Taiwania, **51**(2): 143-147, 2006

Taxonomic Status of *Ophiorrhiza michelloides* (Masam.) X. R. Lo (Rubiaceae) in Taiwan

Fu-Shan Chou[(1)], Chih-Kai Yang[(1)] and Chun-Kuei Liao[(1,2)]

(Manuscript received 5 December, 2005; accepted 24 January, 2006)

ABSTRACT: In 1998, *Hayataella michellioides* Masam. was transferred to the genus *Ophiorrhiza* by X. R. Lo and named *Ophiorrhiza michellioides* (Masam.) X. R. Lo. The following year, Lo treated *Ophiorrhiza exigua* (Li) H. S. Lo as a synonym of *O. michellioides.* However, a detailed comparison between *O. exigua* and *O. michellioides* revealed that the former belongs to a separate species. The diagnostic characters to separate them include pubescence of stems, surfaces of leaves and flower morphology. The present study has ascertained the taxonomic status of *O. michellioides*. In addition, a detailed description, geographic distribution, habitat, photographs and line-drawings are given.

KEY WORDS: ***Hayataella, Ophiorrhiza michelloides,* Taxonomy, Taiwan.**

INTRODUCTION

Hayataella, a monotypic genus, was described by Masamune (Masamune, 1934). The genus was established mainly because it resembled *Ophiorrhiza* in the shape of fruit and because of its prostrate habit which was similar to that of *Mitchella repens* L. In the protologue of this species, the type specimen was cited as "Ipse !" (myself) by Masamune, which was collected at Sakahen, Karenko (current Hualien). Shimizu re-collected plants of the species from the same distributional range in Hualien, and then gave a detailed description and a line drawing in his publication (Shimizu, 1963). Additionally, he pointed out that the type specimen could not be found in any herbarium of Japan and Taiwan. Although recognizing that the floral parts of the genus are most affined to those of *Ophiorrhiza*, he still accepted Masamune's concept of the genus, and mentioned "*Hayataella* is a creeping small herb with terminal and solitary or geminate flowers, while *Ophiorrhiza* is a much larger and erect or ascendant perennial herb with bostryx-like inflorescence". In the absence of any herbarium specimens from Taiwan, Liu and Yang (1998) followed Masamune's treatment and original description to describe the genus as well as the species for the Flora of Taiwan. After a morphological comparison between *H. michelloides* Masam. and *Ophiorrhiza exigua* (Li) H. S. Lo, Lo regarded the two as being identical (Lo, 1999). He transferred the genus *Hayataella* to *Ophiorrhiza*, and made the new combination *O. michelloides* (Masam.) X. R. Lo (Figs. 1 & 2).

In the spring of 2005, we collected an unknown specimen of Rubiaceae, which showed distinctive characters including prostrate habit and 1- to 2-flowered inflorescence. These characters led us to consider some possible genera to which the species belong, based on the treatment of Rubiaceae in the Flora of Taiwan (Liu and Yang, 1998). However, the compressed fruits found on the fruiting specimens collected in the summer of 2005 suggested that these might belong to the genus *Hayataella* or *Ophiorrhiza*. Following examination has resulted in the recognition *Ophiorrhiza michelloides*. According to Lo (1999), the plants from Mainland China have dimorphic flowers with either exserted stamens and short included styles (short stylic flowers) or included stamens and long exserted styles (long stylic flowers). The long stylic flowers have stigma reaching up to the mouth of the corolla tube and subsessile anthers inserted at the middle of the tube, while the short stylic flowers have stigma reaching up to the half length of the corolla tube and anthers with one filament ca. 1 mm long inserted at the throat of the tube. In addition, the species was prostrate or ascending, and characterized by densely haired stems and petioles, and leaves sparsely haired along veins on both surfaces. But, a detailed examination of the plants of *O. michelloides* from Taiwan has revealed that their

