoid describes its saddle-shaped form. On the other hand, SCHLECHTER attributed *Humblot 1592 (P)* to his *D. comorensis* and it is possible that the herbarium specimen of HUMBLLOT found in Vienna, the type of *D. humblotii*, was a part of that collection.

Although there are few Madagascan collections, the distribution of the species is extensive, ranging from around Antananarivo to Périnet (Andasibe) to Lake Alaotra and Mt. Ambre. In the Comores, it has been found on Grande Comore and Anjouan but it is very local.

The flower recalls somewhat that of *D. lanceana*, but the terminal appendage of the lip is larger and of a different form.

16. *Disperis tripetaloides* (Thou.) Lindl.

Gen. Sp. Orch. Pl.: 371 (1839); S. Moore in Baker, Fl. Maurit. and Seych.: 331 (1877); de Cordemoy, Fl. La Réunion: 254 (1895); Schlechter, Bull. Herb. Boiss. 6: 932 (1898); Feddes Repert. Spec. Nov. Regni Veg. Beih. 33: 113 (1925); H. Perrier, Not. Syst. (Paris) 5: 228 (1936); in Humbert H. (ed.), Fl. Madag., 49^e fam., Orchidées 1: 193 (1939); Du Puy et al., Orch. Madag.: 136 (1999). — *Dryopeia tripetaloides* Thou., Orch. Iles Afr.: t. 2 (1822); A. Richard, Monog. Orch. Iles de France et Bourbon: 36 (1828); Bojer, Hort. Maurit.: 312 (1837). — Type: *Thouars s.n.*, La Réunion, without exact loc. (holo-, P!, photo K!).

Slender terrestrial herb 10-22 cm high; tubers 2, ovoid or oblong, up to 13 mm long. Leaves 2-3 the lowest inserted in the lower third to half of stem, alternate, sessile, 1.5-3.5(-5) × 0.8-1.7(-2.5) cm, ovate, subacute, cordate and partly enfolding the stem at the base, dark green with 5 pale nerves above, dark violet below. Inflorescence 1-4(-5)-flowered; bracts lanceolate, 0.6-1.8 cm long, shorter than the ovary. Flowers white or rose-coloured, the nerves on the back of the sepals green or brownish; the puberulence of the terminal appendage of the lip yellow. Dorsal sepal 8-9 mm long, linear; lateral sepals 7-10 mm long, c. 5 mm wide, free more or less to base, obliquely elliptic, with a sac-like spur in the middle. Petals more or less semicircular, 6-8 mm long round the curved edge, joined to the dorsal sepal to form an open hood 6.5-8.5 mm high, 3-5 mm broad. Lip joined to the column at the base, the free part 3-4 mm long, the base triangular-cordate, more or less deeply, covered with short, dense papillae, extended above by a glabrous stalk bearing at its tip a fleshy appendage, 1-1.5 mm long, excavated on the upper surface and bearing the same short papillose puberulence. Rostellar arms curved, 2-3 mm long, rounded-spathulate at the apex. — Fig. 10.

DISTRIBUTION. — Madagascar, Seychelles, Mauritius, La Réunion and Rodrigues.

HABITAT. — Grows singly or in small colonies in rich soil and medium shade in the understorey of semi-dry forests or rarely in humid forest; sea level-700 m.

