Taiwania, **52**(4): 281-286, 2007

Newly Discovered Native Orchids of Taiwan (II)

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(Manuscript received 3 June, 2007; accepted 14 August, 2007)

ABSTRACT: In this report, two newly discovered native orchids, *Corybas shanlinshiensis* and *Nervilia crociformis*, are presented. Also description and figures of *Dendrobium luzonense* were provided.

KEY WORDS: Native orchid, *Corybas shanlinshiensis*, *Dendrobium luzonense*, *Nervilia crociformis*.

INTRODUCTION

In a long journey of searching for native orchids, the first author continues to find species that have never been reported. One of the great discoveries was *Saccolabiopsis wulaokenensis* Lin, Huang & Lin which we previously reported (Lin et al., 2006). These efforts have certainly produced very fruitful results, and many more new orchids are expected to be found in Taiwan. Herein, we report two new plants.

TAXONOMIC TREATMENTS

1. *Corybas shanlinshiensis* *sp. nov.*

杉林溪盔蘭 Figs. 1 & 2A

Corybas shanlinshiensis Corybas sinii T. Tang & F. T. Wang affinis a quo differt sepalo dorsali latiore, et labelli margine minute serratis.—Typus: Weimin Lin s. n. (holo TAI 259402, Shanlinshi, Nantou County).

Plant including flower 3-4 cm tall. Tuberoids white, ovoid, usually < 4 mm long, minutely pilose. Rhizomes erect, 5-13 mm long, tapering downward, pilose where new rhizome and tuber are found. Stem usually < 3 cm long, buried in debris, glabrous, with a tubular sheath at base. Leaves sessile, cordate, usually < 2 cm long, 2 cm wide, cuspidate at apex, entire, greenish, glabrous on both sides, venation palmate. Pedicel and ovary 4 mm long, obliquely ovoid. Flowers solitary, purplish-red; bracts linear-lanceolate, < 12 mm long, 2 mm wide at base, acuminate; dorsal sepal incurved and embracing upper part of lip, spatulate, 17 mm long, 8 mm wide, round at apex, keeled longitudinally; lateral sepals connate at base for about 1/5 of length, filiform, 14 mm long, 1 mm wide at base; petals filiform, usually < 20 mm long, spreading. Lip orbicular in outline when flattened, both sides incurved and completely embracing column, forming a tube with opening about 8 mm across and 10 mm long, minutely serrate along front margins; disc with 5 red concentric markings, anterior limb abruptly recurved at apex, basal part forming 2 horn-like spurs; spurs 5 mm long and 6 mm apart. Column dark red, 2.5 mm long, 1 mm wide, forming a separate protruding callus-like structure in front; anther adnate on column, 1 mm long, anther connective membranaceous, covering pollinia below; pollinia 4, in 2 pairs, with viscidium; stigma protruding, cupular.

Flowering time: July. This orchid usually flowers slightly later than *C. sinii* (Su, 2000) by 1-2 weeks.

Distribution: So far, found in forests at about 1750 m in the central mountain region, often growing on mossy rocky slopes.

Note: At the Shanlinshi Recreation Area, Nantou County Wang and Lu (1994) have reported the occurrence of *Corybas taiwanensis* which Su (2000) later considered was different from *C. taiwanensis* originally described by Lin (1975) but a new record species as *C. sinii*. In November 2004 the senior author has found *Corybas* sp. in a planted pine forest, at an elevation of 1750 m in the Shanlinshi Recreation Area. In 2006, he saw a photo of *Corybas* sp. taken by another orchid amateur from the same location and noted that this *Corybas* exhibited a slightly different phenotype from *C. sinii*. In July 2007, he made another trip to the same location where he found about 100 individuals of *Corybas*,

