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NOTE

Notes on *Phalaenopsis* (Orchidaceae) of Hsiaolanyu, Taiwan

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ABSTRACT: Taxonomic position of the *Phalaenopsis* species in Hsiaolanyu, Taiwan is reviewed along with the rediscovery of wild population. *P. riteiwanensis* Masam. is lectotypified and reconfirmed to be a synonym of *P. equestris* (Schauer) Rchb.f. Its habitat condition in and conservation status is also presented.

KEY WORDS: IUCN category, Lectotypification, Orchidaceae, *Phalaenopsis equestris*, *Phalaenopsis riteiwanensis*, Taxonomy, Taiwan.

INTRODUCTION

The *Phalaenopsis* species from Hsiaolanyu (a.k.a. Syokotosyo, Ritaiwan and Riteiwan) was first published by Masamune (1934) as a new species, *P. riteiwanensis* Masam. In later studies (Sweet, 1969; Lin, 1977; Su, 2000; Chen and Wood, 2009), *P. riteiwanensis* was treated as a synonym of *P. equestris* (Schauer) Rchb.f. However, the population from Hsiaolanyu was not been collected again since 1934 due to transportation inconvenience and low population size, and its habitat situation and morphological variation are thus nearly uncertain. During a botanical survey of Hsiaolanyu in May 2009, a wild population of *Phalaenopsis* species was rediscovered by our co-worker Sin-Jie Hong and Chuan-Rong Yeh. Later in July 2009, flowers were observed and then confirmed to be *P. riteiwanensis*. The rediscovery of wild population offered us a chance to review the taxonomy position of *Phalaenopsis* species from Hsiaolanyu. After a selection of lectotype and a comparative study on fresh flowering materials, we accept that *P. riteiwanensis* should be a synonym of *P. equestris* (Schauer) Rchb. f., as we present here with a report of habitat condition and conservation status.

TAXONOMIC TREATMENT

Phalaenopsis equestris (Schauer) Rchb.f., Linnaea 22: 864. 1849; Lin, Native Orchids Taiwan 2: 286. f. 44. pl. 140. 1977; Ying, Coloured Ill. Indig. Orchids Taiwan 2: 638. 1990; Tsi et al., Fl. Reipubl. Popularis Sin. 19: 375. 1999; Su, F1. Taiwan 2nd ed. 5: 1005, 2000; Christenson, *Phalaenopsis*: a Monograph.: 239. 2001; Chen & Wood, Fl. China 25: 382. 2009. Chung, Orchids Taiwan 2: 146. 2009. ― *Stauroglottis equestris* Schauer, Meyen. Nov. Acad. Cur. 19 (suppl. 1): 432. 1843. ― Type: PHILIPPINE. Luzon, Manila, *Lobb s.n.* (holotype: K photo!; isotype: W) 桃紅蝴蝶蘭 Figs. 1-3

Phalaneopsis riteiwanensis Masam., Trans. Nat. Hist. Soc. Formosa 24: 213. 1934. ―*Stauroglottis riteiwanensis* Masam., Trans. Nat. Hist. Soc. Formosa 24: 213. 1934. *pro. Syn* ―Type: TAIWAN. Taitung County, Hsiaolanyu (Syokotosyo; Riteiwan), *K. Segawa s.n.* (lectotype: TAIF no. 115006!, designated here; isolectotypes: TAIF!, KPM photo!).

Distribution and ecology: *Phalaenopsis equestris* is widespread in the Philippines but recorded in Taiwan only from Hsiaolanyu, a small islet located south of Lanyu. Ying (1990) proclaimed that this species also occurred in Lanyu, but there are no specimens available for us to reconfirm this record. Wild population of *P. equestris* in Hsiaolanyu grows in a dwarf forest of ca. 3 m high along the costal cliff of Hsiaolanyu at ca. 100 m alt. The forest is dominated by *Semecarpus gigantifolia* Vidal, *Ficus cumingii* Miq. var. *terminalifolia* (Elm.) Sata, *F. septica* Burm. f. and *Tabernaemontana subglobosa* Merr. Accompanied species include *Planchonella obovata* (R. Br.) Pierre, *Antidesma pentandrum* Merr. var. *barbatum* (Presl.) Merr., *Diospyros ferrea* (Willd.) Bakhuizen, *Pisonia aculeata* L. and *Podocarpus costalis* Presl. All *Phalaenopsis equestris* individuals were found growing on the branches of *Podocarpus costalis*. Flowers were observed from July to August.

Conservation and IUCN category: According to our field investigation and IUCN Red List Categories and Criteria (IUCN, 2001; 2003), we agreed with Lu et al.

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Fig. 1. Lectotype of *Phalaneopsis riteiwanensis* Masam. in the Herbarium of Taiwan Forestry Research Institute (TAIF).

