Orchidaceous Additions to the Flora of Yunnan

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ABSTRACT: Literature and herbarium studies of material from Yunnan Province, China leads to the recognition of two new taxa, a new record, reduction of *Zeuxine aurantiaca* to *Z. flava*, and further notes on variability in *Cheirostylis malipoensis.* The new species proposed are *Oberonia gongshanensis* and *Zeuxine chenkangensis.*

KEY WORDS: China, Yunnan, taxonomy, *Cheirostylis, Oberonia, Zeuxine.*

INTRODUCTION

The province of Yunnan represents the most biodiverse area of China due to the combination of high mountains, humidity, tropical and subtropical forests. Yunnan borders Myanmar, Laos and Vietnam and thus shares many elements of the floras of those countries. The most recent account of the orchids of Yunnan (Li, 2003) records 135 genera and 764 species from the province, this is about 60% of the entire Chinese orchid flora. Examination of Yunnanese specimens collected in the 1930's and 1940's still yields botanical novelties and new information as evidenced by this paper. Also duplicates sent to the Royal Botanic Garden, Edinburgh from the Gaoligong Shan Biodiversity Survey collected in this decade were studied.

TAXONOMIC TREATMENTS

Cheirostylis Blume

Perhaps seven or eight species are known to occur in Yunnan but it is likely several more taxa will be discovered because a number of entities described from limestone areas in Vietnam will probably occur in similar habitats in China. The known Yunnanese species are *C. calcarata* X.H. Jin & S.C. Chen, *C. griffithii* Lindl., *C. malipoensis* X.H. Jin & S.C. Chen, *C. pingbianensis* K.Y. Lang (?= *C. octodactyla* Ames), *C. pusilla* Lindl., *C. thailandica* Seidenf. and *C. yunnanensis* Rolfe. *Cheirostylis* is a genus of 47 to 50 species distributed from Tropical West Africa to Vanuatu and New Caledonia. The plants are usually terrestrial or lithophytic and often have a fleshy moniliform rhizome, sometimes with roots, more often with rhizoids, stems are usually short with a few leaves, and the inflorescence often long pedunculate with an abbreviated raceme of small tubular (sepals often connate) flowers.

Cheirostylis malipoensis X.H. Jin & S.C. Chen, Acta Phytotax. Sin. 45, 6:797, f.2B, f.3, 2007. Fig. 1

Type: China – Yunnan, Malipo, Donggua, 1100 m, 31 December 2005, *X.H. Jin 8051* (Holotype: PE).

Erect herb. Rhizome creeping, fleshy, 21 mm long, 1.5-2.0 mm thick; internodes swollen, producing rhizoids on the underside, 4-5 mm long. Stem erect, sometimes with a semidecumbent basal half, terete, apically 3-leaved, 24-30 mm long, 1.5-3.5 mm thick; internodes 3-8 mm long. Leaves ovate-subcordate, acute to subacuminate, green reticulated with darker green, 16-20 mm long, 11.5-12.0 mm wide; petiole and sheath 6-8 mm long. Inflorescence pubescent, 57-85 mm long; peduncle 50-78 mm long; sheathing bracts 2, remote, 10-11 mm long; rachis densely few-flowered, 7 mm long; floral bracts ovate-lanceolate, subaristate, to 8 mm long, 2 mm wide. Pedicellate ovary subcylindric-fusiform, pubescent, 4 mm long. Flowers white, basal quarter of sepals externally sparsely pubescent. Dorsal sepal broadly elliptic, obtuse, lower margins halfway connate to lateral sepals, ca. 3.3 mm long, ca. 2 mm wide. Lateral sepals obliquely oblong, obtuse, ca. 3.5 mm long, ca. 1 mm wide, inner margins almost wholly connate and forming a broadly elliptic, shortly bilobed synsepalum. Petals obliquely rhombic-dolabriform, subacute, 3.5 mm long, 1.5 mm wide. Labellum 3.6 mm long medially; hypochile broadly ovoid-cymbiform, apical third tubular and externally half covered with papillae, 2.6 mm long, inside each side with a single bifurcate appendage; epichile bilobed, 1 mm long medially, lobules patent, flabellate, with 3-4 broad, acute to obtuse teeth apically, ca. 2.5 mm long, ca. 3 mm wide. Column 1.8 mm long; sterile stigma lobes or brachia obliquely ovate-lanceolate, acute.