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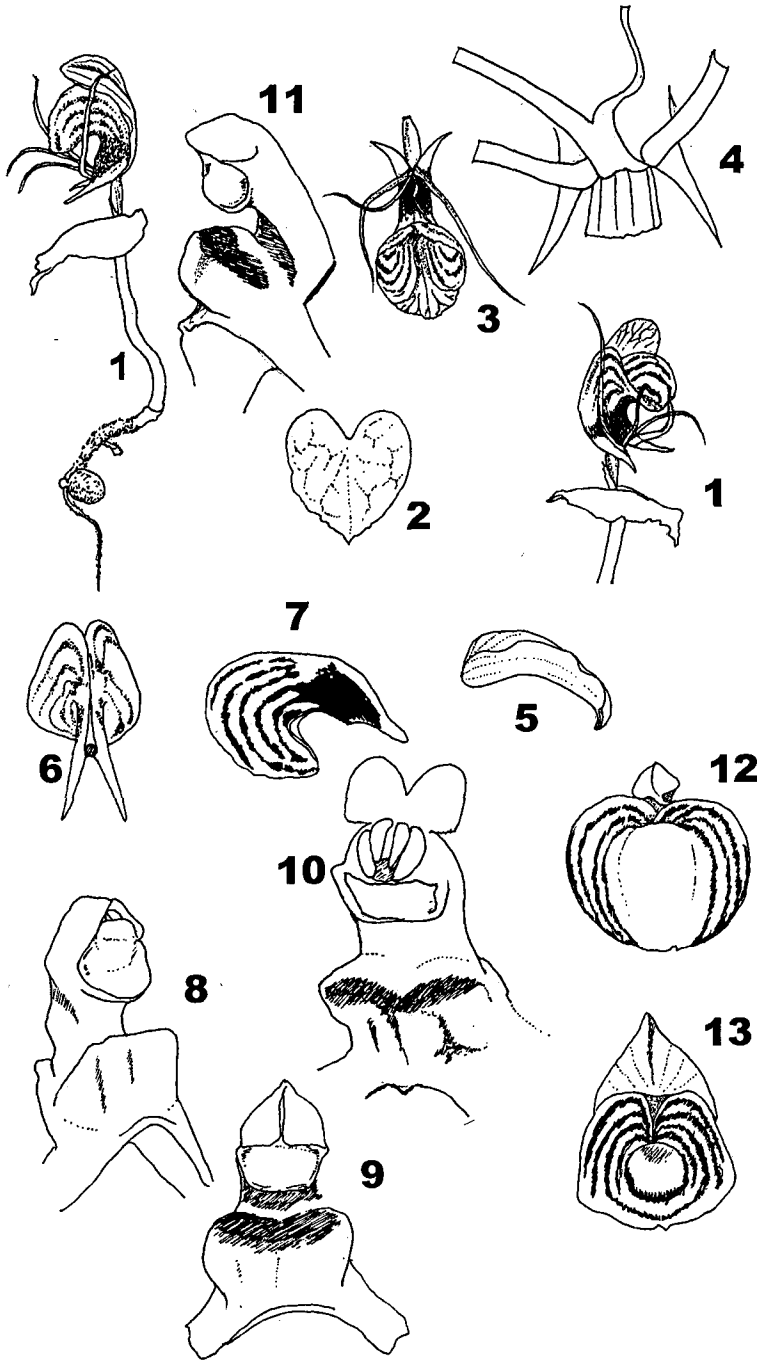


Fig. 1. *Corybas shanlinshiensis* sp. nov. 1: Plant body and inflorescence. 2: Leaf. 3: Ventral view of flower. 4: Enlarged view of connate lateral sepals. 5: Upper sepal. 6: Ventral view of lip. 7: side view of dissected lip. 8 and 9: Front view of column and callosity. 10: Front view of column showing the opened membranous connective tissues. 11: Side view of column and callosity. 12: Front view of upper sepal and lip of *C. sinii*. 13: Front view of upper sepal and lip of *C. shanlinshiensis*.

in fact a mixture of *C. sinii* and another closely related but unknown species of *Corybas* (now known as *C. shanlinshiensis*). It is hard to imagine how two species of *Corybas* could grow together with overlapping flowering seasons and still be able to maintain different morphology. Could they be pollinated by different insects? Or have they already evolved reproductive isolation?

