

## Studies on the Orchid Flora of Vanuatu: I

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Recently, our knowledge on the orchid flora of Melanesia has noticeably increased due to studies in New Caledonia (Hallé 1977), Fiji (Kores 1989, 1991), Vanuatu (Lewis and Cribb 1989; Hallé 1990; Lewis 1992; Attie 1996), the Solomon Islands (Lewis and Cribb 1991), and Samoa (Cribb and Whistler 1997). Taking account of the results from these studies, the materials obtained during the Vanuatu Expedition in 1996 and 1997 have been critically investigated. One of our significant achievements of the expeditions was the collection of living plants. The materials flowered in our greenhouses were very helpful to examine delicate, three-dimensional structure and colour of orchid flowers, and, as a result, we note the following new findings.

***Dendrobium greenianum*** Cribb & B. A. Lewis in *Orchid Rev.* **97**: 360 (1989).

*Dendrobium neuroglossum* sensu Attie non Schltr., Liste d' orchidées collectées sur I, île de Vaté au Vanuatu de 1992 à 1996: 5 and 20.

VANUATU. Espiritu Santo: Butmas, alt. 510m, on a tree, lowland forest, 20, Oct. 1997, Yukawa 97-2189 (TNS).

The species is apparently identical with *Dendrobium neuroglossum* Schltr. We examined living plants of the two species cultivated at the Tsukuba Botanical Garden and the protologues as well. The former differs from the latter by having a verrucose, longitudinal, central callus and apical warts on a labellum. The floral colour is also different: *D. greenianum* has cream perianth lobes with brownish purple veins on the labellum. On the other hand, the flower of *D. neuroglossum* is yellowish, closely brown-spotted on the tepals and brown-veined on the labellum. Furthermore, the former is indistinct in its abaxial costa of the leaf.

***Liparis pedicellaris*** Schltr. in Fedde, Rep. Beih. **1**: 191 (1912).

VANUATU. Espiritu Santo: Mt. Vutimena, alt. 900m, terrestrial, montane forest, 18, Oct. 1997, Yukawa 97-2146 (TNS). Figs. 1 and 2.

This species has not been recorded from Vanuatu and neighboring Melanesian islands. The species was originally described on the basis of a collection from Mt. Gomadjidji, eastern part of New Guinea. Our collection coincides with Schlechter's description and figure of *Liparis pedicellaris* except for the width of the stem and leaf, *i. e.*, 1 and 3.9 cm in this material and 0.4 and 2-3 cm in the type material.

Lewis and Cribb (1989) recorded a closely related species, *Liparis pullei* J. J. Sm. from Tanna, a southern island of Vanuatu (Morat 6034). Kores (1989), however, identified this material as *Liparis orbiculata* L. O. Williams. The latter identification was followed by Lewis and Cribb (1991) and Lewis (1992).

The present material is approximately identical to the protologue and its accompanying figure of

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Fig. 1. *Liparis pedicellaris* Schltr. in cultivation,  $\times$  ca. 0.3. Habit. Photographed from Yukawa 97-2146.

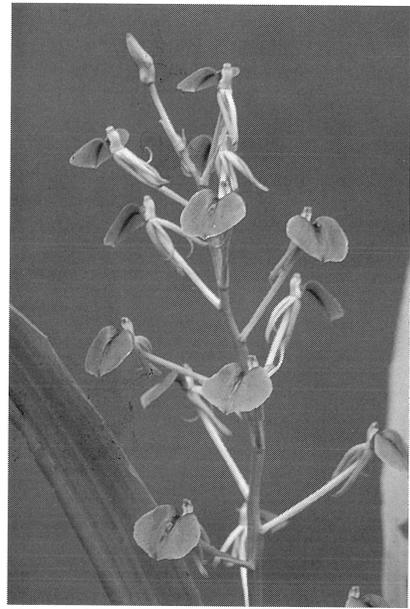


Fig. 2. *Liparis pedicellaris* Schltr. in cultivation,  $\times$  ca. 0.8. Flowers. Photographed from Yukawa 97-2146.

*L. pullei* from the western part of New Guinea, but the column is terete in the former and laterally ridged in the latter. Moreover, the former has an orbicular labellum, but the latter has a transversely oval one. Since these differences are slight, more collections may show the conspecificity of these two taxa. On the other hand, *L. orbiculata* does not have a direct affinity with *L. pedicellaris* and *L. pullei*, because the former is a member of section *PlatyGLOSSUM* and the latter two species belong to section *Platychilus*.