Distribution: China (Yunnan). Habitat: In open thickets on rock mountain, 1300-1500 m (*Feng 13502*).

Specimen examined: China – Yunnan, Malipo, Tung-Ting, 1300-1500 m, 21 November 1947, *K.M. Feng 13502* (AMES).

Notes: I supply the above description (based solely on *Feng 13502* AMES) of *C. malipoensis* to augment knowledge of its possible variation, though the

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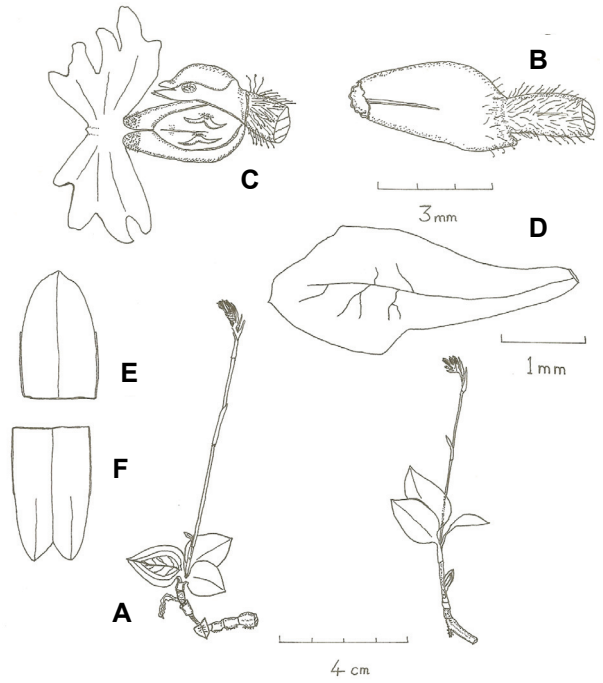


Fig. 1. *Cheirostylis malipoensis.* A: Plants. B: Flower bud. C: Labellum and column. D: Petal. E: Dorsal sepal. F: Lateral sepals. A-D to respective scales. EF not to scale. Drawn from Feng 13502 (AMES).

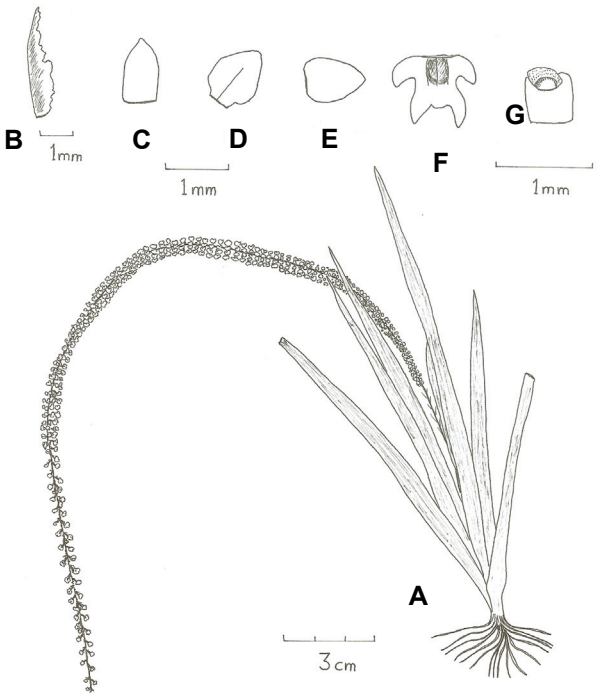


Fig. 2. *Oberonia gongshanensis*. A: Plants. B: Flower bract, from side. C: Dorsal sepal. D: Petal. E: Lateral sepal. F: Labellum. G: Column, from below. A, B, C-F and G to respective scales. Drawn from holotype.

available specimens have slightly immature inflorescences and flowers. The material appears to be referrable to *C. malipoensis* but the petals differ in being obliquely rhombic-dolabriform (not falcate) and the labellum only has a single (not two) bifurcated internally appendage each side. Jin and Chen (in Jin et al., 2007) do not fully show the petals in the type drawing so it is possible that they are not falcate. The petals of *Cheirostylis* species are often difficult to examine in herbarium material due to their delicate nature and coherence to the sepals.

