

Utricularia mangshanensis (Lentibulariaceae), a new species from Hunan, China

Guang-Wan Hu^{1,2}, Chun-Lin Long^{1,*} & Ke-Ming Liu³

¹⁾ Kunming Institute of Botany, Chinese Academy of Sciences, Kunming 650204, China
(*corresponding author's e-mail: long@mail.kib.ac.cn)

²⁾ Graduate School, Chinese Academy of Sciences, Beijing 100039, China

³⁾ Department of Botany, Hunan Normal University, Changsha 410081, China

Received 16 Oct. 2006, revised version received 18 Dec. 2006, accepted 29 Jan. 2007

Hu, G. W., Long, C. L. & Liu, K. M. 2007: *Utricularia mangshanensis* (Lentibulariaceae), a new species from Hunan, China. — *Ann. Bot. Fennici* 44: 389–392.

Utricularia mangshanensis G.W. Hu, a new species of Lentibulariaceae from Hunan Province, China, is described and illustrated. It belongs to section *Kamienskia* and is very similar to *U. peranomala*, but differs in that its leaves are irregularly branched, its bract and bracteoles are not connate at the base, its corolla is white with a yellow dot on the palate of lower lip, and its spur is unequally 2-lobed at the apex.

Key words: Lentibulariaceae, new species, taxonomy, *Utricularia mangshanensis*

Utricularia is a carnivorous genus of about 214 species (Taylor 1989) or 220 species according to more recent studies (Barthlott *et al.* 2004, Müller & Borsch 2005). It is a cosmopolitan genus, but most of its members are distributed in tropical regions, and few in north temperate region. There are about 23 species occurring in China, of which seven have been reported in Hunan Province (Qi & Yu 2002, Li 2007).

In May 2003, we performed an investigation of plants and collected numerous specimens in Mangshan Mountains. We found a little herb on a waterish cliff mixed with mosses. Its procumbent and branched leaves looked like a liverwort, but characters of its white flowers showed it was a member of *Utricularia* (Lentibulariaceae). After a morphological study and literature surveys (Taylor 1986, Li 1988, 1990, 2003), we could not find a published name for this plant. In May 2004, the first author went to Mangshan Mountains again, and collected more specimens

and some material conserved in FAA liquid for further study. In 2005 we got a taxonomic monograph of *Utricularia* by Taylor (1989). With the aid of the detailed descriptions and clear illustrations, we were able to compare our specimens with all species of *Utricularia* in the world. After further careful study, we concluded our material represented a new species of *Utricularia* sect. *Kamienskia*.

***Utricularia mangshanensis* G.W. Hu, sp. nova** (Fig. 1)

Species affinis U. peranomalae, sed haec species foliis irregulariter ramosis, floribus albis, calcaribus impariter 2-lobatis ad extremum differt.

HOLOTYPE: China. Hunan Province, Yizhang County, Mangshan Mountains, Jiashui, alt. 750 m, on a waterish cliff, 5.V.2004 *Hu Guang-Wan 219220* (HNNU; isotype KUN).