**Malaxis iwashinae** Yukawa et Hashimoto, *sp. nov.* TYPE: VANUATU, Espiritu Santo: Palitaliefu, near Nokovula, Mt. Tabwemasana, alt. ca. 1000m, Nov. 1996, *sine coll. s. n.*, Tsukuba Botanical Garden accession number 123235 (Holotype: TNS). Figs. 3, 4 and 5.

Affinis *M. vitiensis*, sed petalis obovatis, fovea lineari, floribus brunnescenti-purpuris differt.

Terrestrial plant to 30 cm tall. **Rhizome** absent. **Stems** clustered, erect, cylindrical-fusiform, thick, mostly covered by bases of petioles, grass-green, 8.5–12 cm long  $\times$  1.1–1.4 cm wide. **Leaves** 3–11; blade patent, ovate-lanceolate, acuminate, asymmetric at base, plicate, often undulate at margins, glossy, middle green, up to 13 cm long  $\times$  5.5 cm wide; petiole sheathing at base, up to 4 cm long. **Inflorescence** terminal, densely many-flowered, angular, dirty purple; peduncle 4.5–7 cm long; rachis 10.5–19 cm long; bracts reflexed, lanceolate, greenish, up to 8 mm long  $\times$  2 mm wide. **Flowers** non-resupinate, glossy, glabrous, patent, 10 mm wide; pedicellate ovary and perianth lobes pale, dirty brownish purple, paler and more greenish towards base of labellum; column greenish stained with purple; operculum pale, straw yellow; pollinia yellow. **Pedicellate ovary** cylindrical, 6-ridged, deflexed, 12 mm long. **Dorsal sepal** elliptic-ovate, obtuse, 6.1 mm long  $\times$  3.0 mm wide. **Lateral sepals** obliquely ovate, obtuse, 4.6 mm long  $\times$  3.2 mm wide. **Petals** obovate, obtuse, 4.9 mm long  $\times$  2.35 mm wide. **Labellum** sagittate, auriculate, cordate in outline, 4.8 mm long  $\times$  4.3 mm wide; blade broadly triangular, obscurely 3-lobed, slightly erose, obtuse, 2.65 mm long; auricles falcate-oblong, entire, obtuse,