C. taiwanensis (Lin, 1977) is very similar to *C. sinii*, and *C. shanlinshiensis* and differs from them in the linear upper sepal (Lin, 1977). Basically, *C. taiwanensis, C. sinii*, and *C. shanlinshiensis* should be considered as a complex species and good material to study plant adaptations and local speciation. The following table lists differences between *C. sinii* and *C. shanlinshiensis*. (Table 1)

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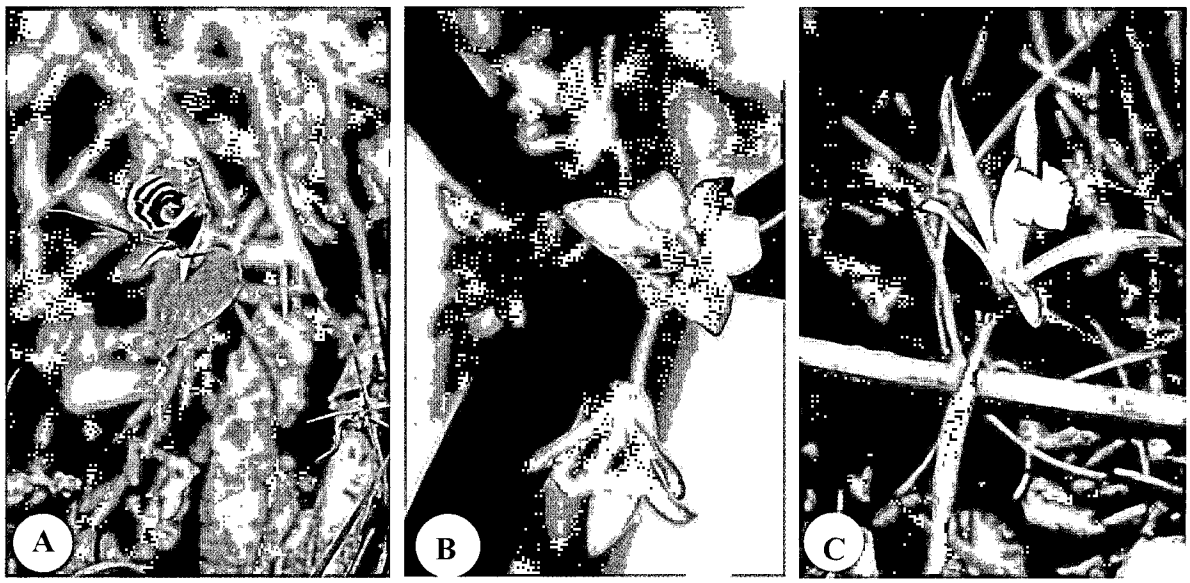


Fig. 2. Photos of *Corybas shanlinshiensis* sp. nov. (A), *Dendrobium luzonense* (B), and *Nervilia crociformis* (C).

Table 1. The differences between *C. sinii* and *C. shanlinshiensis*.

Character	*C. shanlinshiensis*	*C. sinii*
Upper sepal	Apex wide and rounded	Apex narrow and caudate
Lip margins	Minutely serrate	Fimbriate
Lip opening	Narrower at the opening, 0.8 cm across	Widely open, 1.3 cm across
Lip disposition	Basal lip and ovary almost parallel with the leaf surface	Basal lip and ovary almost perpendicular with the leaf surface
Lateral sepals	Connate at base	Entirely separated
Position between limb and spur	Limb recurved but still 1 cm away from the spur	Limb recurved and almost against the spur

2. ***Nervilia crociformis*** (Zoll. & Moritzi) Seidenf. in Dansk Bot. Ark. 32(2): 151. fig. 92. 1978; Pettersson in Nord. J. Bot. 9: 494. 1990.
四重溪脈葉蘭 Figs. 2C & 3

Bolborchis crociformis Zoll. & Mor. In Moritzi, Syst. Verz. Pl. Zoll. 1846: 89.

