

## Two new *Plagiochila* species (Plagiochilaceae, Hepaticae) from Yunnan, China

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*Received 18 June 1997, accepted 17 October 1997*

Two new species of *Plagiochila* are described from Yunnan, China: *P. kunmingensis* Piippo and *P. yulungensis* Piippo. Their taxonomic characters and related species are discussed.

Key words: Bryophyta, China, Hepaticae, *Plagiochila*, taxonomy

The present study is connected with research on the Chinese bryophyte flora (Piippo *et al.* 1997ab), and the material for the present study was obtained from the expeditions to Yunnan by Prof. Timo Koponen in 1985 and Prof. Paul Redfearn in 1984. Even though 76 species of *Plagiochila* have been reported for China (Piippo 1990), the genus is still poorly known (Piippo 1997). The genus seems especially rich in Yunnan (Piippo *et al.* 1997b). Two new species, *P. kunmingensis* and *P. yulungensis* are here described as new to science.

### ***Plagiochila kunmingensis* Piippo, *sp. nov.* (Fig. 1)**

*Planta ad 4 cm longa et 2 mm lata, olivacea, ramis sparsis, terminalibus et intercalaribus. Folia imbricata vel remota, ovata, margine antico fere recto, decurrente, revoluta vel plano, integro vel 1–2 dentato prope apicem, margine postico arcuato, 1–4 dentato vel crenulato, basi dilatato, apice subtruncato, 4 dentato. Cellulae medianae 23–43 µm longae et 23–38 µm latae, parietibus tenuibus, trigonis nullis vel parvis vel mediocribus. Reproductio asexualis foliis fragilibus.*

Type: China. Yunnan, Songming Co.: ca. 48.5 km N of Kunming, mesic ravines and drier slopes with remnant broad-leaved evergreen, *Keteleeria* and *Pinus* forest, shaded tree trunk, 25°22'N, 102°45'E, 2 100 m, 28.VII.1984 Redfearn, He & Wang 2035 (H, holotype). Kunming Municipality, vicinity of Qiongzhusi (Bamboo Temple), well preserved broad-leaved evergreen forest with *Pinus yunnanensis* and shrubs on ridge, shaded tree trunk, 25°04'N, 102°37'E, 2 100–2 300 m, 30.VII.1984 Redfearn, He & Wang 2180 (H, paratype).

Plants to 4 cm long and to 2 mm wide on main shoots, when dry, leaves clasping, olive green, obliquely arising from substrate. Stem exposed, brownish, paraphyllia and rhizoids absent from aerial shoots. Branches few, both terminal and of *Frullania* type, and lateral-intercalary. Leaves on leading stem imbricate to distant, postically secund, ovate, 0.9–1.4 mm long and 0.6–0.9 mm wide, somewhat narrowing toward apex, obliquely spreading; branch leaves similar. Dorsal margin nearly straight, revolute or not, decurrent; ventral margin arched, base dilated; apex subtruncate, with 4 teeth, dorsal margin entire or with 1–2 teeth near apex, ventral margin with 1–4 teeth or only crenulate, teeth 1–8 cells high and 1–6 cells wide, triangular or somewhat spinose. Apical cells 12–