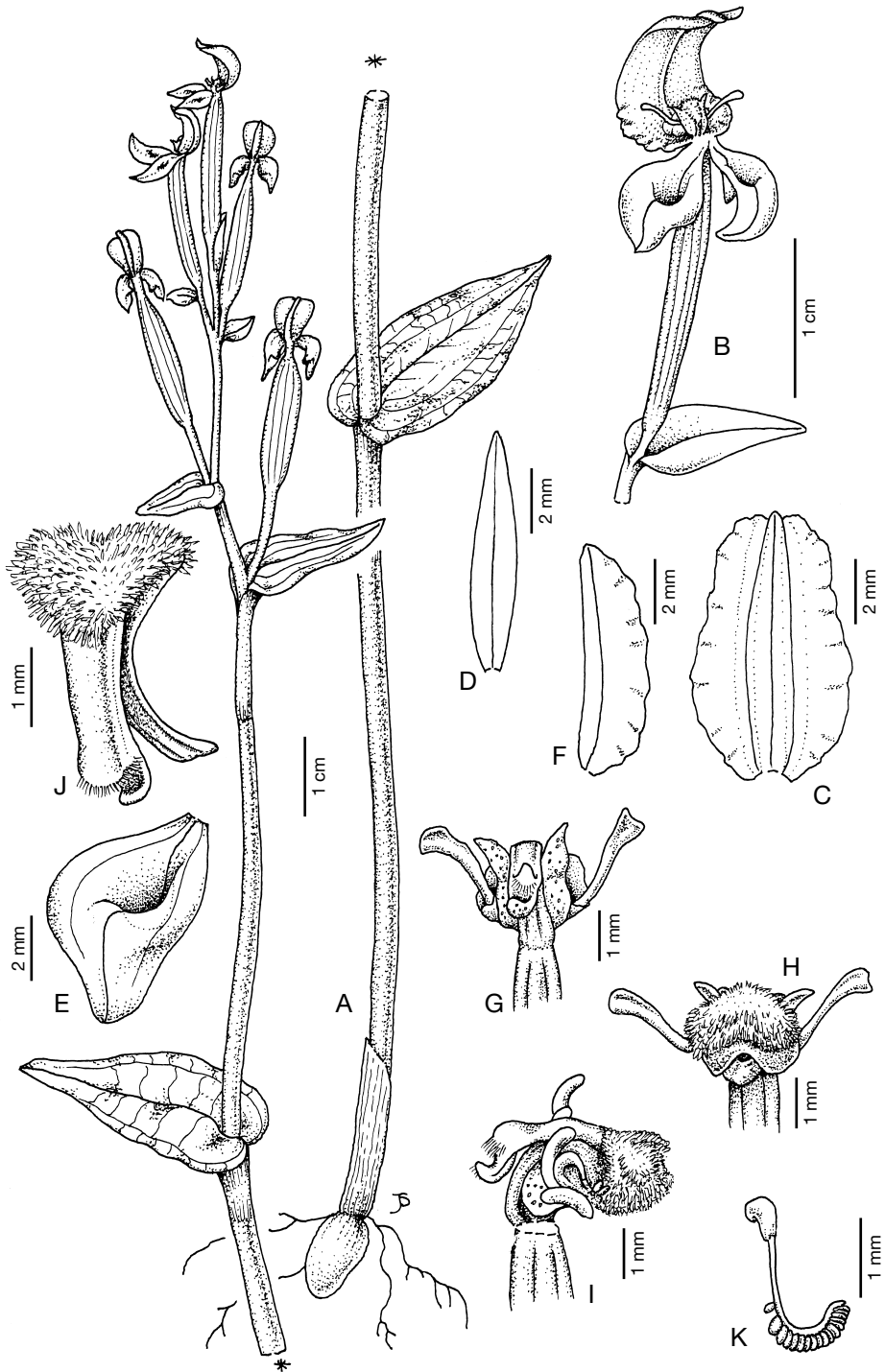


Fig. 10. — *Disperis tripetaloides*: A, flowering plant; B, flower; C, hood, front view; D, dorsal sepal; E, lateral sepal; F, petal; G, column and lip, front view; H, column and lip, back view; I, column and lip, side view; J, lip; K, pollinarium. (Jeffrey 812, spirit material 23726, K).

MATERIAL STUDIED. — MADAGASCAR: *Decary 4052*, Fort-Dauphin, 20 June 1926 (P!); *Humbert 20594*, Manampanihy valley (SE), near Ampasimena, 20-100 m, 18-23 Mar. 1947 (P!); *Humbert & Capuron 29042*, Mt. Ankazovandamena, baie des Galions, Ranofotsy, SW of Fort-Dauphin, 21 Feb. 1955 (P!); *Leandri 888*, Tsiandro, 10-12 Nov. 1933 (P!); *Leandri 1101*, gorges of the Salapango, Bemaraha tsingy, calcareous rocks, 1933 (P!); *Leandri 2359*, near Tsiandro (W), Jan. 1953 (P!); *Perrier de la Bâthie 490*, Firingalava woods, Feb. 1898 (P!); *Perrier de la Bâthie 15706*, Sambirano, c. 400 m, Jan. 1923 (P!); *Scott Elliot 2305*, Fort-Dauphin, May 1889 (K!, P!). — LA RÉUNION: *Bosser 12163*, St. Philippe, 200-300 m, May 1957 (P!); *Bosser 22166*, path from Aurère to the Riv. des Galets, Cirque de Mafata, 16 June 1976 (P!); *Cadet 4185*, Ilet Solitude, heights of La Possession, 600 m, 15 Mar. 1973 (P!, REU); *Friedmann 2146*, Marquet ravine, Dos d'Âne, 700 m, Mar. 1973 (P!); *Thouars s.n.*, without exact loc. (P!); *Thouars in Herb. Richard s.n.*, without exact loc. (P!). — MAURITIUS: *Ayres s.n.*, without exact loc., rec. 27 Feb. 1864 (K!, P!); *Commerson s.n.*, without exact loc. (P!); *Herb. Desvaux*, without exact loc. (P!); *Vaughan s.n.*, Cabinet-Magenta road, 4 Apr. 1952 (K!, MAU); *Vaughan in MAU 11204 A*, Vacoas Ridges 9 Apr. 1964 (MAU). — RODRIGUES: *Bosser 22396*, Mt. Cimetièrre, 16 Mar. 1978 (P!). — COMORES: *Kirk s.n.*, Johanna, Aug. 1862 (K!); *Kirk s.n.*, Johanna, Nov. 1866 (K!); *Lavanchie s.n.*, Anjouan, rec. 13 Oct. 1905 (P!); *Pascal 414*, Tschaourembo, Mayotte, 10 Mar. 1996 (P!); *Tinguy 746*, edges of Mt. M^eLima, Comani, Mayotte, 26 Jan. 1989 (P!). — SEYCHELLES: *Archer s.n.*, Praslin, Central, 800 ft., 6 Sep. 1960 (K!); *Friedmann 3834*, Silhouette, May 1981 (P!); *Friedmann 3872*, Glacis Noir, Praslin, June 1981 (P!); *Friedmann 5592*, Silhouette, Jardin Marron, June 1987 (P!); *Guého in MAU 15382*, Fond Azor, Praslin, 27 Oct. 1972 (MAU, P!); *Jeffrey s.n.*, Silhouette, ridge above Anse Lascars, 1 Feb. 1962 (K!); *Neville s.n.*, Praslin, Feb. 1867 (K!); *Pervillé s.n.*, Mahé, 21 Feb. 1840 (P!); *Proctor 4010*, Silhouette, between La Passe and Jardin Marron, June 1960 (K!); *Stanley Gardiner s.n.*, Mare aux Cochons, 1908 (K!); *Stanley Gardiner s.n.*, Silhouette, 1908 (K!); *Thomasset s.n.*, Cascade Estate, on mossy rocks near mountain stream, May 1902 (K!).

Notwithstanding its extensive range, only slight variation has been observed between populations of this species, in particular in the morphology of the lip.

It approaches *D. cordata* in its habit and leaves which are violet on their underside. It can be distinguished readily by its free lateral sepals and the morphology of the terminal free part of the lip.

In the type collection of THOUARS (P), the characters of the flower are not clear, but the THOUARS' specimen in the RICHARD herbarium is in much better condition and the morphology of the lip can be clearly seen.

17. *Disperis cordata* Sw.

Kongl. Vetensk. Acad. Nya Handl. Stockholm 21: 218 (1800); Lindley, Gen. Sp. Orch. Pl.: 371 (1839); S. Moore in Baker, Fl. Maurit. and Seychelles: 331 (1877); Schlechter, Bull. Herb. Boiss. 6: 955 (1898). — Type from Mauritius.

Disperis discolor (Thouars) Frappier, Cat. Orch. La Réunion: 10 (1880); de Cordemoy, Fl. La Réunion: 254 (1895). — *Dryopeia discolor* Thouars, Orch. Iles Afr.: t. 2 (1822); A. Richard, Monogr. Orchid. Iles de France et Bourbon: 36 (1828). — Type: *Thouars*, Orch. Iles Afr.: t. 2 (1822) (lecto-, chosen here).