Plant including inflorescence 3-4 cm tall. Corms whitish, ovoid or nearly globose, < 1 cm across. Leaves petiolate, polygonal-ovate or cordate, 3 cm in diameter, acute, cordate at base, green on upper surface, pale green on lower surface, wavy-ruffled along margins, with 7 palmate major veins, leaf emergence only after anthesis; petiole short. Peduncle slender, 2.5-3.0 cm tall, with several sheaths, sheaths tubular; pedicel and ovary 4 mm long. Flowers solitary, not resupinate, facing upward, perianth spreading, 1.8 cm across, anthesis only lasting for 1 day and flower pendent thereafter; sepals lightly greenish, lanceolate, 13-14 mm long, 2 mm wide, acute or acuminatex; petals similar to sepals but slightly narrower, 11 mm long, 1.5 mm wide. Lip rhombic, 13 mm long, 8 mm wide, not lobed, both sides embracing column and tube-like, upper part suddenly incurved downward, basal part lightly greenish otherwise whitish, inner surface covered with white hairs, margins in front undulate and fringed, apex acute, disc with 3 longitudinal keels, yellowish. Column white, 6.5 mm long, dilated upward, keeled on dorsal side; anther cucullate; pollinia 4, without viscidium; stigma semiorbicular.

Flowering Season: May to June.

Distribution: Pettersson (1990) reported that *N. crociformis* is very widespread from Africa to Australia and varies widely in flower size and lip morphology. In Australia, it is known as the round shield orchid (Jones, 2006).

Note: This species is only restricted to southern Taiwan: Syhchurngshi and Chechen, Pingtung County (Weimin Lin *s. n.* TAI259404). This is also the sixth species in the genus *Nervilia* in Taiwan.

Mr. P. Ormerod suspected the *N. trichophylla* Fukuyama is the same as *N. crociformis* (personal communication). Unfortunately we didn't find the specimen in the TAI for further examination.

Though similar in gross morphology, our entity still has some characteristics different from the description appeared in many publications of

