

## Convolvulaceae in the Flora of Thailand: Addenda, Corrigenda and Emendanda, I

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### ABSTRACT

This compilation, the first of a series, presents additions, corrections, and amendments to the Convolvulaceae account for the Flora of Thailand that was published 10 years ago. Methods used include the traditional study of dried voucher specimens housed in herbarium collections, field research and collecting, and monitoring photographs of Thai Convolvulaceae shared on selected natural history applications. This initial compilation results in 13 species new to the flora, updates names for eight species, amends taxonomic concepts (and names) for four species, and augments the distribution for 16 species. One orthographic change is made to bring a binomial into conformity with the International Code of Nomenclature. We highlight significant discoveries for two rare and little-known Thai Convolvulaceae species. References are cited to document descriptions, ecology, distributions beyond Thailand, and several new taxonomic works published since 2010.

KEYWORDS: biodiversity survey, floristics, plant distribution, Southeast Asia.

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### INTRODUCTION

Ten years have elapsed since the Convolvulaceae account was published for the Flora of Thailand (Staples 2010) and a considerable number of new specimen collections have been made and examined during that time. These new collections generated a significant amount of new biodiversity information about the presence, ecology, distribution, and abundance of Thai Convolvulaceae. Since 2010, several new species were added to the Thai flora (Chitchak *et al.*, 2018; Traiperm & Staples, 2014, 2016; Staples *et al.*, 2015; Traiperm & Suddee, 2020). New systematic studies resulted in taxonomic changes (Simões & Staples, 2017), and some corrections are necessary as well. This is the first update and others are anticipated. These findings are summarized here in a concise form modelled on the updates published for the Flora of Tropical East Africa (Verdcourt, 1967, 1969, 1978). We do not provide full descriptions for

newly reported species; instead, we cite published references where detailed information will be found. Taxa are organized in alphabetical sequence. An appendix of Specimens Examined that document these new findings concludes the summary.

Recently, Muñoz-Rodríguez *et al.* (2019) published a new taxonomic arrangement that subsumes several smaller genera recognized in Flora of Thailand under a much-expanded genus *Ipomoea* L. Essentially, these authors propose a new taxonomy in which all species of Convolvulaceae with spinulose pollen grains are included in *Ipomoea*. We found that they have not made a convincing case for this sweeping taxonomic rearrangement, let alone a compelling one. Like all taxonomies this is a hypothesis to be tested. Indeed, forty-one Convolvulaceae researchers have signed on to a nomenclatural proposal that lays the foundation to make alternative taxonomies possible (Eserman *et al.*, 2020). We noted some disturbing

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discordance in the morphological rationale offered by Muñoz-Rodríguez *et al.* (2019) as well as internal disconnects in their publication between statements made and supporting documentary evidence that does not match up. In order to test their taxonomic hypothesis, we require to resolve these discrepancies in their paper and harmonize their findings with our own ongoing research. Until we are able to reconcile these matters, we see no benefit (and considerable practical disadvantage for floristic purposes) to adopting the name changes proposed by Muñoz-Rodríguez *et al.* (2019). For the time being, in this paper at least, we continue to recognize the genera *Argyreia* Lour., *Blinkworthia* Choisy, *Lepistemon* Blume, *Rivea* Choisy, and *Stictocardia* Hallier f. as distinct from *Ipomoea*.

## MATERIALS & METHODS

New information presented here derives from three discrete information streams: herbarium voucher specimens; field study of living plants; photographs of living plants shared via social media. The first two are traditionally rich streams of information for biodiversity survey and documentation; the third is becoming increasingly important in the twenty-first century as photo documentation is replacing traditional plant collecting because of its speed, ease, and efficiency.

Firstly, the authors studied herbarium specimens at institutions in Thailand and around the world; herbarium acronyms (standardized according to Thiers, 2020) cited in the nomenclatural blocks and the Appendix of Specimens Examined document the full array of herbaria consulted during the past decade. In particular, longer research visits by GS to the herbaria A, GH, HITBC, K, KUN and P provided opportunity for comparative study of large collections of Convolvulaceae from throughout the tropical Asian region. Secondly, field studies in Thailand conducted by the authors led to discovery of species unknown to science, rediscovery of rare species that had not been seen alive for decades, and many new distribution records. Finally, social media platforms for natural history enthusiasts such as iNaturalist, plant identification groups on Facebook, and other targeted sites are increasingly important sources for rapid reporting of new biodiversity discovery; we have made use of them to supplement the traditional streams of new floristic information.