A slender glabrous terrestrial herb, 8-20 cm tall. Stem violet. Tubers 2, subspherical or ovoid, pubescent, 0.7-1.2 cm long. Leaves 2, alternate, sessile, narrowly ovate or ovate, acute at the apex, cordate or amplexicaul at the base, (1-)1.5-3.7 × 0.7-1.4 cm, the lowermost inserted in the basal quarter to middle of the stem; upper surface dull green with a median pale nerve; lower face violet. Inflorescence 1-2(-3)-flowered; floral bracts broadly ovate, cordate, foliaceous, the lowermost much larger, 0.8-1.5 cm long. Flowers rose-coloured or white with a streak of purple on the petals, dorsal sepal with some violet spots on the inner face towards the base. Dorsal sepal linear, one-nerved, 7-8 mm long; lateral sepals obliquely ovate, obtuse, 7-10 × 4-4.5 mm, 5-nerved, united at the base for about half their length, each furnished towards the inner margin with a short obtuse spur. Petals obliquely ovate, forming with the dorsal sepal a slightly concave hood, 8 × 6-6.5 mm. Lip adnate to the column, linear and ascending in the basal part, the terminal part free, bifid at the base, with slender arcuate branches, 1.5 mm long, tomentose-papillose; the terminal appendage ovate, 1-1.5 mm long, curved on the upper surface and bearing a yellow tomentose indumentum, stalked, the stalk linear, flat, 2-2.2 mm long. Rostellar arms 1.5 mm long, slightly dilated at the apex. — Fig. 6B.

DISTRIBUTION. — La Réunion, Mauritius; endemic to the Mascarenes.

HABITAT. — Under trees in semi-dry forest; 400-1500 m.

MATERIAL STUDIED. — LA RÉUNION: *Bernardi* 14988, La Grande Chaloupe, 400-500 m, 11 Jan. 1975 (G!); *Bosser* 21031, path to Ilet à Guillaume, 31 Dec. 1971 (P!); *Bosser* 21111, Ravine du Chaudron, 8 Jan. 1972 (P!); *Bosser* 21623, Ravine Grande Chaloupe, 17 Mar. 1974 (P!); *Bosser* 22352, *ibid.*, 1 Mar. 1978 (P!); *Cadet* 1900, Bras Sec, Cirque de Cilaos, c. 1500 m, 7 Feb. 1969 (P!), *Delteil s.n.*, without exact loc. (P!); *Friedmann* 1541, Ravine of Marquet, Dos d'Âne, 700 m, Feb. 1972 (P!); *Friedmann* 2137, Ravine Grande Chaloupe, 550 m, Mar. 1973 (P!); *de Cordemoy C. 1*, Bois de Nèfles, 700-800 m, 1870 (MARS!). — MAURITIUS: *Bosser* 21896, les Trois Mamelles, 20 Apr. 1974 (P!); *Commerson s.n.*, without exact loc. (G!, P!).

Although we have not seen the type, it is described in the protologue as having connate lateral sepals and a bilobed lip with a recurved, spatulate appendage. Given that the Mauritian species are well known, we are sure that it is the same as *D. discolor*, a species subsequently described by DU PETIT THOUARS.

We have not managed to locate the type specimen of *D. discolor*. P. THOUARS' plate in *Orchidées des îles Australes d'Afrique* (1822) has been chosen here as the lectotype. The fusion of the lateral sepals is well illustrated there and, as shown in "de", the appendage of the lip has two arcuate branches.

The habit is very similar to that of *D. tripe-taloides* but the flowers are very distinct.

FRAPPIER, in his Catalogue, cited *D. discolor* Frappier, not stating explicitly that this name was based on *Dryopeia discolor* of THOUARS. But in his introduction, he gave a list of several works he used to compile his catalogue and cited the publication of THOUARS, *Orchidées des îles Australes de l'Afrique* (1822). As he did not retain the genus *Dryopeia* then it is evident that FRAPPIER in using the name *Disperis discolor* made an indirect citation of *Dryopeia discolor* Thouars. The combination *Disperis discolor* (Thouars) Frappier is accordingly retained as used by Jacob DE CORDEMOY in *Flore de La Réunion*: 254 (1895).

REICHENBACH, in *Fl. Germ. Recens. Orch.* 13 & 14, t. 354, figs. 27-30 (1850), illustrated a flower of a plant said to be *D. cordata* Sw. This flower, and particularly the terminal appendage of the lip, does not correspond to any of the Mascarene species of *Disperis*. The origin of the plant used for this drawing is not stated.

18. *Disperis bathiei* Bosser & la Croix, *sp. nov.*

Affinis *Disperis masoalensis* P.J. Cribb & la Croix *sed foliis hastatis distincte petiolatis, inflorescentia 4-5-flora, petalis linearibus, labello carnosio trilobato, lobis laterilibus erectis pubescentibus lobo medio lanceolato pendenti glabro ornato bene distinguenda.*

TYPUS. — *Perrier de la Bâthie* 1924bis, Madagascar, massif of Manongarivo, 1000-2000 m, May 1909 (holo-, P!, photo K!). Known only from the type collection.

Terrestrial herb c. 17 cm high. Leaves 3, in upper half of stem, alternate, up to 3.3 × 1.8 cm, ovate, the lowest petiolate, the upper two sessile; petiole 2 mm long with a basal sheath 8 mm long. Inflorescence 5-flowered; bracts leafy, ovate to lanceolate, acute, up to 1.5 cm long. Flower colour not known; pedicel and ovary 12 mm long. Dorsal sepal 10 × 1 mm, linear; lateral sepals free to the base, 13-14 × 4.5-5.6 mm, obliquely elliptic, subacute, with a small spur in the basal half. Petals 10 × 2.5 mm, oblong, sub-falcate, adnate to the dorsal sepal to form an elliptic, concave hood, rounded at the summit, 9.5-10 mm high, 6 mm wide. Lip with a linear claw, slightly reflexed at about 3.5 mm from the base and enlarged just below the bend, extending above the bend for 3.5 mm but divided at about halfway along into 2 branches, then sharply bent down to the front and bearing an obtuse, glabrous, linguiform, convex appendage 5.5 mm long. — Fig. 11.

DISTRIBUTION. — Madagascar; endemic.

HABITAT. — In the understorey of humid forest at intermediate elevation.

