Nomenclatural notes on the family Smilacaceae in Thailand

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Summary. A nomenclatural synopsis of 11 of the 28 *Smilax* species recorded in Thailand (*S. bracteata*, *S. calophylla*, *S. corbularia*, *S. davidiana*, *S. extensa*, *S. hemsleyana*, *S. luzonensis*, *S. myosotiflora*, *S. myrtilus*, *S. perfoliata* and *S. prolifera*) is presented. Three names, *S. helferi* var. *maingayana*, *S. microchina* and *S. ocreata* are placed into synonymy of *S. luzonensis*, *S. davidiana*, and *S. perfoliata*, respectively. *Smilax prolifera* is reinstated. Ten taxa, *S. calophylla*, *S. extensa*, *S. helferi*, *S. helferi* var. *maingayana*, *S. hemsleyana*, *S. myosotiflora*, *S. myrtilus*, *S. ocreata*, *S. stenopetala* and *S. woodii* are lectotypified.

Key Words. Lectotypification, reinstatement, *Smilax*, synonymy, taxonomy.

Introduction

Smilacaceae Vent. is a monogeneric family belonging to order Liliales, that is widely distributed mainly in tropical and subtropical regions of America, Africa and Asia. The family comprises two genera: *Smilax* L. is the largest, with c.300 species, while *Heterosmilax* Kunth has 10 – 12 species (Heywood *et al.* 2007; Mabberley 2008). Recently, it has been suggested that *Heterosmilax* is placed into *Smilax*, based on morphological and molecular data (Cameron & Fu 2006; Chen *et al.* 2006; Qiu *et al.* 2013a; Judd *et al.* 2016).

In Thailand, 27 species (30 taxa) were recognised by Koyama (1975). A new *Smilax* species was later found in north-eastern Thailand (Moore *et al.* 2008), resulting in 28 species (31 taxa) enumerated for the country in total. Ongoing revisionary studies of the family for Thailand by the authors, which include comparisons with the work of Koyama (1983, 1984), Rae (1994), Chen & Koyama (2000), Dassanayake (2000) and Qiu *et al.* (2013b), have examined the circumscription of species, together with associated nomenclatural problems. The present work aims to provide nomenclatural actions intended to resolve these various problems in the Thai taxa.

Materials and Methods

This study is largely based on the examination of specimens from India, China, Japan, Philippines, Indo-China, Myanmar, Thailand and the Malay Peninsula

which are deposited in A, BK, BKF, BM, BO, DAO, E, GH, HN, HNU, K, L, NY, P, PRC, SING, TCD, TI and US. Field observations in Thailand have also been made. Specimens were examined using a Nikon SMZ445 stereomicroscope. Nearly all the specimens cited here have been examined and are indicated by '!'.

Nomenclatural synopsis of Thai *Smilax*

1. *Smilax bracteata* C. Presl (1827: 131). Type: Philippines, Luzon, *Haenke* s.n. (holotype PRC! [PRC450457]).

Smilax stenopetala A. Gray (1858: 412). Type: Japan, Kiu-siu (Kyushu), Kagoshima Bay, ♂♀, Wright 312 (lectotype GH! [00030109], selected here; isolectotypes GH! [00056356], US! [US00092046]).

NOTES. The original protologue of *Smilax stenopetala* was described by Gray (1858) based on Wright 312 from Kiu-siu (=Kyushu), Japan housed in GH and US. We have examined these specimens carefully and selected sheet 00030109 at GH as the lectotype because the specimen has more mature leaves, fruits and male flowers.

The lectotype sheet has two localities indicated: Kagoshima Bay and Hakodate, Hokkaido, both of which are cited in the protologue by Gray (1858).

There are two specimens of Wright 312 in K (K000820664, K000820666) that were collected from the Loo-Choo Is. (present-day Ryuku Is.). Loo-Choo was an independent kingdom until it was annexed by

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Japan in 1879 and it seems unlikely that Wright would treat them as the same locality as Kiu-Siu. Therefore, without evidence that the locality on the label is incorrect, the material from Loo-Choo is not treated here as isolectotype material.

2. *Smilax calophylla* Wall. ex A. DC. (Candolle 1878: 60). Type: Singapore, Oct. 1822, ♀, Wallich 5131 (lectotype K-W! [K001104886], selected here; isolectotype P! [P00686979]).