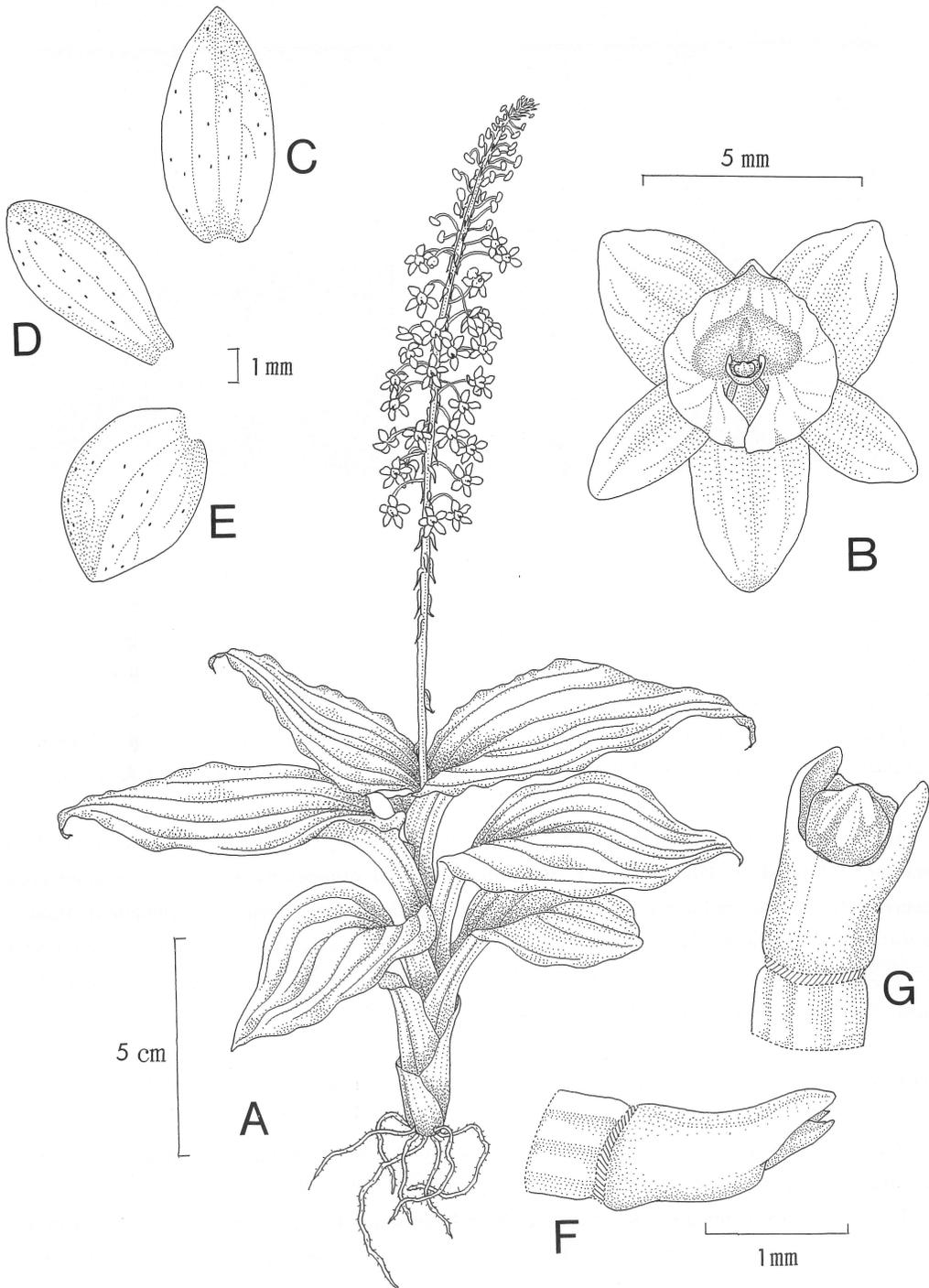


Fig. 3. *Malaxis iwashinae* Yukawa et Hashimoto. A. Habit; B. Flower; C. Dorsal sepal; D. Petal; E. Lateral sepal; F. Column, side view; G. Column, oblique view. Drawn from the holotype.



Fig. 4. *Malaxis iwashinae* Yukawa et Hashimoto in cultivation,  $\times$  ca. 0.2. Habit. Photographed from the type stock.



Fig. 5. *Malaxis iwashinae* Yukawa et Hashimoto in cultivation,  $\times$  ca. 1.4. Flowers. Photographed from the type stock.

2.15 mm long  $\times$  1.85 mm wide; disk with weakly raised thickenings along margins of shallow, linear fovea, sparsely papillate in front of fovea. **Column** somewhat recurved, 1.4 mm long; operculum subtriangular, obtuse, 0.5 mm wide; pollinia 4 in 2 pairs.

**ETYMOLOGY:** The specific epithet honors Tsukasa Iwashina, Senior Curator of Tsukuba Botanical Garden, who organized the Botanical Expedition to Vanuatu and Adjacent Areas in 1996 and 1997.

*Malaxis dryadum* sensu Lewis and Cribb (1989) probably represents this species. *Malaxis dryadum* (Schltr.) P. F. Hunt, however, shows much smaller dimensions in all parts, a more laxly flowered inflorescence, obliquely linear petals, and differently shaped auricles of the labellum. *Malaxis vitiensis* (Rolfe) L. O. Williams, endemic to Fiji, resembles the species described here, but the former is distinguished by linear-ligulate to -oblanceolate petals, a large, semicircular fovea surrounded by a hippocrepiform thickening, and pale green to greenish yellow flowers.

*Oberonia bifida* Schltr. in K. Schum. et Lauterb., Nachtr. Fl. Deutsch. Schutzgeb. Südsee: 109 (1905).

*Oberonia fissiglossa* N. Hallé in Fl. Nouv. Caled. 8: 274 (1977); *syn. nov.*

**VANUATU.** Espiritu Santo: Palitaliefu, near Nokovula, Mt. Tabwemasana, alt. ca. 1050m, Oct. 1997, Hashimoto s. n. (accession number of living material: TBG118625).

This species was originally described from New Guinea and has not been recorded from Espiritu Santo. Recently, a wide distribution of this species has become apparent. Lewis and Cribb (1991) recorded it from the Solomon Islands and Efate, an island of Vanuatu. Subsequently, Cribb and Whistler (1997) noted its probable distribution in Samoa. Except for serrate margins of its bract, *O. bifida* is identical with New Caledonian *O. fissiglossa* which has entire margins. This difference certainly does not warrant separate specific status of them.

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### Summary

The material of Orchidaceae collected during the Vanuatu Expedition in 1996 and 1997 are critically studied. A new species of *Malaxis* is described and several new findings are also noted.

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