This species has only been collected once. It resembles *D. lanceana* in the shape of the flowers

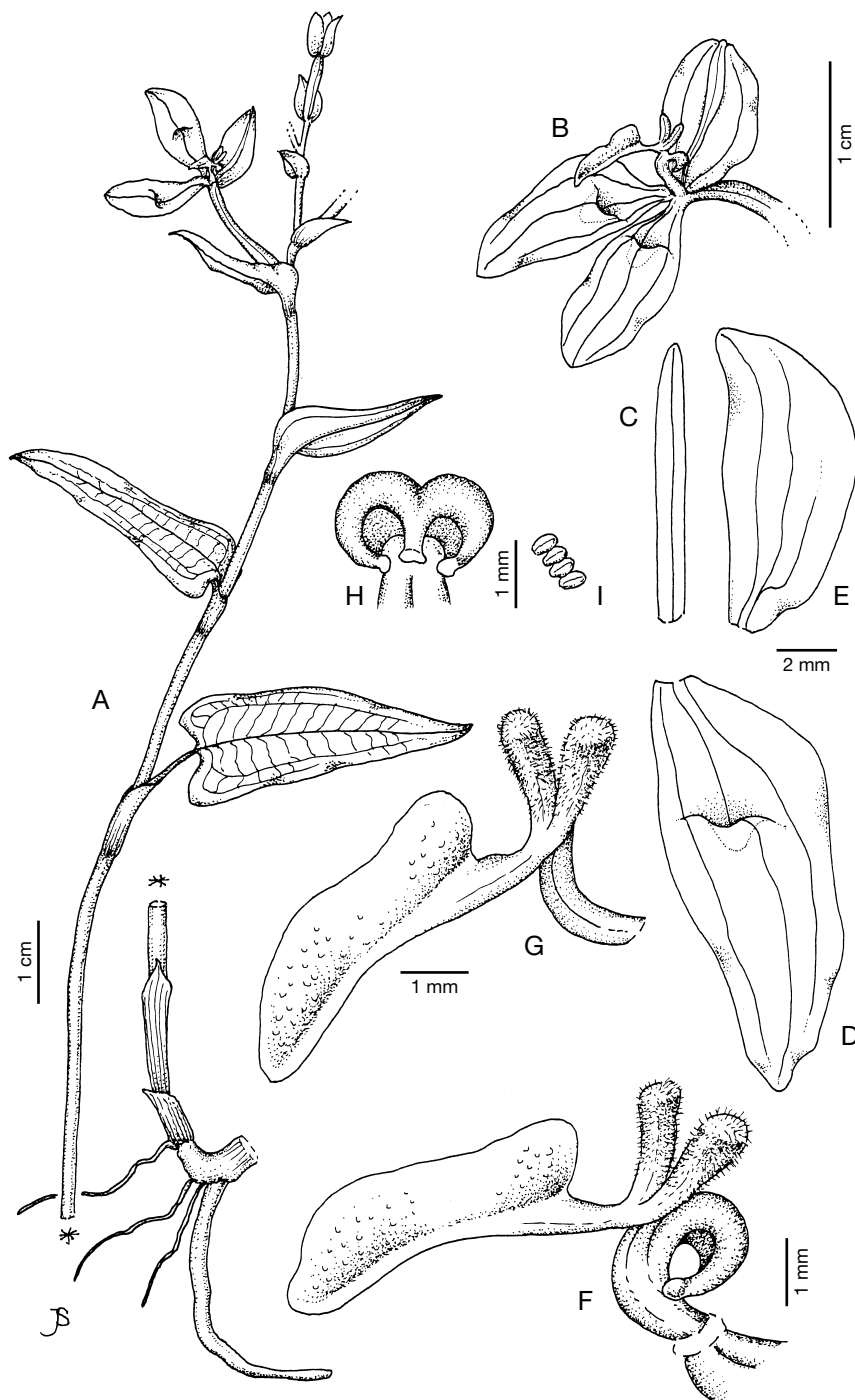


Fig. 11. — *Disperis bathiei*: A, flowering plant; B, flower; C, dorsal sepal; D, lateral sepal; E, petal; F, column and lip, side view; G, lip; H, rostellum; I, pollinia granules. (Perrier de la Bâthie 1924bis P).

and the morphology of the lip, but the appendage is completely glabrous and is borne on a glabrous stalk. The lateral sepals appear to be free almost to the base. But this character needs to be confirmed. On the label on the type specimen, PERRIER DE LA BÂTHIE commented that it approaches *D. comorensis* (= *D. humblotii*), but in that species the terminal appendage of the lip is considerably smaller and bears a short, dense indumentum except on the basal extremity.

19. *Disperis lanceolata* Bosser & la Croix, sp. nov.

Affinis Disperis disciferae H. Perrier *sed foliis multo reductis, inflorescentia 2-5-flora, galea longiora quam latiora, labello trilobo, lobo medio unguiculato ovato ad basin umbonato satis differt.*

TYPUS. — *Bosser 7951*, Madagascar, Ambohitantely, district of Ankazobe, Apr. 1955 (holo-, P!, photo K!).

A very slender terrestrial herb 14-27 cm high. Stem slender violet. Leaves 2-3, alternate, sessile or rarely with a very short, 1 mm long petiole, the lowest leaf in the lower half of the stem, 1.8-3.6 × 0.7-1.5 cm, lanceolate to narrowly ovate, acute. Inflorescence 2-5-flowered; bracts lanceolate, acute, 4-6 mm long, leaf-like. Flowers rose pink, the petals striped with violet; pedicel and ovary 10-13 mm long. Dorsal sepal 7.5 × 1 mm, linear; lateral sepals 6-9 mm long, free more or less to the base, obliquely oblanceolate, with a distinct spur at about the middle. Petals 7.5 × 2 mm, obliquely oblong, subacute, the free margins undulate, adnate to the dorsal sepal and forming an oblong, concave hood 5.5-7.5 mm high, 2.5-3 mm wide. Lip claw joined to the column at the base, the free part gradually enlarged to 2 papillose lobes, then with a narrow stipe 2 mm long ending in a suborbicular or elliptic appendage, 1.5-2 mm in diameter, papillose in the centre, with a protuberance where the blade joins the stipe. Rostellum with short arms. — Fig. 12.

DISTRIBUTION. — Madagascar; endemic.

HABITAT. — In humus in shade in moist forest, edge of forest in shade of small trees in deep leaf litter; 1200-2000 m.