NOTES. The original protologue of *Smilax calophylla* was based on Wallich 5131 (Candolle 1878) and that has two duplicates. We selected sheet K001104886 at K-W as the lectotype because it has complete female inflorescences and mature fruits, while the sheet at P is without these characters.

3. *Smilax corbularia* Kunth (1850: 262). Type: Vietnam, Cochinchina, Loureiro s.n. (P, fide Koyama (1983)).

Smilax woodii Merr. (Merrill 1922: 162). *Smilax corbularia* var. *woodii* (Merr.) T. Koyama (1960: 15). Type: Malaysia, Sabah, Sandakan, Oct. 1920, ♂, Wood 1097 (lectotype K! [K000292101], selected here; isolectotypes A! [A00030120], P! [P00686996], US! [US00092052]).

NOTES. Wood 1097 is mentioned in the original protologue of *Smilax woodii* (Merrill 1922). However, Wood's collection has four duplicates. Therefore, we select sheet K000292101 at K as the lectotype because it has more leaves and male flowers which are in good condition.

4. *Smilax davidiana* A. DC. (Candolle 1878: 104). Type: China, Guangxi, ♀, David s.n. (holotype P! [P00686782]).

Smilax microchina T. Koyama (1963: 15), **synon. nov.** Type: Thailand, Loei, Phu Kradueng, 10 July 1959, Th. Sørensen, K. Larsen & B. Hansen 7465 (holotype DAO! [DAO000466230]).

NOTES. *Smilax microchina* is distinctive on account of its umbellate inflorescence which has 4 – 7 flowers per umbel with 2 – 5 cm long leaf-blades and a very short or wanting tendril. These characters were used to separate this species from *S. davidiana*, which has more than 10 flowers per umbel with leaf-blades 5 – 12 cm long and a tendril length of 0 – 12 cm. (Koyama 1975). On examination of type material of *S. microchina* and specimens from Phu Kradueng, the type locality of *S. microchina*, we found that the umbels of this species have 4 – 10 flowers, leaf-blades 2 –

15 cm long and a tendril length of 0 – 15 cm. These characters show a range of variation that encompasses both *S. davidiana* and *S. microchina*. Therefore, we conclude that *S. microchina* should be regarded as conspecific with *S. davidiana*.

5. *Smilax extensa* Wall. ex Hook. f. (Hooker 1892: 309). Type: Malaysia, Penang, ♂, Wallich 5126B (lectotype K-W! [K001104872], selected here; isolectotypes BM!, K!-3 sheets [K000292127, K000292128, K000292223]).

NOTES. Wallich 5126B is mentioned in the original description of *Smilax extensa* by Hooker (1892). However, Wallich's collection has four duplicates. Therefore, we select the sheet K001104872 at K as the lectotype because it has many male flowers and leaves.

6. *Smilax hemsleyana* Craib (1912: 409). *Smilax zeylanica* subsp. *hemsleyana* (Craib) T. Koyama (1975: 218). Type: Thailand, Chiang Mai, Doi Suthep, 11 April 1909, ♀, Kerr 596 (lectotype K! [K000292111], selected here; isolectotypes BM!-3 sheets, K!-2 sheets [K000292110, K000292112]).

NOTES. Kerr 596 is mentioned in the original protologue of *Smilax hemsleyana* by Craib (1912). However, this collection has six duplicates. Therefore, we select K000292111 at K as the lectotype because it has female flowers while the isolectotypes have fruits and young shoots.

7. *Smilax luzonensis* C. Presl (1827: 131). Type: Philippines, Luzon, Haenke s.n. (PRC, fide Koyama (1983)).

Smilax helferi A. DC. (Candolle 1878: 176). Type: Malay Peninsula, ♂, Griffith 5425 (lectotype K! [K000292125], selected here).

Smilax helferi var. *maingayana* A. DC. (Candolle 1878: 176), **synon. nov.** Type: Malaysia, 23 July 1866, ♂♀, Maingay 1696 (lectotype K! [K000292121], selected here; isolectotype K! [K000292122]).

NOTES. Griffith 5425 was cited in the original protologue of *Smilax helferi* (Candolle 1878). K000292125 is selected as the lectotype because it has many male flowers and leaves which are in good condition. The original description of *Smilax helferi* var. *maingayana* was made by Candolle (1878) based on Maingay 1696 but the collection has two duplicates and, therefore, we designate K000292121 as the lectotype because it has many female flowers.