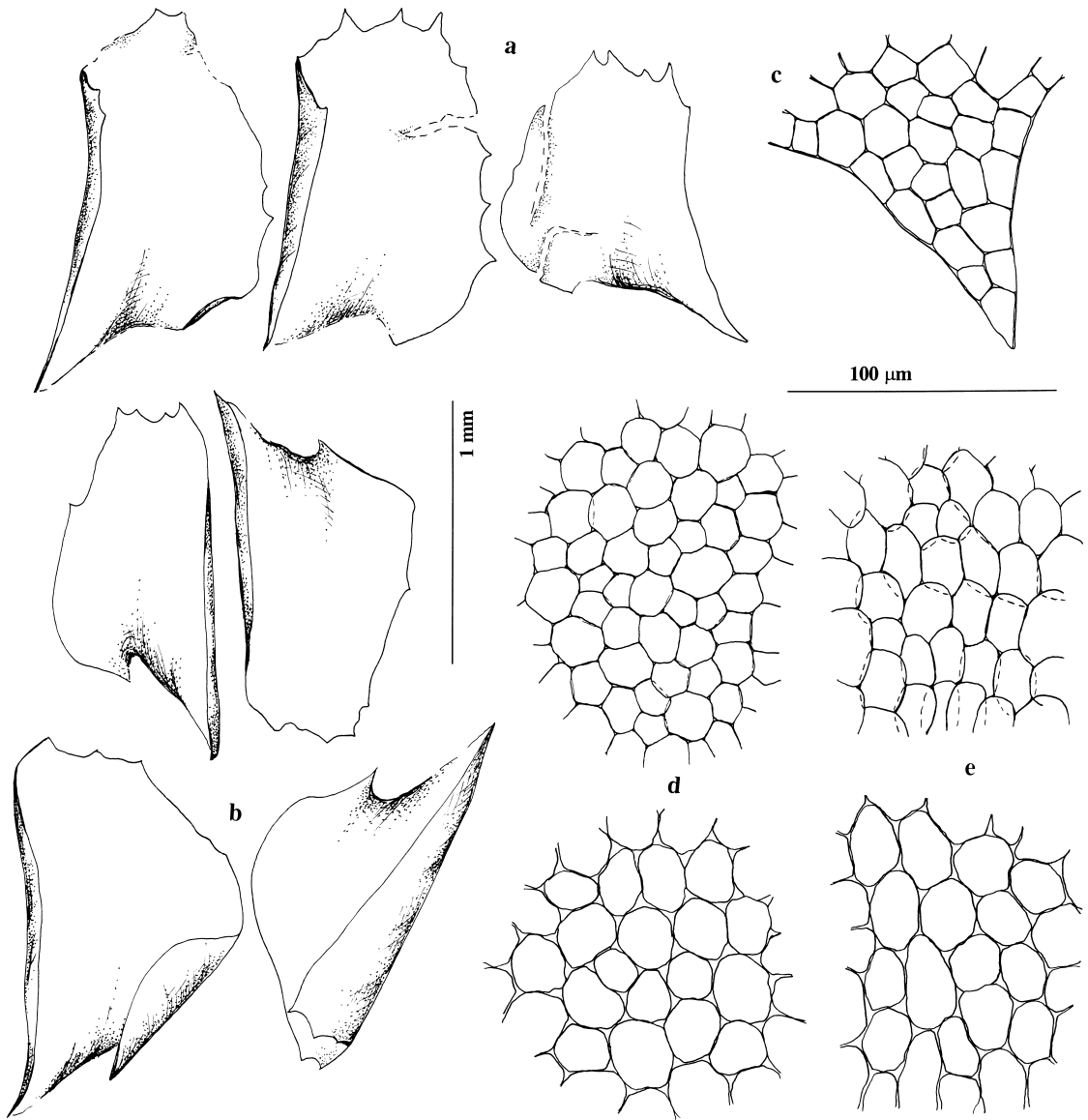


Fig. 1. *Plagiochila kunmingensis* Piippo. — a, b: Leaves. — c: Apical tooth. — d: Cells from the middle portion of leaf. — e: Cells from the basal portion of leaf. — a, c–e drawn from the holotype, b from the paratype.

20 µm wide and 15–25 µm long, cells of middle portion of leaves 23–43 µm long and 23–38 µm wide, at base 25–50 µm long and 20–28 µm wide, thin-walled, trigones variable, absent or very small to medium-sized, cuticle smooth to slightly verrucose. Underleaves absent. Asexual reproduction by fragmenting leaves. Gynoecia and androecia not present.

Characters for *Plagiochila kunmingensis* are: 1) clasping leaves, 2) exposed stems, 3) ovate

leaves, 4) nearly straight dorsal leaf margin, ventral margin arched with dilated base, 5) apex subtruncate with four teeth and ventral margin with only 1–4 teeth or marginal teeth totally absent, 6) leaf cells thin-walled, 7) trigones often absent, and 8) fragmenting leaves.

The species resembles *Plagiochila manilana* Mont. & Gott., but *P. manilana* has more marginal teeth and the leaves are not fragmenting (Inoue 1984a). It also resembles *P. monalata*