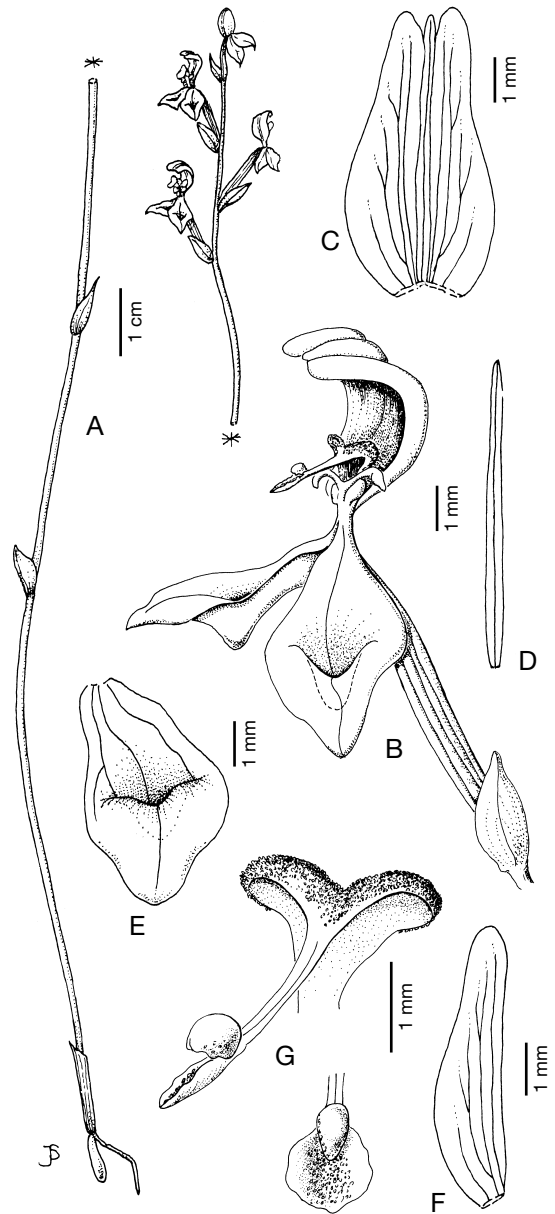


Fig. 12. — *Disperis lanceolata*: A, flowering plant; B, flower; C, hood; D, dorsal sepal; E, lateral sepal; F, petal; G, lip. (A-F, *Botoalina*, RN 3758, P; G, *Bosser 7951*, P).

MATERIAL STUDIED. — MADAGASCAR: *Bosser 7951*, forest of Ambohitantely, Ankazobe Distr., Apr. 1955 (P!); *Botoalina in Rés. Nat. 3758*, Rés. Nat. no. 3, Ambatosoratra, Ambatondrazaka, 10 Apr. 1952 (P!); *J. & C. Hermans 13-5/10*, Ambohitantely, Ankazobe

Distr., 1450 m, May 2001 (K!); *Humbert 25754*, massif of Marivorahona, SW of Manambato, high Mahavavy du Nord, Ambilobé Distr., 16-26 Mar. 1951 (K!, MO, P!).

This species recalls *D. humblotii* and *D. saxicola* in its habit. It is distinguished by its much smaller and narrower, sessile leaves and by the terminal appendage of its lip in the form of a flat elliptic or suborbicular plate having at its base a rounded protuberance. The lip appendage bears some resemblance to that of the African species *D. togoensis*, but the latter is a more slender plant with larger flowers and leaves, and with the lateral sepals joined at the base for a quarter to half of their length. It also resembles *D. katangensis* but that, too, has the lateral sepals partly joined.

20. *Disperis masoalensis* P.J. Cribb & la Croix, sp. nov.

Affinis *Disperis bathiei* Bosser & la Croix *et D. ankarensis* H. Perrier *sed floribus majoribus, sepalis lateralibus fere ealcaratis quam sepalo dorsali duplo longioribus, petalis undulatis, labello papilloso, lobis lateralibus incurvatis, lobo medio lanceolato deflexo satis differt.*

TYPUS. — *Schatz, van der Werff, Gray & Razafimandimbison 3380*, Madagascar, Toamasina, Masoala Peninsula, 1-25 m, 31 Oct. 1992 (holo-, K!; iso-, MO, P!).

Slender terrestrial herb 8-12 cm tall. Stems slender reddish. Leaves 2, alternate, narrowly ovate, rounded at base, 25-32 × 11-12 mm, green, the lower with a short petiole 3-4 mm long. Inflorescence 1-2-flowered; bracts 7 mm long. Flowers pale pink inside, whitish tinged with pink on the outside; pedicel and ovary 12-13 mm long. Dorsal sepal and petals forming a hood c. 10 mm long; dorsal sepal lanceolate, acute, 10 × 1-1.5 mm; lateral sepals deflexed, joined for about half their length, obliquely ovate, obtuse, 18 mm long, 20 mm wide across the middle where they are joined, shallowly concave at about half way along mid-vein. Petals obliquely ovate, obtuse to rounded at the apex, 10 × 6 mm, adnate to the dorsal sepal on the

inner margin to form a hood over the column, undulate on the free margin. Lip fleshy, 3-lobed, 7 × 2.5 mm, papillose; basal lobes incurved, clavate; mid-lobe linguiform, deflexed, concave, tapering to blunt apex. Column erect, 2.5 mm long; rostellar arms porrect, clavate, 2-2.2 mm long; anther loculi parallel; pollinia clavate, seticulate. — Figs. 7F, 13.

DISTRIBUTION. — Madagascar; endemic.

HABITAT. — Growing in moss on top of boulders in river-bed; sea level-25 m.

MATERIAL STUDIED. — MADAGASCAR: *Labat & Poncy 3424*, Tamatave Prov., Maroantsetra, Parc National Masoala, Andranobe, 0-10 m, 26 Oct. 2001 (K!, MO!, P!, TEF, TAN); *Lowry, Rakotozafy & Nicholl 4104*, trail along Ampanga R., c. 5 km S of Hiaraka, E of Maroantsetra, NW coast of Masoala Peninsula, 13 Oct. 1986 (MO, P!, TAN); *Schatz, van der Werff, Gray & Razafimandimbison 3380*, Toamasina, Masoala Peninsula, 1-25 m, 31 Oct. 1992 (K!, MO, P!, TAN).

Known only from three collections, this is a distinct species with one or two large pink and white flowers borne on a small plant. It is allied to *D. bathiei* and *D. ankarensis*. It differs from the former in its ovate, very shortly petiolate leaves, fewer, larger flowers in which the lateral sepals are fused almost to their mid-point and have the shallowest of spurs in the centre, broader undulate petals, and lip in which the mid-lobe is sessile and the side lobes are incurved and papillose rather than erect and pubescent. From the latter it differs in its larger flowers in which the scarcely saccate lateral sepals are much longer and larger than the dorsal sepal, the undulate petals, and papillose rather than villose lip.

21. *Disperis bosseri* la Croix & P.J. Cribb, sp. nov.