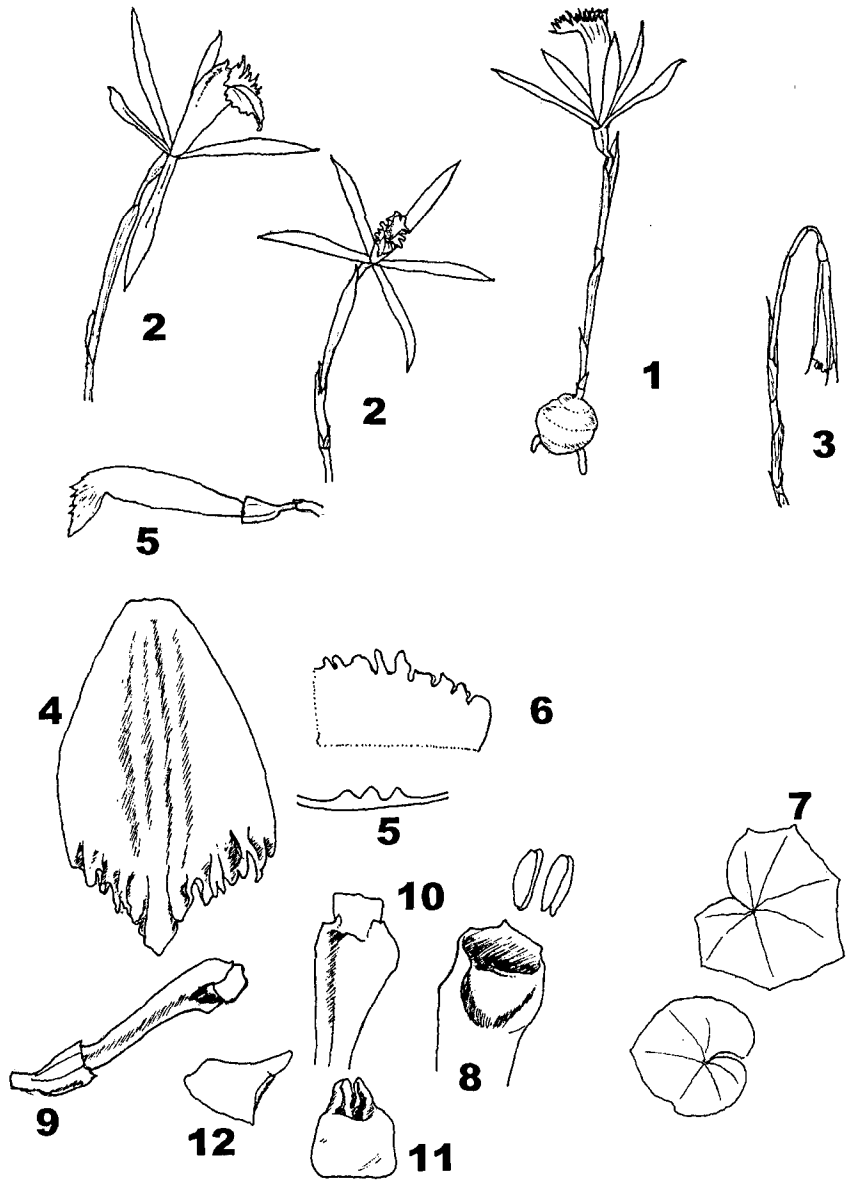


Fig. 3. *Nervilia crociformis* 1: Plant body and inflorescence. 2: Flower. 3: One day after anthesis. 4: Lip. 5: Cross-section of lip. 6: Undulate margins of lip. 7: Leaves. 8: Ventral view of column. 9: Side view of column. 10: Dorsal view of column. 11. Ventral view of anther. 12: Side view of anther cap.

N. crociformis, especially in the labellum. In the Fig. 92 of Seidenfafen (1978) who noted that the labellum was hairy and more or less tri-lobed. In the Lavarack and Gray (1985), they described the labellum trilobed and the disc covered with hair and short papillae. Then in the Pettersson (1991), the labellum trilobed, and the inner surface covered with thin hairs and a few thicker formations more or less arranged in three rows along the center of the lip. He considered this is a widely distributed species in Africa, India, Indo-China, the Philippines and Australia, etc. It is hardly to see hairs on the lip of the Taiwanese *N. crociformis*. We tentatively consider this plant is a variation of the species.

Dendrobium luzonense was recorded for the first time in the book entitled *A field guide to wild orchids of Taiwan*, Vol. 2 (Lin, 2006). Here, we provide more information about this orchid.

3. *Dendrobium luzonense* Lindl. in Bot. Reg. 1844, Misc. 54; Merrill in An Enum. Philippine Flowering Pl. 1: 351. 1925.

呂宋石斛 Figs. 2B & 4

D. alagense Ames in Phil. J. Sci. 2: 328. 1907.
Grastidium luzonense (Lindl.) M.A. Clem. & D.L. Jone in Lasianthera 1(2): 52-128.