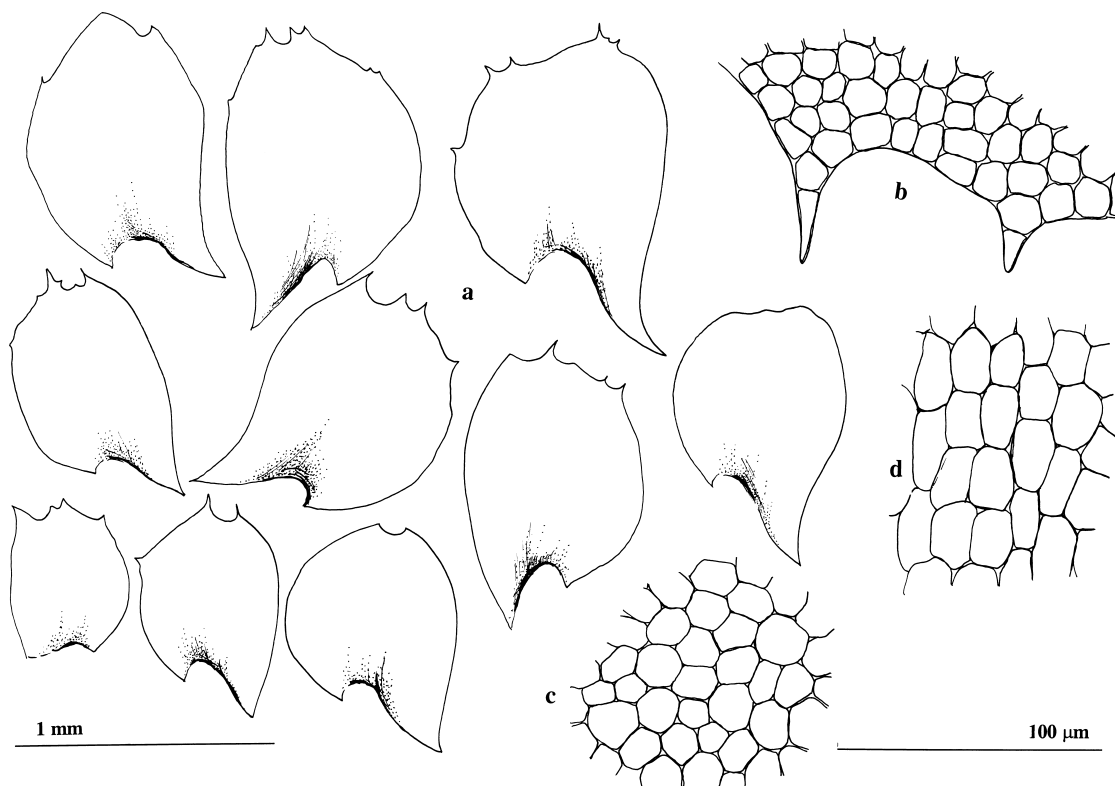


Fig. 2. *Plagiochila yulungensis* Piippo. — a: Leaves. — b: Teeth. — c: Cells from the middle portion of leaf. — d: Cells from the basal portion of leaf. — Drawn from the holotype.

Inoue, but that species has paraphyllia, medium-sized trigones and leaves not fragmenting (Inoue 1987). It also is similar to *P. gollanii* Steph. (syn. *P. makinoana* Hatt.), *P. khasiana* Mitt., *P. microdonta* Mitt., and *P. nepalensis* Lindenb. (cf. Inoue 1958b, 1967, 1982), but all of those species have large trigones, terminal cells of marginal teeth sharply elongated, and leaves not fragmenting.

***Plagiochila yulungensis* Piippo, sp. nov.** (Fig. 2)

*Planta parva, viridis vel olivacea, ramis intercalaribus, sparsis. Folia caulina contigua vel remota, oblongo-ovata, margine antico arcuato, longe decurrente, margine postico arcuato, apice rotundato, 1–7 dentato vel apice retuso vel crenulato, cellula apicali elongata. Cellulae medianae 18–28 μm longae et latae, parietibus tenuibus, trigonis parvis, cuticula levi.*

Type: China. Yunnan, Lijiang Co.: Mt. Yu-Lung 25 km NNW of Lijiang, near Gan-He-Ba. *Pinus tabulaeformis* var.

*densata*–*Larix*–*Abies*–*Rhododendron* forest at foot of the mountain sloping gently E, on trunk in partial shade, 27°06' N, 100°14' E, alt. 3 020–3 050 m, collection site 9a, 29.VII.1985 Koponen 42081 (H, holotype).

Plants fairly small, to 2 cm long and to 3 mm wide on main shoots, green to olive green, erect or obliquely arising from substrate. Stem exposed, no rhizoids on aerial shoots, brownish. Branches few, lateral-intercalary. Leaves on leading stem contiguous to distant, slightly secund postically, oblong-ovate, 0.6–1.2 mm long and 0.6–0.8 mm wide, narrowing toward apex and base, obliquely spreading; branch leaves similar. Dorsal margin somewhat arched, long decurrent; ventral margin arched; apex rounded; teeth 1–7 or leaves may be only retuse at apex or crenulate, dorsal margin entire or with one small tooth near apex, teeth 1–6 cells high and 1–5 cells wide at base, apical cell of teeth longer than other cells, 28–50 μm long. Apical cells 23–30 μm long and 16–25 μm wide, cells of middle portion of leaves 18–28 μm long and wide, at base 30–50 μm long and 20–30 μm

wide, thin-walled, trigones small or very small, cuticle smooth. Underleaves absent. Asexual reproduction not seen. Gynoecia and androecia not present.

Characters for *Plagiochila yulungensis* are: 1) slightly secund, oblong-ovate leaves, 2) leaf margins arched, 3) dorsal margin long decurrent, 4) leaves retuse, crenulate or with 1–7 small teeth, 5) apical cell of teeth long, 6) cells thin-walled, and 7) trigones small.

*Plagiochila yulungensis* resembles *P. duthiana* Steph., but the latter is larger in size, 3–5 cm long and 3–4 mm wide, and the leaf cells have large trigones (Inoue 1967). The leaf shape also is similar to *P. ovalifolia* Mitt. (syn. *P. asplenoides* (L.) Dum. subsp. *ovalifolia* (Mitt.) Inoue; Inoue 1958a) and to some extent to *P. gracilis* Lindenb. & Gott. (Inoue 1960, as *P. firma*). *Plagiochila ovalifolia* usually has many more teeth, which are spinose, and large trigones. *Plagiochila gracilis* has large trigones, the teeth are acute and leaf apices 2-lobed. *Plagiochila querpertensis* Inoue resembles *P. yulungensis*, but its leaves are not as regularly oblong-ovate as in *P. yulungensis* (cf. Inoue 1962).

*Acknowledgements.* Prof. Timo Koponen and Prof. Paul Redfearn are thanked for providing the specimens. Mr. Heino Vänskä, Phil. Lic. is cordially thanked for checking the Latin, and Prof. Timo Koponen for his comments on the manuscript.

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