Affinis *Disperis tripetaloides* Thouars *sed foliis parvis perfoliatis, calcare sepalorum latiorum cylindraceo, labello glabro pandurato bene distinguenda.*

TYPUS. — *Bosser 10869*, Madagascar, Ankaratra, road from Ambatolampy to Faratsiho, 2400 m, Feb. 1957 (holo-, P!, photo K!).

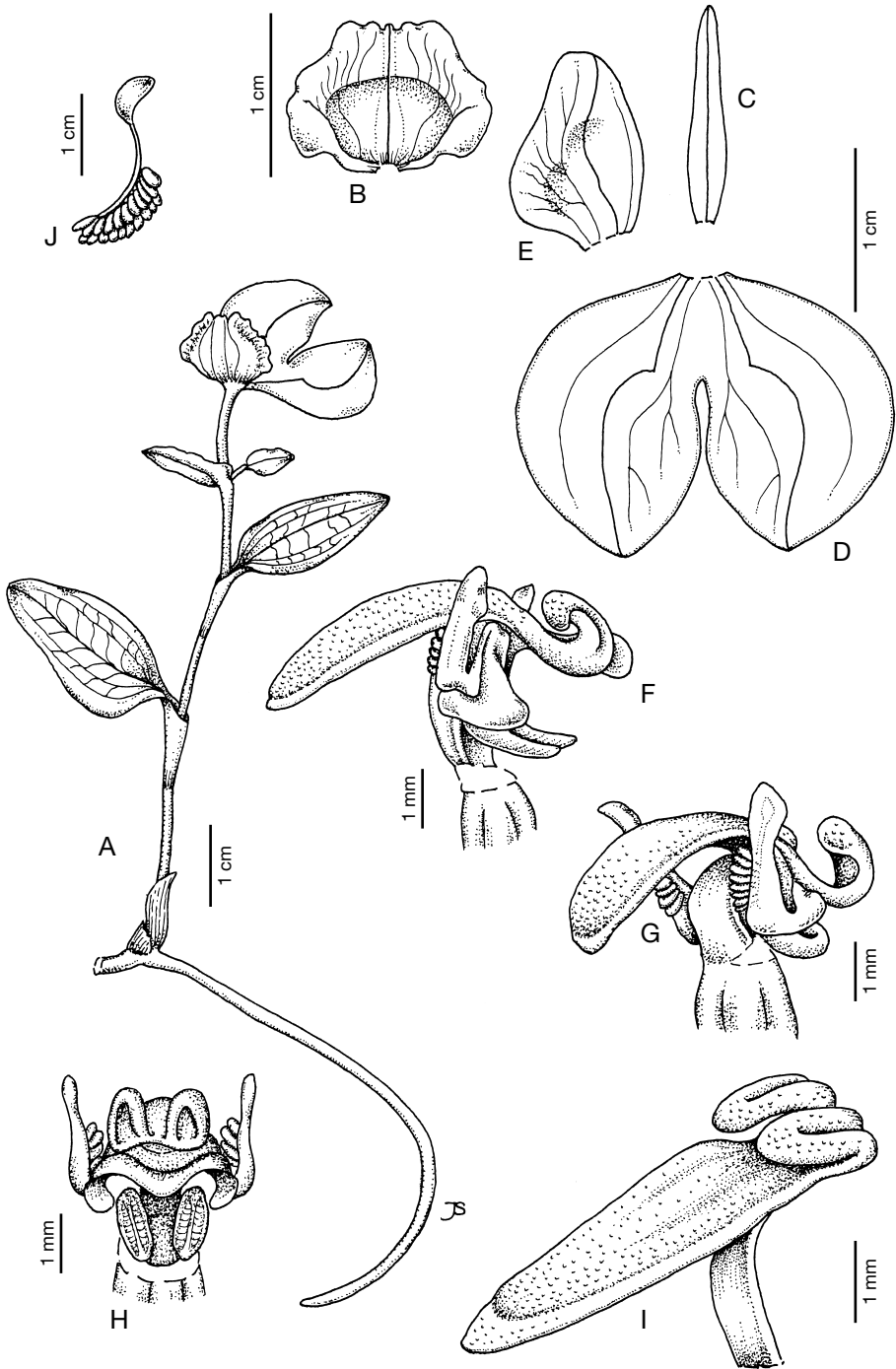


Fig. 13. — *Disperis masoalensis*: **A**, flowering plant; **B**, hood, front view; **C**, dorsal sepal; **D**, lateral sepals; **E**, petal; **F**, column and lip, side view; **G**, column and lip, front view; **H**, column and lip, back view; **I**, lip; **J**, pollinarium. (Schatz, van der Werff, Gray & Razafimandimbison 3380, K).