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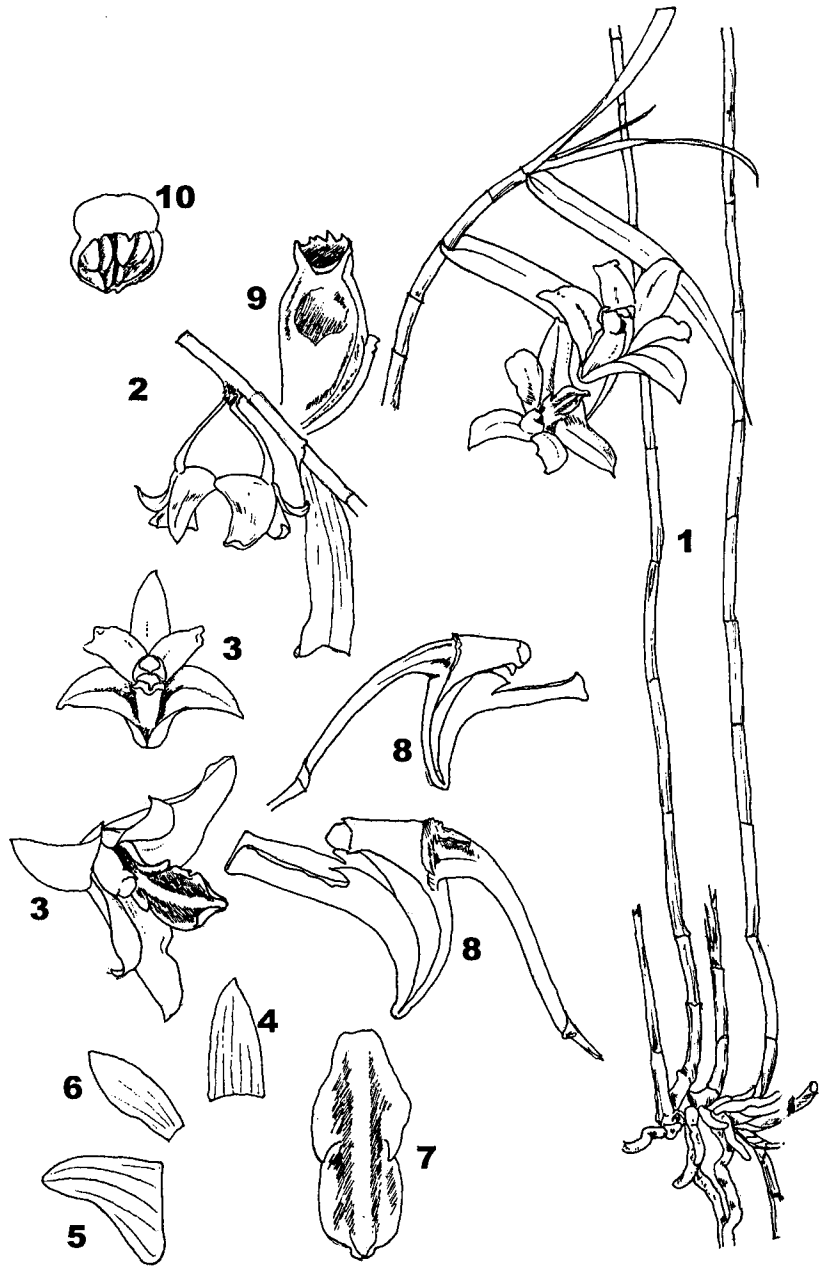


Fig. 4. *Dendrobium luzonense*. 1: Plant. 2: Inflorescence. 3: Front view of flower. 4: Upper sepal. 5: Lateral sepal. 6: Petal; 7: Top view of lip. 8: Side view of column and lip. 9: Ventral view of column. 10: Ventral view of anther.