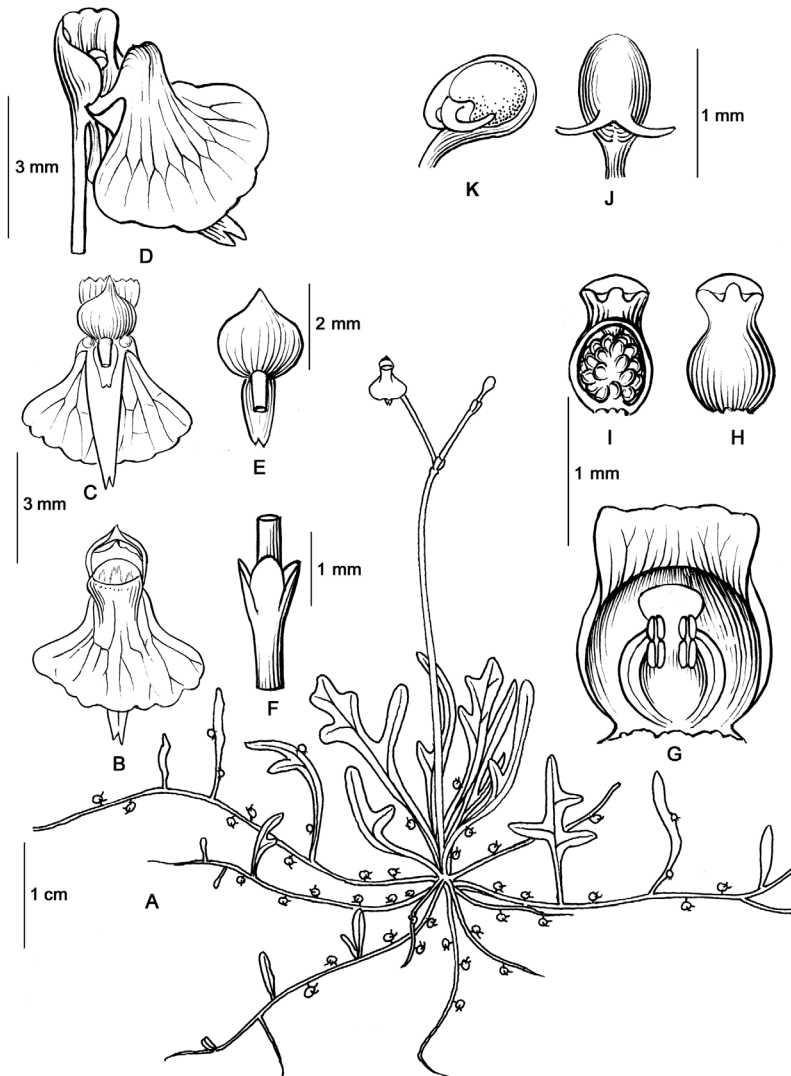


Fig. 1. *Utricularia mangshanensis* (from holotype, conserved in FAA liquid). — **A**: Whole plant. — **B**: Anterior view of flower. — **C**: Posterior view of flower. — **D**: Lateral view of flower. — **E**: Dorsal view of calyx. — **F**: Bract and bracteoles. — **G**: Upper lobe of corolla with stamens and pistil inside. — **H**: Posterior view of pistil. — **I**: Placenta and ovules in ovary. — **J** and **K**: Trap.

Paratype: Same locality, 22.IV.2003 Liu Lin-Han 20050 (HNNU).

Small, annual, bryophilous lithophyte ca. 3–6 cm tall. No rhizoids differentiated from stolons. Stolons numerous, filiform, simple or branched near terminal, 0.5–8(–10) cm long, 0.2–0.3 mm thick. Leaves numerous, procumbent on rock surface, several from peduncle base and several on stolons, not distinctly petiolate; lamina linear or obovate, 0.8–2.2 cm long, 1–2.5 mm wide, membranous, usually branched irregularly, branches very small to 6 mm long, with apex rounded, 1-nerved, main nerve with few irregular lateral branches. Traps numerous, most on stolons, less

on downward side of laminae and very close to their margins, ovoid, stalked, 0.6–0.9 mm long, mouth lateral with two subulate, dorsal, simple appendages. Inflorescence erect, solitary, simple, 3–6 cm tall. Peduncle filiform, glabrous, 2–4 cm long, 0.4–0.7 mm thick. Scales absent. Bracts and bracteoles basifixed, not connate at base; bract broadly ovate, with apex rounded, ca. 0.8 mm long; bracteoles oblong, with apex rounded, slightly narrower than bract. Flower 1 or 2, rarely 3, pedicels ascending, 0.6–1.3 cm long, 0.2–0.3 mm thick, capillary, glabrous. Calyx lobes unequal, smooth, nerves few; upper lobe broadly ovate or cordate, with an apiculus at apex, convex, 1.5–2 mm long, 1.5–2 mm broad;

Table 1. A morphological comparison of *Utricularia mangshanensis* and *U. peranomala*.

	<i>Utricularia mangshanensis</i>	<i>Utricularia peranomala</i>
Rhizoids	absent	present
Leaves	usually branched irregularly, 0.8–2.2 cm long	not branched, total length up to 1 cm
Inflorescence	3–6 cm tall	1.5–2.5 cm tall
Pedicel	4–13 mm long	2–7 mm long
Bract and bracteole	not connate at all	shortly connate at the base
Upper calyx lobe	with an apiculus at apex	apex obtuse
Lower calyx lobe	apex truncate, usually emarginate	apex rounded
Corolla of flower	white with a yellow dot at the base of lower lip	yellowish
Spur apex	2-lobed unequally, lobes acute	obtuse

lower lobe smaller, ovate or elliptic-oblong, with apex truncate and usually emarginate, somewhat less convex, 1–1.5 mm long, ca. 0.6 mm broad. Corolla 4–6 mm long, white, with a yellow dot at base of lower lip; upper lip ovate-oblong with apex broadly truncate, equal to or slightly shorter or longer than upper calyx lobe; lower lip broadly flabellate or axe-like, 3–4 mm long, 4–5 mm broad, base swelling, apex rounded, entire, slightly undulated; palate yellow, densely covered with short hairs; spur subulate, slightly curved upward, 3.5–5 mm long, shortly longer than lower corolla lobe, with apex shortly and unequally 2-lobed, lobes acute. Filaments curved, ca. 0.6 mm long, anther thecae distinct. Ovary globose, glabrous, unilocular with a central placenta; style short but distinct; stigma 2-lobed, lower lip circular, folded backward and covering stigma surface, upper lip much smaller, oblong or triangular. Placenta globose, almost sessile, with an apical extension connected with top of ovary wall. Ovaries numerous, subglobose to obovate. Capsule not mature. Flowering period from April to May.