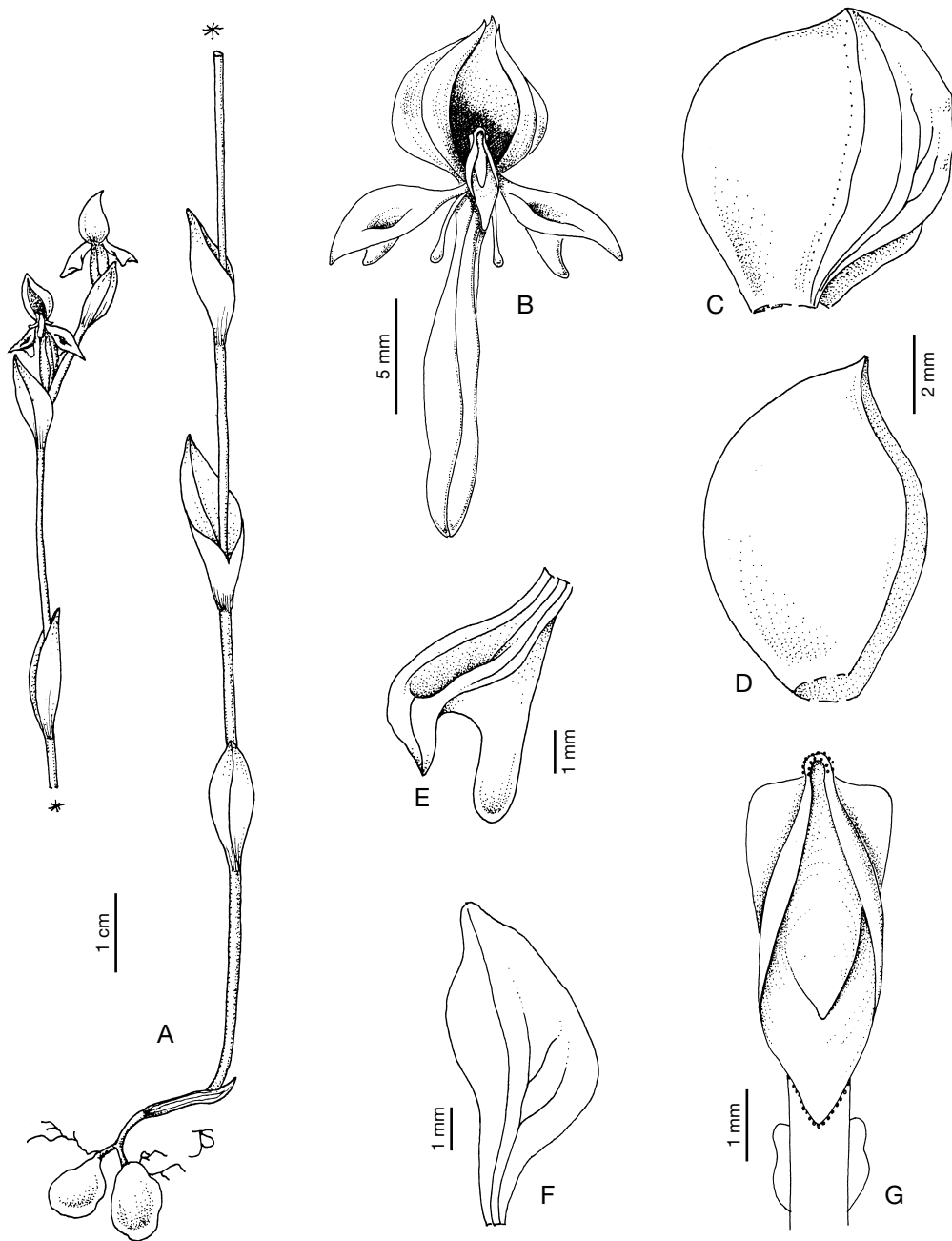


Fig. 14. — *Disperis bosseri*: A, flowering plant; B, flower; C, hood, side view; D, dorsal sepal, side view; E, lateral sepal; F, petal; G, lip. (Bossier 10869, P).

Slender terrestrial herb 15-18 cm high. Tubers 5-10 mm long. Leaves 3, alternate, more or less evenly spaced along the stem, 1-2 cm long, ovate to lanceolate, acute, suberect, sessile, clasping the stem. Inflorescence 1-2-flowered; bracts 8-14 mm long, oblong, acute. Flowers pale pink; pedicel and ovary 9-15 mm long. Dorsal sepal c. 6×1 mm, linear; lateral sepals free to base, divergent, $6-7 \times 3$ mm, obliquely ovate, apiculate, with a prominent, obtuse spur 2-3.5 mm long, c. 1.5 mm wide. Petals c. 6×2.5 mm, spathulate, apiculate, adnate to the dorsal sepal and forming a concave hood c. 6 mm high and 6 mm deep. Lip with the basal part, ascending, obtriangular, 6-7 mm long, attached to the base of the column for 1-1.5 mm, terminal appendage ovate, 5.5-6.5 mm long, rounded or subtruncate at the base which is adorned with a small median subcircular, papillose lobule, obtuse and subtriangular at the tip; the upper face having in the basal half two slender erect wings with a thick and convex median zone between them, margins finely papillose towards the summit. Rostellar arms scarious, rigid, linear, a little dilated and rounded at the apex, 3-4 mm long. — Fig. 14.

DISTRIBUTION. — Madagascar; endemic.

HABITAT. — Humid places, on steep slopes, in full sun light; 2400 m.

This species is only known from the type collection. It also resembles *D. concinna* Schltr., known from South Africa and Zimbabwe, but the differences in the lip and appendage seem sufficient to recognise it as distinct.

22. *Disperis falcatipetala* P.J. Cribb & la Croix, *sp. nov.*

Affinis *Disperis lanceolata* Bosser & la Croix *et* *D. tripetaloides* (Thou.) Lindl. *sed sepalis latioribus usque ad medium adnatis, petalis falcatis, truncatis, labello trilobato lobis lateralibus carnosis villosis et lobo medio spathulato appendiculatoque satis differt.*

TYPUS. — Malcomber, Hutcheon, Razafimanantsoa & Zjhra 1413, Madagascar, Antsiranana, Mangonarivo Special Reserve, Antsatrotro, E of summit, 1700-1730 m, 9 Apr. 1992 (holo-, MO!, photo K!).

A small, terrestrial herb up to 13.5 cm tall. Stem slender bearing three leaves in upper half. Leaves 3, alternate, suberect to spreading, ovate, obtuse, the largest 1.8×0.8 cm, the upper two progressively smaller, green with purple markings. Inflorescence terminal, c. 3-flowered; bracts ovate, subacute, 6×3 mm. Flowers clustered, white with purple dots; pedicel and ovary up to 10 mm long. Dorsal sepal concave, linear-oblong, acute, 4×1 mm, forming a hood with the petals. Lateral sepals deflexed, obliquely spathulate, obtuse or apiculate, united in basal half to form a narrow claw, $9.5-10 \times 3.5$ mm. Petals adnate to the dorsal sepal along inner margin, falcate, oblong, truncate, 5×1 mm. Lip 3-lobed, 3.5 mm long and wide when spread; side lobes fleshy, arcuate, truncate, villose in apical part; mid-lobe spathulate with an undulate margin to the apical lamina. Column short, 2 mm long including the clavate rostellar arms. — Fig. 15.

DISTRIBUTION. — Madagascar; endemic.

HABITAT. — On a rotten branch on floor in ridge-top montane forest; 1700-1730 m.

Disperis falcatipetala is known only from the type collection which comprises two flowering plants. This small orchid is apparently allied to *D. lanceolata* Bosser & la Croix and to *D. tripetaloides* (Thou.) Lindl. It differs from the former in having slightly larger leaves, a shorter inflorescence, and flowers in which the lateral sepals are united to the middle to form a narrow claw, somewhat truncate petals, and a lip in which the side lobes are as long as the spathulate mid-lobe and villose. The latter differs in having larger more acute leaves and the flower which has free lateral sepals and a lip with a broad hairy base and a narrow, rather than spathulate mid-lobe. *Disperis humblotii* Rchb.f. has flowers that resemble those of *D. falcatipetala* but the former always has a petiolate lowermost leaf. It is also close to the tropical African *D. johnstonii* Rolfe but that usually has two larger leaves and flowers with a shorter broader claw to the united lateral sepals and a lip in which the mid-lobe is puberulous and has a central umbo.