8. *Smilax myosotiflora* A. DC. (Candolle 1878: 65). Type: Indonesia, ♂, *Spanoghe* s.n. (lectotype K! [K000292103], selected here).

NOTES. Of the two original collections, *Millett* s.n. (K) and *Spanoghe* s.n. (K), the latter is the best preserved and has many complete male inflorescences and a number of mature leaves.

9. *Smilax myrtillus* A. DC. (Candolle 1878: 106). *Smilax rigida* var. *myrtillus* (A. DC.) T. Koyama (1963: 74). *Smilax rigida* subsp. *myrtillus* (A. DC.) T. Koyama (1971: 173). Type: India, Khasia, ♀, *Hooker & Thomson* 5 (lectotype K! [K000939180], selected here; isolectotypes GH! [0030115], K! 5-sheets [K000939181, K000939182, K000939183, K000939184, K000939185], P! [P00686834], TCD! [TCD0018100]).

NOTES. *Griffith* 5453 and *Hooker & Thomson* 5 were cited in the original protologue of *Smilax myrtillus* (Candolle 1878), although the latter was incorrectly cited as *Hooker & Thomson* 3 in the first publication. *Hooker & Thomson* 5 has six duplicates in K, and one each in GH, P and TCD. The sheet K000939180 at K is selected as the lectotype because it has complete stems and flowering branches and includes female flowers and fruits which are in good condition.

10. *Smilax perfoliata* Lour. (Loureiro 1790: 622). Type: Vietnam, Cochinchina, *Loureiro* s.n. (P, fide Koyama (1983)).

Smilax ocreata A. DC. (Candolle 1878: 191). Type: India, Uttar Pradesh, Kumaon, ♂♀, *Strachey & Winterbottom* 5 (lectotype K! [K000820890], selected here).

NOTES. *Smilax perfoliata* was published and based on a Loureiro specimen that he collected from Vietnam. The original protologue explains that this species has an axillary umbellate inflorescence (Loureiro 1790). *Smilax ocreata* was proposed by Candolle (1878) but this species was treated as a synonym of *S. perfoliata* by Merrill (1935), Koyama (1960, 1975 & 1983) and Rae (1994). Recently, *S. ocreata* was separated as a species in its own right by Chen & Koyama (2000) and Dassanayake (2000). On examination of type material of *S. ocreata* and specimens gathered during fieldwork, we found that the inflorescence of this species has 1 – 3 umbels that are borne on a common axis, and 1 – 2 nodes with a bract at the base of each umbel peduncle. This matches well with *S. perfoliata* and we conclude that *S. ocreata* should be regarded as conspecific with *S. perfoliata*. *Strachey & Winterbottom* 5 (K000820890) is selected as the lectotype of *S. ocreata*

because it has many male flowers and fruits and also has complete leaves and petiolar sheaths that show their variation.

11. *Smilax prolifera* Roxb. (Roxburgh 1832: 795). Type: India, *Wallich* 5124B (lectotype K, selected by Koyama (1983), emended here to K-W! [K001104859]; isolectotypes K-W! [K00110486], P! [P00686844]). *Smilax siamensis* T. Koyama (1974: 136). Type: Thailand, Kanchanaburi, Sai Yok, 11 Feb. 1959, ♂♀, *Sangkhaachand* 767 (holotype NY! [NY00320038]; isotypes BKF, K!, L).

NOTES. The original description of *Smilax prolifera* was published by Roxburgh (1832). However, this species was treated as a synonym of *S. perfoliata* by Chen & Koyama (2000) and Dassanayake (2000). On examination of type material of *S. prolifera* and specimens collected during fieldwork, we found that the inflorescence of this species has 7 – 30 umbels that are borne on a common axis and 3 – 8 nodes with 1 – 3 umbels per node subtended by only one bract. These characters define the proliferous inflorescence that was alluded to in the specific epithet *prolifera* by Roxburgh (1832). Therefore, we conclude that *S. prolifera* should be regarded as species in its own right. The lectotype of *S. prolifera* was selected by Koyama (1983), but *Wallich* 5124B has three duplicates, the sheet K001104859 at K-W is selected here as the lectotype because it has many complete male inflorescences.

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