1. Department of Biological Sciences, National Sun Yat-sen University, 70, Lien-Rd., Kaohsiung 804, Taiwan.
2. Corresponding author. Tel: 886-7-5252000 ext. 3622; Email: chunkuei.liao@gmail.com

臺灣大學圖書館 期刊資料庫

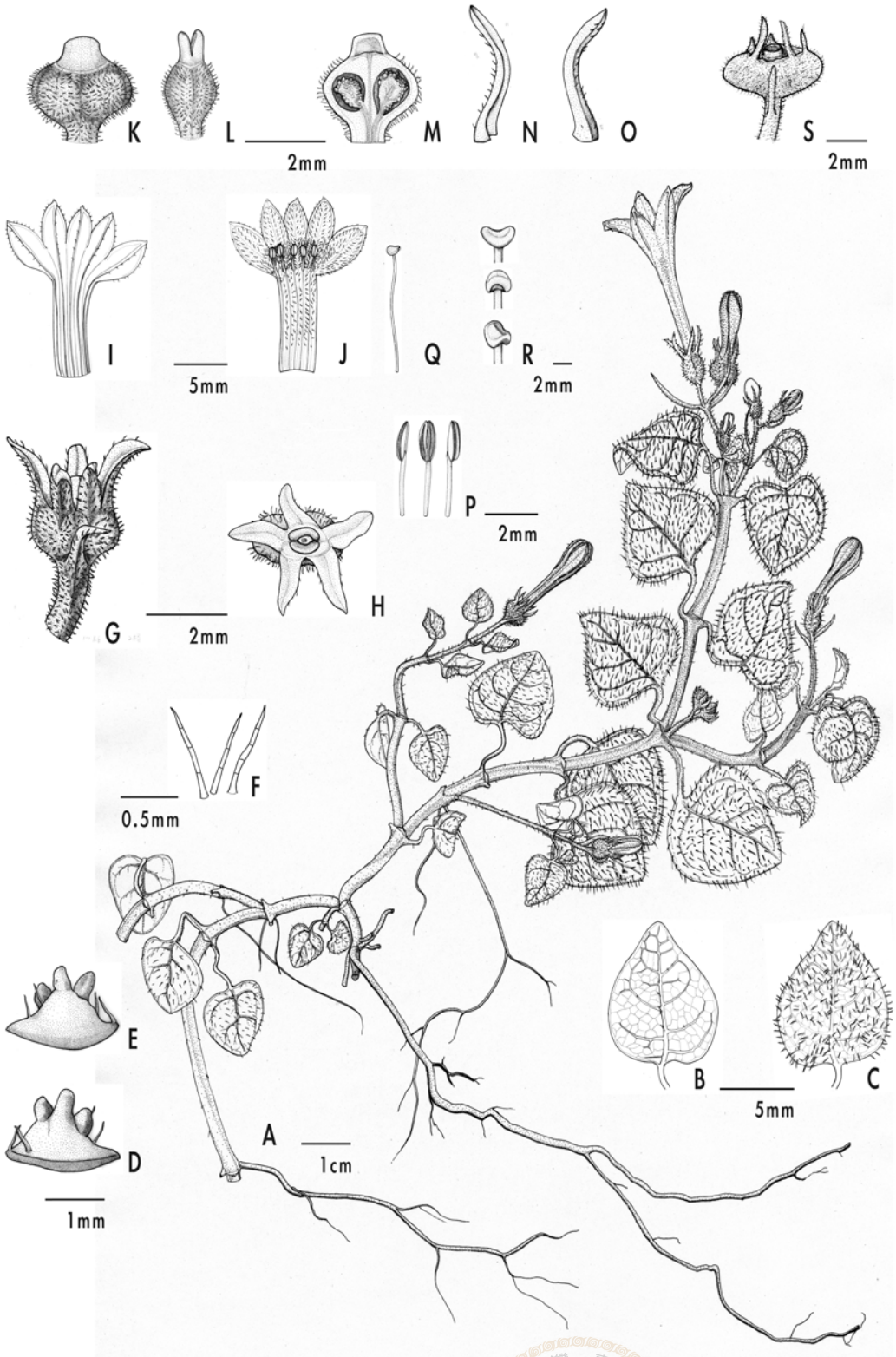


Fig. 1. *Ophiorrhiza michelloides* (Masam.) X. R. Lo. A: Habit. B-C: Leaves. B: Abaxial side. C: Adaxial side. D-E: Stipules. F: Multicellular hairs. G: Calyx and bracteole. H: Vertical view of flower. I-J: Corolla. I: Outside. J: Inside. K-L: Ovary. K: Front view. L: Lateral view. M: Longitudinal section of ovary. N-O: Bracteoles. P: Stamens. Q: Style with stigma. R: Stigmas. S: Capsule.

臺灣大學學術期刊資料庫



Fig. 2. *Ophiorrhiza michelloides* (Masam.) X. R. Lo. A: Plants with flowers. B: Flower buds and their habitat.

flowers are monomorphic with style reaching up to the mouth of the corolla tube and anthers with one filament ca. 1.5 mm long inserted at the throat of the tube. Other characters used to distinguish the Taiwanese plants from those of Mainland China included nearly glabrous lower leaf surface, sparsely haired petioles and exclusively prostrate growth habit. Based on the characters mentioned above, the plants from Taiwan are here recognized as being distinct from *O. exigua*. The taxonomic treatment of *O. michelloides* is given as follows. A detailed description, specimen citations and a line drawing of the plant are also provided.

TAXONOMIC TREATMENT

Ophiorrhiza michelloides (Masam.) X. R. Lo, Bull. Bot. Res. 18(3): 277. 1998. *excl. syn. O. exigua* (Li) Lo & *Geophila exigua*; H. S. Lo, Fl. Reip. Pop. Sin. 71(1): 141. 1999, *pro. part. et excl. syn. O. exigua* (Li) Lo & *Geophila exigua*.

玉蘭草 Figs. 1 & 2