(2001) and Chung (2009) to consider *Phalaenopsis equestris* Critically Endangered (CR B2ab; D) in Taiwan based on an area of occupancy less than 10 km^2 and matured individuals less than 50. Conservation measures should be taken immediately to ensure the continued existence of *P. equestris* in Taiwan. Although *Phalaenopsis equestris* had been a common species in the Philippines (Lin, 1977), we maintain its regional protection level in Taiwan because the wild population in the Philippines continues deteriorating due to horticultural over-collection (Chung, pers. comm.), and the immigration probability is thus reduced.

Typification of *Phalaneopsis riteiwanensis*: After a herbaria reviewing, we found five sheets of *Phalaenopsis* specimens, three in TAIF and two in KPM, fit the type data described by Masamune (1934). Since none of these specimens were marked or defined as a holotype, lectotypification of *Phalaenopsis riteiwanensis* is necessary for stabilizing its taxonomy position. We select the TAIF no. 115006 specimen as a lectotype because the plant on this sheet is most complete among the possible syntypes (Table 1), and its measurements fit well to the original description of *Phalaenopsis riteiwanensis* (Masamune, 1934).

Taxonomic Note: Although *Phalaenopsis equestris* was reported highly variable both vegetatively and in flower colorization (Christenson, 2001), morphology of the population in Hsiaolanyu is quite uniform (Figs. 2 & 3). All individuals we observed bear linear-oblong leaves, strongly reflexed lateral sepals, petals tinged with reddish-purple along midribs, and yellowish-purple lips. The low morphological diversity suggests a single origin of *P. equestris* in Hsiaolanyu.

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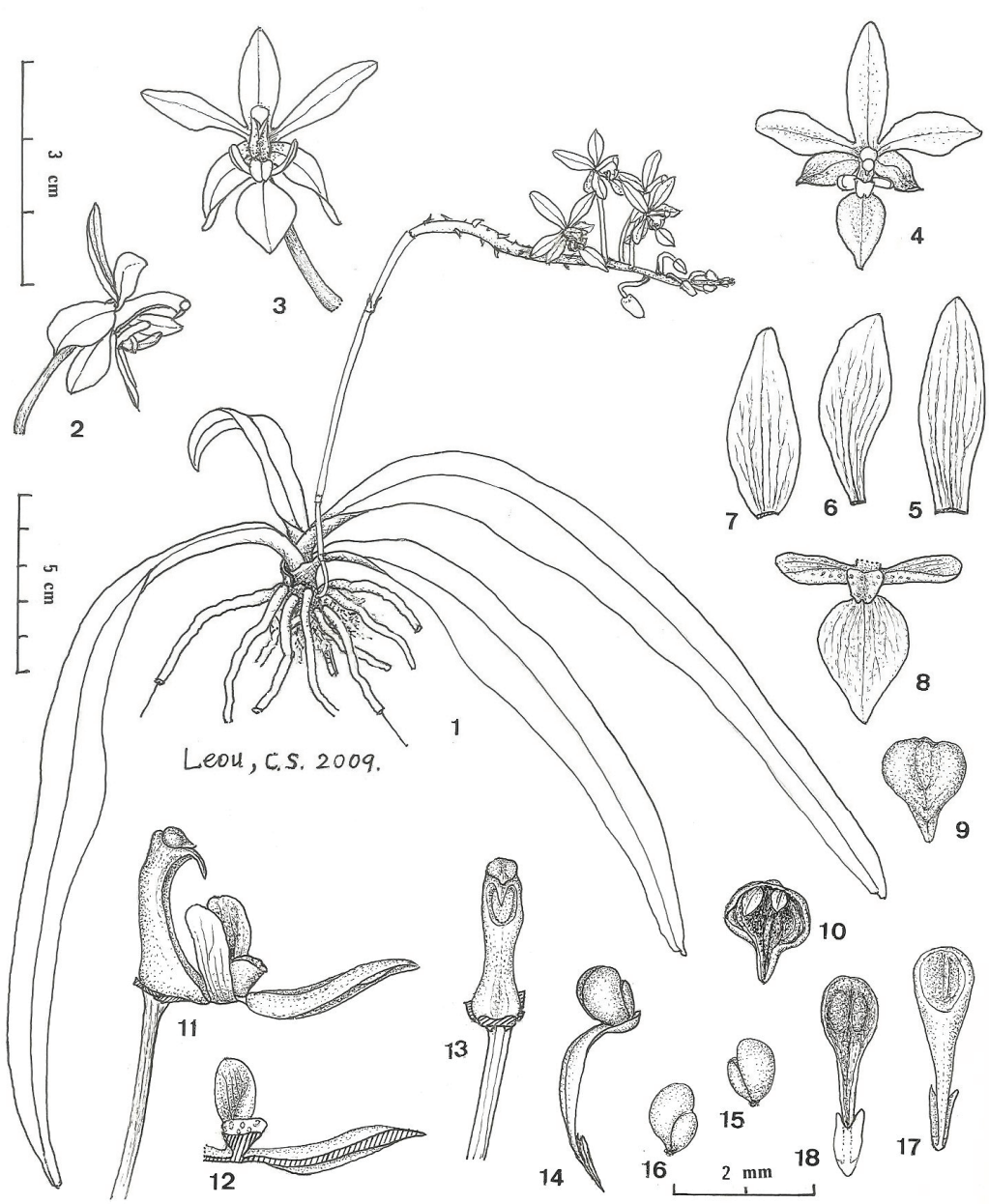