Cleisostoma Blume

A genus of about 100 species distributed from India to Fiji. The plants vary greatly in habit from pendulous whip-leaved species to stout *Vanda*-like plants. In all cases the flowers are fairly small but often quite complicated in structure. There are about 17 species in China with 13 of those found in Yunnan.

Cleisostoma rolfeanum (King & Pantl.) Garay, Bot. Mus. Leafl. Harv. Uni. 23, 4:174, 1972.

Basionym: *Sarcanthus rolfeanus* King & Pantl., J. As. Soc. Beng. 66, 3:594, 1897.

Type: Burma – Moulmein, *cult. Bot. Gard. Calcutta, ex ?Peche s.n.* (Holotype: CAL).

Distribution: SW China; Myanmar; Thailand.

Specimen examined: China – Yunnan, Jinghong Xian, 1700 m, 5 June 1992, *Z.H. Tsi 95-352* (AMES).

Notes: The specimen cited represents both a new record for the flora of China and Yunnan. Additional collections were also seen from Myanmar [*McKee 6158; Dickason 9879* (AMES)], a country in which the species was only known from the original discovery.

Oberonia Lindl.

A genus commonly said to have 300 species, distributed from East Africa to Tahiti. The plants are usually epiphytic and have laterally compressed, knife-like leaves and inflorescences of many small flowers. In China 28 species are recorded, with about two-thirds (20) of these in Yunnan.

Oberonia gongshanensis Ormerod, *sp.nov.* Fig. 2

Type: China – Yunnan, Gongshan, Dulongjiang, W side of Dulong Jiang Valley, ca. 0.7 km SW of Qinglan Dang, and ca. 2 km NE of Myanmar border, 1270 m, 20 August 2006, *Gaoligong Shan Biodiversity Survey 32626* (Holotype: E!).

Affinis O. anthropophora Lindl. *sed foliis longioribus (7.5-14.5 vs. ad 5 cm) et lobulis epichilo oblique ovatis vel deltatis (non lanceolatis vel caudatis) differt.*

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Epiphytic herb. Stems caespitose, very short, rooting basally, 6-leaved. Leaves linear-lanceolate, acute, not articulated basally, 7.5-14.5 cm long, 0.3-0.6 cm wide. Inflorescence terminal, ca. 30.5 cm long; peduncle ca. 4 cm long; sheathing bracts about 9, setaceous, 0.25-0.45 cm long; rachis arcuate, densely many-flowered, becoming sublaxly-flowered toward the apex, 26.5 cm long; floral bracts ovate-elliptic, margins deeply irregular, 3.2 mm long. Pedicellate ovary 3-winged, 1.7 mm long. Flowers yellow. Dorsal sepal ovate-elliptic, subacute, 1.1 mm long, 0.8 mm wide. Lateral sepals obliquely ovate-elliptic, acute, 1 mm long, 0.9 mm wide. Petals broadly ovate from a broadly clawed base, acute to obtuse, 1-veined, 1.1 mm long, 0.95 mm wide. Labellum trilobed, basal half with a shallowly saccate, 3-veined disc, in total 1.3 mm long, ca. 1.5 mm wide across sidelobes, 0.95 mm wide across midlobe; sidelobes basal, patent, obliquely subquadrate to rectangular, subacute; midlobe widely bilobed, lobules obliquely ovate to deltate, subacute. Column semiterete, 0.5 mm long.

Distribution: China (Yunnan). Habitat: Tropical rainforest on granite, disturbed by agriculture, 1270 m.