Hayataella michelloides Masamune, Trans. Nat. Hist. Soc. Formos. 24: 206. 1934; Shimizu, Journ. Faculty Text. Sci. & Techn. Shinshu Univ. Ser. A Biology 12: 59-60. 1963; Liu & Yang, Fl. Taiwan 2nd, 4: 263. 1998.

期刊資料庫

A repent herb. Roots filiform, elongated. Stems filiform, multicellular hairy. Leaves opposite, ovate-rotund or ovate, ca. 10-20 mm long, 6-13 mm broad, upper surface covered with multicellular hairs, lower surface sparsely short hairy along veins, apex obtuse, base rounded or subtruncate, margins entire, lateral veins 3-4 pairs; stipules small, deltate, with 3 glands; petioles ca. 2-4 mm long, with multicellular hairs. Flowers pedicellate, terminal, one or paired in a short pedunculate inflorescence; pedicels 2-3 mm long; bracts linear, ca. 3 mm long; calyx tubes hemispheric, laterally compressed, outside pubescent with multicellular hairs, glabrous inside, ca. 2.5 mm in diameter; calyx 5-lobed, the lobes 1-ribbed, linearly lanceolate, ca. 2 mm long, ca. 0.5 mm wide, with multicellular hairs outside, ciliate along margin, glabrous inside; corolla tubiform, 5-lobed, 10-15 mm long, the lobes white, triangular, ca. 3 mm long, 2.5 mm broad, 1-ribbed, the margins with unicellular hairs, slightly short-hairy outside, the tube slightly purplish, ca. 10 mm long, with multicellular hairs outside, sparsely hairy with unicellular hairs inside, densely hairy inside between lobes and tube; stamens 5, epipetalous, ca. 3 mm long, inserted at the mouth of corolla tube; filaments ca. 1.5 mm long, glabrous; anthers basifixed, linear-oblong, 2-celled, ca. 1.5 mm long; ovary inferior, 2-celled, ovules numerous, style filiform, ca. 12 mm long; stigma 2-lobed. Capsules laterally compressed, broad-obcordate, loculicidally dehiscent; seeds many, granulate.