Stems tufted, stiff, straight, up to 75 cm long, 2.7 mm in diameter, greenish-brown, leafy in upper part; internodes 2.5-3.5 cm long, loosely covered with leaf sheaths. Leaves linear, 9 cm long, 9 mm wide, acuminate, base contracted, articulated with tube-like sheath. Cymes lateral on leafy part of stem, 2-flowered; no peduncle; pedicel and ovary 1.1 cm long. Flowers yellowish, glabrous, ca. 1.6 cm across; upper sepal oblong, 9 mm long, 4 mm wide, yellowish, apex revolute; lateral sepal 9 mm long and 7 mm wide at base, more or less recurved, forming a mentum 4 mm long; petals 8 and 3 mm long. Lip 3-lobed, 8.5 mm long, glabrous, brownish, central part yellow and slightly ridged, basal part clawed and connate with a column-foot; terminal lobe oblong, 4-4.5 mm long and 3.5 mm wide; side lobes triangular or tooth-like, 2 mm long. Column about 3 mm long and 2 mm wide; column-foot 4 mm long; pollinia 4, oblong.

Flowering season: Sporadic, flowers last for only 2 days.

Distribution: The Philippines and Taiwan.

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Note: This orchid was first discovered growing on *Bischofia trifoliate* Hook. by Mr. Chien-Chung Chen in a creek-side forest in Lichiashi, Taitung County, southeastern Taiwan at an elevation of 400 m. The medium-sized to large clump-forming species grows on the trunk or overhanging branches. The location is dry with bright sunshine in the winter season. This is a new record species for Taiwan with vegetative part indistinguishable from *D. furcatopedicellatum* Hay. but with very different flower characteristics.

ACKNOWLEDGEMENTS

Thanks are given to Dr. Chang-Fu Hsieh for writing the Latin description for the new species. Thanks also to Mr. Hong-Wen Liu who provided the photo of *Dendrobium luzonense*. We are grateful to Mr. P. Ormerod who kindly provided references concerning *N. crociformis*.

LITERATURE CITED

Backer, C. A. and R. C. Bakhuizen van den Brink. 1968. Flora of Java, Vol. III. Wolters, Noordhoff N.V., Groningen, The Netherlands. p. 305.

Holttum, R. E. 1964. Flora of Malaya, Vol. 1. Orchids of Malaya. Government Printing Office, Singapore.

Jones, D. L. 2006. A complete guide to native orchids of Australia including the island territories. New Holland Publishers, Sydney, Australia. p. 281.

Lavarack, P. S. and B. Gray. 1985. Tropical Orchids of Australia. p. 94.

Lin, T.-P. 1975. New addition to the orchid flora of Taiwan. Taiwania **20**: 162.

Lin, W.-M. 2006. A field guide to wild orchids of Taiwan (vol. 2). Tien Hia Yuan Chien Publisher, Taipei, Taiwan. p. 76.

Lin, W.-M., L.-L. Kuo-Huang and T.-P. Lin. 2006. Newly discovered native orchids of Taiwan. Taiwania **51**: 162-169.

Petterson, B. 1991. Orchid monographs, Vol. 5. The genus *Nervilia* (Orchidaceae) in Africa and the Arabian Peninsula. Rijksherbarium/Hortus Botanicus. Leiden University, The Netherlands. p. 44.

Seidenfafen, G. 1978. Orchid genera in Thailand VI. Dansk Bot. Ark. **32**: 151. 1978.

Su, H.-J. 2000. Orchidaceae. In: Huang, T.-C. et al. (eds.), Flora of Taiwan, 2nd ed. **5**: 939. Editorial Committee, Dept. Bot., NTU, Taipei, Taiwan.

Wang, J.-C. and Y.-C. Lu. 1994. Additional observation on *Corybas taiwanensis* Lin & Lu (Orchidaceae). Biol. Bull. Natl. Taiwan Normal Univ. **29**: 53-55.

臺灣新發現的野生蘭（二）

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(收稿日期：2007 年 6 月 3 日；接受日期：2007 年 8 月 14 日)

摘　　要

本文介紹兩種臺灣新的野生蘭：杉林溪盔蘭與四重溪脈葉蘭。此外我們對呂宋石斛加以描述並提供圖片。

關鍵詞：野生蘭、杉林溪盔蘭、呂宋石斛、四重溪脈葉蘭。

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