Notes: *Oberonia gongshanensis* seems to be a species without close relatives. It is somewhat similar to *O. anthropophora* Lindl. but differs in being a much larger plant with longer (7.5-14.5 vs. to 5 cm) leaves, and the flowers have shorter, obliquely ovate to deltate (not lanceolate to caudate) epichile lobules. Superficially *O. gongshanensis* resembles *O. acaulis* Griff. with its long, densely-flowered inflorescence and four-lobed labellum. However *O. gongshanensis* differs from *O. acaulis* in having stems of six unjointed leaves of similar width, longer (3.2 vs. 2.0-2.5 mm) floral bracts and broader (0.95 vs. 0.5 mm) petals. In *O. acaulis* (several specimens seen at K) the stems have two to five articulated or jointed leaves of which the inner two are usually the broadest and longest, whilst the outer two are much shorter and narrower.

Zeuxine Lindl.

A genus of about 90 species, distributed from West Tropical Africa to Samoa. In China seven or eight species with most of these reported from Yunnan. Two taxa have been considered endemic to Yunnan, these are *Z. aurantiaca* Schltr. (see below) and *Z. gengmanensis* (K.Y. Lang) Ormerod.

Zeuxine chenkangensis Ormerod, *sp. nov.* Fig. 3

Type: China – Yunnan, Chen-Kang Hsien, 1640 m, March 1936, *C.W. Wang 72192* (Holotype: AMES!).

Affinis Z. flava (Wall. ex Lindl.) Trimen *sed appendicibus labello bifidis (non integris) et aliis columna suborbicularis (non oblique triangularis) differt.*

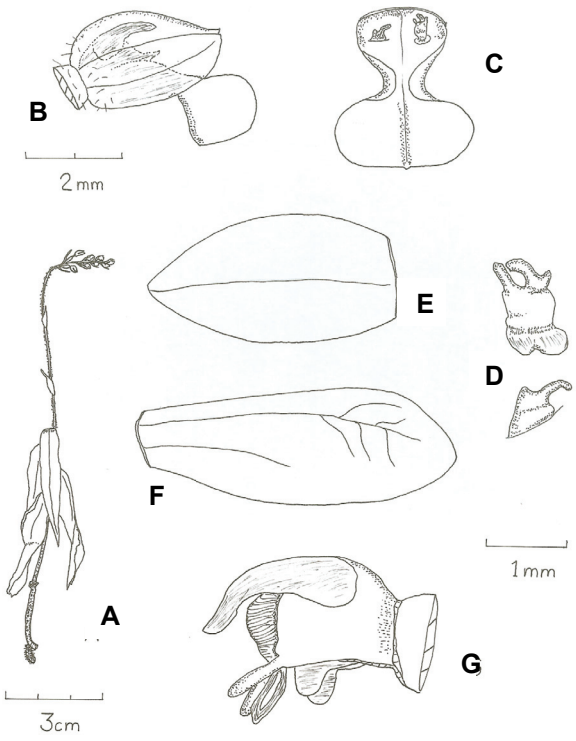


Fig. 3. *Zeuxine chenkangensis*. A: Plants. B: Flower. C: Labellum. D: Internal appendages. E: Lateral sepal. F: Sepal. G: Column. A, BC and D-G to respective scales. Drawn from holotype.