Specimens examined: Hualien: Tungmen to Lungxhien, ca. 500 m alt., on mossy rock, *T. Shimizu 11135* (KYO); Tachingshui valley, *T. Shimizu & M. T. Kao 11653* (KYO = Herbarium, Botany Department Graduate School of Sciences, Kyoto University, Japan); Taroko Forest, 1000 m, *M. Tamura et al. 21400* (SHIN = Herbarium, Faculty of Liberal Arts, Shinshu University, Japan); Chingshuishan, open, moist stone wall by the hiking trail, ca. 800-1000 m alt., *S. C. Liu, C. H. Chen & H. W. Lin 171* (TNU = Herbarium, Department of Biology, National Taiwan Normal University) ; Tuomowanshan, mossy rock, ca. 1700 m alt., 17 March 2005, *F. S. Chou s. n.* (SYSU = Herbarium, Department of Biological Sciences, National Sun Yat-sen University).

Distribution and habitat: Taiwan, known only from Hualien and growing on moist stone of mountain ridge at altitudes between 500 m to 1700 m.

ACKNOWLEDGEMENTS

The authors thank Dr. Jenn-Che Wang for the loan of specimens, Dr. Chin-I Peng for providing valuable information and the director of the herbarium of the South China Botanical Garden, Chinese Academy of Sciences (IBSC) for permission to examine specimens. We are grateful to anonymous reviewers for providing helpful comments.

LITERATURE CITED

Liu, H.-Y. and T.-Y. A. Yang. 1998. Rubiaceae. In: Huang, T.-C. et al. (eds.), Flora of Taiwan, 2nd ed. **4**: 263. Editorial Committee, Dept. Bot., NTU, Taipei, Taiwan.

Lo, X.-R. 1998. Materials for Chinese Rubiaceae (IV). Bull. Bot. Res. **18**: 276-277.

Lo, H.-S. 1999. *Ophiorrhiza*. In: Lo, H.-S. et al. (ed.), Rubiaceae. Flora Reipubicae Popularis Sinicae. **71**: 111-175. (in Chinese).

Masamune, G. 1934. Beitrage zur Kenntnis der Flora von Sudjapan. (II). Trans. Nat. Hist. Soc. Formos. **24**: 206.

Shimizu, T. 1963. Studies on the limestone, Flora of Japan and Taiwan. Journ. Faculty Text. Sci. & Techn. Shinshu Univ. Ser. A, Biology **12**: 59-60.

臺灣大學學術期刊資料庫

臺灣產玉蘭草（茜草科）的分類地位

周富三[(1)]、楊智凱[(1)]、廖俊奎[(1,2)]

(收稿日期：2005 年 12 月 5 日；接受日期：2006 年 1 月 24 日)

摘　　要

玉蘭草（*Ophiorrhiza michelloides* (Masam.) X. R. Lo）為臺灣的特有植物。以往，羅獻瑞將中國大陸南部的東南蛇根草（*Ophiorrhiza exigua* (Li) H. S. Lo）視為玉蘭草（*Ophiorrhiza michelloides* (Masam.) X. R. Lo）的同物異名。經過詳細檢視兩者的莖及葉上表面之被毛和花的形態後，發現兩者為不同種。本文除了釐清臺灣產玉蘭草的分類地位外，並提供其更詳細的形態特徵描述、地理分布、生育地環境、彩色照片及插圖。

關鍵詞：玉蘭草、分類地位、臺灣。

1. 國立中山大學生物科學系，804 高雄市蓮海路 70 號，臺灣。
2. 通信作者。Tel: 886-7-5252000 ext. 3622; Email: chunkuei.liao@gmail.com

臺灣大學學術期刊資料庫