This species was found on a waterish cliff in Mangshan Mountains at alt. 750 m, mixed with mosses. Mangshan Mountains is one of the earliest founded national nature reserves in China, and has been protected for a long time. Its rich biodiversity has attracted many botanists to study its plant life. Previous studies on the flora of Mangshan Mountains showed that 2314 species of vascular plants belonging to 838 genera and 214 families occur in the area (Wu *et al.* 1980, Qi 1987), and over thirty species of vascular plants have originally been described from the reserve. Vegetationally, Mangshan Mountains belongs to the *Castanopsis–Altingia* Forest Domains of mid-

subtropical evergreen forest zone. The dominant taxa are mainly from Rosaceae, Theaceae, Lauraceae, Fagaceae, Magnoliaceae, Symplocaceae, and Aquifoliaceae (Koponen *et al.* 2000).

Utricularia mangshanensis resembles *U. peranomala* and they both belong to the section *Kamienskia*. Their habit, basifixed bracts and bracteoles, construction of traps and flowers are similar. However, the leaves of *U. mangshanensis* are irregularly branched, and its bract and bracteoles are not connate at the base, its corolla is white with a yellow dot on the palate of lower lip, and its spur is unequally 2-lobed at apex (lobes are acute). These characteristics clearly distinguish it from *U. peranomala*. Some characters of *U. peranomala* described by Taylor (1986, 1989) differing from *U. mangshanensis*, such as leaves usually two from the peduncle base, stolons simple etc. are probably because the specimens he studied were not complete. A morphological comparison between *U. mangshanensis* and *U. peranomala* is in Table 1.

Acknowledgements

Mr. Yi-Tao Liu, our artist, had drawn the refined illustration. Mr. Yun-Gang Guo helped to collect necessary literature from the Royal Botanic Gardens, Kew. The study was supported in part by grants from the Ministry of Science and Technology of China (2004DKA30430, 2005DKA21006), and Natural Science Foundation of Yunnan (2005C0053M).

References

- Barthlott, W., Porembski, S., Seine, R. & Theisen, I. 2004: *Karnivoren. Biologie und Kultur fleischfressender Pflanzen*. — Ulmer, Stuttgart.

- Koponen, T., Enroth, J., Fang, Y.-M., Huttunen, S., Hyvönen, J., Ignatov, M., Juslén, A., Lai, M.-J., Piippo, S., Potemkin, A. & Rao, P. 2000: Bryophyte flora of Hunan Province, China. 1. Bryophytes from Mangshan Nature Reserve and Wulingyuan Global Cultural Heritage Area. — *Ann. Bot. Fennici* 37: 11–39
- Li, Z. Y. 1988: A revision of the genus *Utricularia* in China. — *Bull. Bot. Res.* 8(2): 25–39. [In Chinese with English abstract].
- Li, Z. Y. 1990: [Lentibulariaceae]. — In: Wang, W. C. (ed.), *Flora Reipublicae popularis Sinicae* 69: 582–605. Sci. Press, Beijing. [In Chinese].
- Li, Z. Y. 2007: Lentibulariaceae. — In: Wu, Z. Y., Raven, P. H. & Hong, D. Y. (eds.), *Flora of China*, vol. 19. Sci. Press, Beijing and Miss. Bot. Garden Press, St. Louis [In press].
- Müller, K. & Borsch, T. 2005: Phylogenetics of *Utricularia* and molecular evolution of the *trnK* intron in a lineage with high substitutional rates. — *Pl. Syst. Evol.* 250: 39–67.
- Qi, C. J. 1987: *List of plants in Hunan*. — Hunan Sci. Technol. Press, Changsha. [In Chinese].
- Qi, C. J. & Yu, X. L. 2002: [A survey of Hunan seed plants]. — Hunan Sci. Technol. Press, Changsha. [In Chinese].
- Taylor, P. 1986: New taxa in *Utricularia* (Lentibulariaceae). — *Kew Bull.* 41: 1–18.
- Taylor, P. 1989: The genus *Utricularia*: a taxonomic monograph. — *Kew Bull., Additional Ser.* XIV: 1–724.
- Wu, Z. Y., Wnag, X. F., Liu, F. X., Li, S. Y., He, S. J., Zhang, X. S., Chen, C. D., Zhou, Y. L., Zhou, G. Y., Lin, Y. & Hou, X. L. (eds.) 1980: [Vegetation of China]. — Sci. Press, Beijing. [In Chinese].