Fig. 2. *Phalaenopsis equestris* (Schauer) Reichb. f. 1: Habit. 2-4: Flower, varied views. 5: Dorsal sepal. 6: Petal. 7: Lateral sepal. 8: Lip. 9: Anther, upper side. 10: Anther, lower side. 11: Column and lip, side view. 12: Lip, longitudinal section. 13: Column, ventral view. 14: Pollinarium. 15 & 16: Pollinia, side views. 17: Stipe with viscidium. upper side. 18: Stipe with viscidium, lower side.

Table 1. Syntypes of *Phalaenopsis riteiwanensis* Masam.

Herbarium/Museum Accession No.	Leaves	Racemose panicle	Flowers	Capsule
TAIF				
115006	4, 8-18 cm long	present	present	
115007	absent	present	present	absent
115008	2, ca. 6 cm long	present	present	absent
KPM				
T00076	absent	present	present	absent
T00077	absent	present	present	absent

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Fig. 3. *Phalaenopsis equestris* (Schauer) Rchb. f. from Hsiaolanyu. A: Plants *in situ*. B-D: Transplanted individual in the greenhouse of National Pingtung University of Science and Technology.

Additional specimens examined: Taiwan. Taitung Co., Hsiaolanyu, 27 May 1934, *S. Sasaki s. n.* (TAI), same loc., 24 Aug 2009, *M.-J. Jung 4498* (TAIF).

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LITERATURE CITED

Christenson, E. A. 2001. *Phalaenopsis*, a Monograph. Timber Press, Portland, USA.

Chen, X.-Q. and J. J. Wood. 2009. *Phalaenopsis*. In: Wu, Z., P. H. Raven and D. Hong (eds.), Flora of China **25**: 478-483. Science Press, Beijing, China and Missouri Botanical Garden Press, St. Louis, USA.

Chung, S.-W. 2008. Orchids of Taiwan 2. Council of Agriculture, Executive Yuan, Taipei, Taiwan.

IUCN. 2001. IUCN Red List Categories and Criteria, Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland, and Cambridge, UK.

IUCN. 2003. Guidelines for Application of IUCN ed List Criteria at Regional Levels, Version 3.0. IUCN Species Survival Commission. IUCN, Gland, Switzerland, and Cambridge, UK.

Lin, T.-P. 1977. Native Orchids of Taiwan 2. Southern Materials Center, Taipei, Taiwan.

Lu, S.-Y., S.-J. Moore, T.-H. Hsieh and T.-W. Hsu. 2001. Rare and Endangered Plants in Taiwan 6. Council of Agriculture, Executive Yuan, Taipei, Taiwan.

Masamune, G. 1934. Beiträge zur Kenntnis der Flora von Südjapan (II). Trans. Nat. Hist. Soc. Formosa **24**: 206-214.

Su, H.-J. 2000. *Phalaenopsis*. In: Huang, T.-C. et al. (eds.). 2000. Flora of Taiwan. 2nd ed. **5**: 1003-1005. Dept. Bot., NTU, Taipei, Taiwan.

Sweet, H. R. 1969. Revision of the Genus *Phalaenopsis*, pts. 1 and 2. Amer. Orchid Soc. Bull. **37**: 867-877, 1089-1104.

Yeh, C.-L., Y.-S. Chian, C.-F. Liao, C.-R. Yeh, M.-J. Jung and S.-J. Hung. 2010. Inventory of flora in Hsiao Lanyu. Journal of National Park (in press).

Ying, S.-S. 1990. Coloured Illustrations of Indigenous Orchids of Taiwan 2. Private publication, Taiwan.

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小蘭嶼蝴蝶蘭屬植物註記

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摘要：隨著蝴蝶蘭屬植物之野生族群於小蘭嶼再度發現，我們重新檢視其分類地位。本文指定了小蘭嶼蝴蝶蘭 (*Phalaenopsis riteiwanensis* Masam.) 之選模式，並再次確認小蘭嶼蝴蝶蘭為桃紅蝴蝶蘭 (*P. equestris* (Schauer) Rchb.f.) 同物異名。本文亦報導桃紅蝴蝶蘭在小蘭嶼的生育地狀態，評估其保育等級。

關鍵詞：選模式、蘭科、小蘭嶼蝴蝶蘭、桃紅蝴蝶蘭、分類學、臺灣。

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