Erect lithophytic herb. Rhizome incomplete, fragment terete, creeping, rooting at nodes. Stem erect or partly decumbent basally, terete, 4-5-leaved, 40-70 mm long, 1-3 mm thick; internodes 8-17 mm long. Leaves ovate-lanceolate, acute, withering at anthesis, 25-35 mm long, 8-12 mm wide; petiole and sheath to 12 mm long. Inflorescence pubescent, 55-70 mm long; peduncle 45-50 mm long; sheathing bracts 2, scattered, 7-9 mm long, 3.0-3.5 mm wide; rachis sublaxly 8-10-flowered, 10-20 mm long; floral bracts ovate-lanceolate, acute, 5-6 mm long, 2 mm wide. Pedicellate ovary cylindric-fusiform, pubescent, 5-6 mm long. Flowers yellowish-red, very fragrant, basal quarter of sepals externally pubescent. Dorsal sepal ovate-elliptic, subacute, 4 mm long, 2 mm wide. Lateral sepals obliquely ovate-elliptic, obtuse, 3 mm long, 1.5 mm wide. Petals obliquely oblong-oblanceolate, obtuse, 4 mm long, 1.4 mm wide. Labellum 3.50-3.75 mm long; hypochile ovoid-cymbiform, apical fifth forming a short tubular claw, 2.5 mm long, inside each side with a fleshy, apically bifid appendage; epichile bilobed, 1.25-1.50 mm long, lobules patent, semicircular, broadly rounded, ca. 1.5 mm long and wide. Column ca. 2 mm long; column wings parallel, lower half lamellate, dilating into semicircular lobules in apical half; pollinia 2, directly attached to an elliptic viscidium.

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Distribution: China (Yunnan). Habitat: In woods on rock surfaces.

Notes: This species is similar to *Z. flava* (Wall. ex Lindl.) Trimen but it differs from that in having flowers with semicircular, broadly rounded (not cuneate to subquadrate, subtruncate) epichile lobules, erect, bifid (not retrorse, entire) internal appendages or glands of the hypochile and semicircular (not obliquely triangular to low rounded) column wings.

Zeuxine chenkangensis differs from *Z. affinis* (Lindl.) Trimen in having flowers with semicircular, broadly rounded (not cuneate to subquadrate, subtruncate to rounded) epichile lobules, subquadrate (not cornute) internal appendages of the hypochile and a winged (not unwinged or exalate) column.

Zeuxine flava (Wall. ex Lindl.) Trimen, J. Ceyl. Br. Roy. As. Soc. 9:90, 1885.

Basionym: *Monochilus flavus* Wall. ex Lindl., Gen. Sp. Orch. Pl.:487, 1840.

Synonyms: *Haplochilus flavus* (Wall. ex Lindl.) D. Dietr., Syn. Pl. 5:172, 1852.

Type: Nepal – without locality, 1821, *N. Wallich (Catal. No.) 7380A* (Holotype: K-L!; Isotypes: K-W, K!).

Zeuxine aurantiaca Schltr., Repert. Sp. Nov. Regni Veg. 19:377, 1924. *syn. nov.*

Type: China – Yunnan, Shweli-Salwin Divide, 2440 m, August 1913, *G. Forrest 11914* (Holotype: E!).

Zeuxine affinis auct. non (Lindl.) Trimen: W.W. Smith, Not. Roy. Bot. Gard. Edinb. 13-14:221, 1921.

Distribution: Nepal; NE India; Bhutan; SW China; Myanmar; Thailand.

Specimens examined: China – Yunnan, Fugong Xian, Maji Xiang, Laoyadang Qiao, on W side of the Nujiang, just S of the border with Gongshan Xian, 1390 m, 26 April 2004, *Gaoligong Shan Biodiversity Survey 19535* (E); same area, 1390 m, 27 April 2004, *Gaoligong Shan Biodiversity Survey 19579* (E).

Notes: This species was first collected in Yunnan in 1913 but the specimen was misidentified as *Z. affinis* (Lindl.) Trimen. It was not until much later that Jin and Qin (2005) would officially record *Z. flava* from Yunnan, where it had been found in the Wenshan area. I have compared the holotypes of *Z. flava* and *Z. aurantiaca* and find them conspecific.

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摘要：研究中國雲南省植物文獻與腊葉標本導至二新種、一新記錄的發現、另將 *Zeuxine aurantiaca* 歸併於 *Z. flava* 之下與 *Cheirostylis malipoensis* 之變異註解。二新種則為 *Oberonia gongshanensis* 與 *Zeuxine chenkangensis*。

關鍵詞：中國、雲南、分類、指柱蘭屬、莪白蘭屬、線柱蘭屬。

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