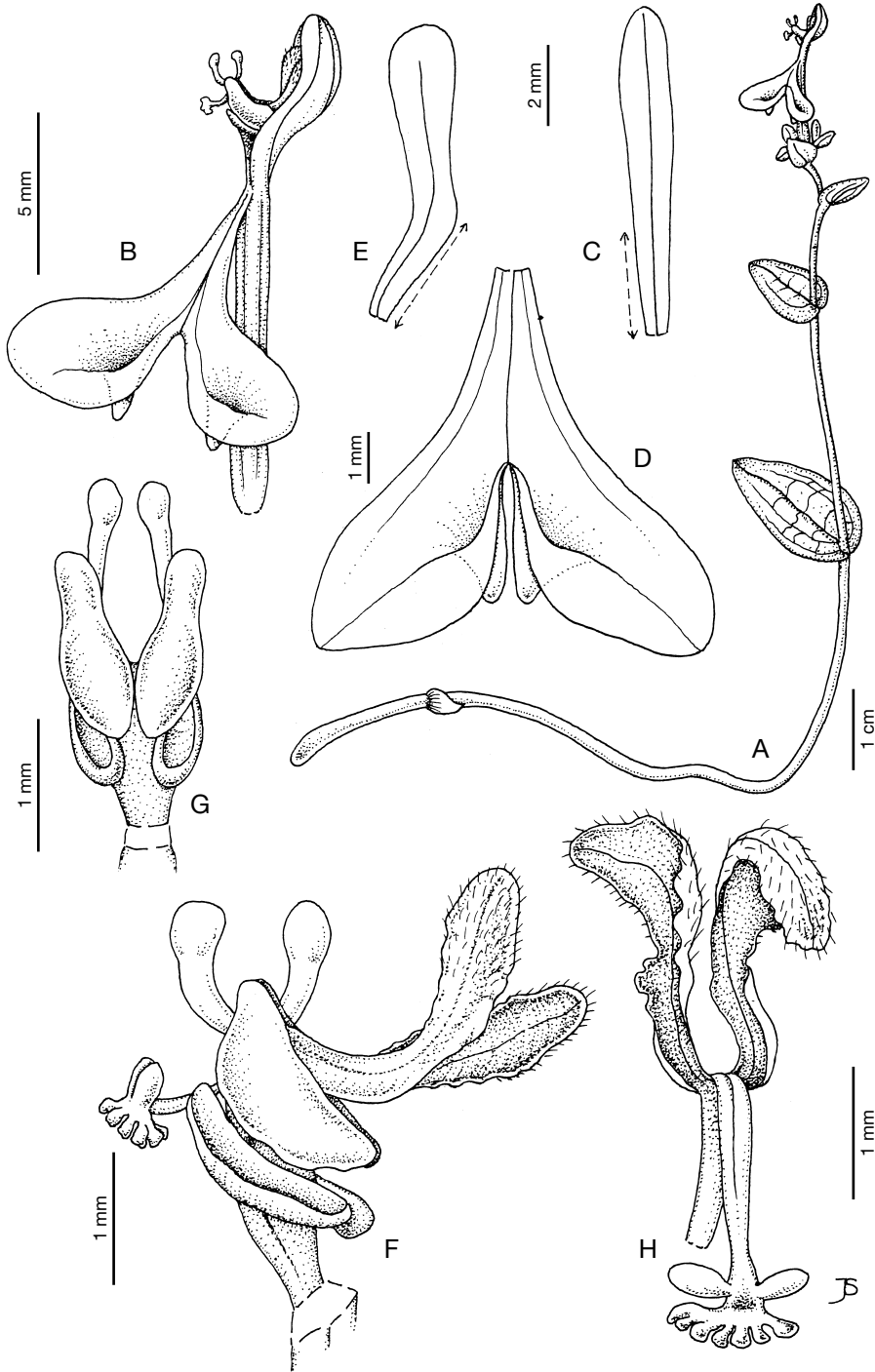


Fig. 15. — *Disperis falcatispetala*: **A**, flowering plant; **B**, flower; **C**, dorsal sepal (dotted line shows where joined to column); **D**, lateral sepals; **E**, petal (dotted line shows where attached to column); **F**, column and lip, side view; **G**, column and lip, back view; **H**, lip. (Malcomber *et al.* 1413, MO).

DOUBTFUL NAMES

Disperis afzelii Schltr.

Feddes Repert. Spec. Nov. Regni Veg. Beih. 15: 326 (1918); H. Perrier in Humbert H. (ed.), Fl. Madag., 49^e fam., Orchidées 1: 190 (1939); Du Puy et al., Orch. Madag.: 133 (1999). — Type: *Afzelius s.n.*, Madagascar E, Andakambararata (holo-, B, delet.).

In his protologue, SCHLECHTER said “floribus illis *D. tripetaloidae* Lindl. similibus et fere aequimagnis”. He then indicated that his species could be slightly distinguished from *D. tripetaloides* by the lip appendage which developed linearly and was not dilated in front, but in the protologue the description of the free part of the lip corresponds well with *D. tripetaloides* except for the terminal lobule: “appendice antrorsa infraacta a basi late cordata dense papillosa lineariter producta...”. One can only suppose that *D. afzelii* is a synonym of *D. tripetaloides* but as the type has been lost, doubts persist.

Disperis guttata Frapp. ex Cordem.

Fl. La Réunion: 254 (1895); Schlechter, Bull. Herb. Boiss. 6: 955 (1898). — *Disperis guttata* Frapp., Cat. Orch. La Réunion: 10 (1880), *nom. nud.*, type not designated.

No herbarium specimen of this species is known and CORDEMOY'S description is very imperfect. The only significant characters noted by him are as follows “feuilles alternes, fleurs petites et rosées, sépales latéraux parsemés de grosses taches vertes”. This last character has not been seen in any of the known species. *Disperis discifera* var. *borbonica* possesses green or brown stripes, but on the petals not the lateral sepals. That described by DE CORDEMOY is perhaps this taxon but we cannot be sure and it is better, as done by SCHLECHTER in his monograph, to consider this name a doubtful one.

The herbarium of DE CORDEMOY (MARS) contains an herbarium specimen of *D. discifera*

var. *borbonica* but misidentified as *D. tripetaloides*. This specimen came from “Plaine Fourgères”, but the locality indicated by DE CORDEMOY for *D. guttata* is “St. Pierre (Tampon)”. This specimen cannot be that used by DE CORDEMOY to make his description of *D. guttata*.

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