Our findings are presented alphabetically under genera and then species. Taxa already present in the Flora of Thailand Convolvulaceae are listed by scientific name only. Species newly described since 2010 have a full reference to the protologue where more detailed information can be found. Species described before 2010 that are newly reported for the Thai flora have a full reference and type citation provided. The documenting specimen citations are presented in an appendix arranged alphabetically by scientific names and following the format and style used in Flora of Thailand volumes.

## RESULTS

### ANISEIA Choisy

#### *Aniseia martinicensis* (Jacq.) Choisy

Add to Thailand.— NORTHERN: Nakhon Sawan; NORTH-EASTERN: Maha Sarakham, Nakhon Phanom; PENINSULAR: Phatthalung.

### ARGYREIA Lour.

A visit to the herbaria KUN and HITBC by GS in 2012 allowed study of type material there for several Chinese species of *Argyreia*. This provided names for a number of Thai collections that had previously been unidentified or that had been included within aggregate species concepts such as *A. 'splendens'*, and *A. 'mollis'*. Several new species have been added to the Thai flora since 2010. A comprehensive nomenclatural review of all names published in *Argyreia* (Staples & Traiperm, 2017) has also clarified many problems and enabled the first accurate tabulation of accepted species worldwide. Some corrections related to the Thai flora are also warranted. Further novelties are anticipated and after all the new species have been described a revised key will be provided for the Thai *Argyreia* taxa.

***Argyreia albiflora*** Staples & Traiperm, *Phytotaxa* 204: 227. 2015.

A full description, illustrations, and summary of biological and ecological information were provided by Staples *et al.* (2015).

Thailand.— NORTHERN: Chiang Mai, Tak. Endemic.

***Argyreia ankylophlebia*** Traiperm & Staples, *Syst. Bot.* 41: 1020. 2016.

A full description, illustrations, and summary of biological and ecological information were provided by Traiperm & Staples (2016).

Thailand.— NORTHERN: Tak. Endemic.

**Argyreia cheliensis** C.Y.Wu, Rep. Yunnan Trop. Subtrop. Fl. Res. Inst. 1: 126. 1929. Type: China. Yunnan. Cheli Xian, Jing Hong, Sept. 1936, *C.W. Wang 78747* (holotype **KUN** [KUN1218334!]; isotypes **A** [00054260!], **PE** [00029543!, 00029544!] photos seen).

A full description in English is provided in Fang & Staples (1995) and in Chinese in Fang & Huang (1979).

Thailand.— NORTHERN: Chiang Mai, Chiang Rai, Mae Hong Son, Tak; also China (Yunnan), Myanmar.

Notes.— Plants with glabrous upper leaf surfaces that had been combined under '*A. mollis*' in the Thai flora (Staples & Traiperm, 2010: 355–357) proved to be two very similar species: *A. cheliensis* can be distinguished most readily from *A. monglaensis* C.Y.Wu & S.H.Huang by the sepals. In flower, the sepals are broadly elliptic or ovate in shape, no more than 5 mm long, apically rounded, and finely and densely appressed hairy outside. A very few Thai specimens are intermediate in sepal characters between *A. cheliensis* and *A. monglaensis*.

**Argyreia dokmaihom** Traiperm & Staples, Syst. Bot. 41: 1021. 2016.

A full description, illustrations, and summary of biological and ecological information were provided by Traiperm & Staples (2016).

Thailand.— SOUTH-WESTERN: Kanchanaburi. Endemic.

**Argyreia gyrobracteata** Traiperm & Chitchak, Botany 96: 231. 2018.

A full description, illustrations and summary of biological and ecological information were provided by Chitchak *et al.* (2018).

Thailand.— EASTERN: Ubon Ratchathani, Yasothon (see Notes).

Possibly in adjacent Laos as well. Recently confirmed in Vietnam (Tran *et al.*, 2020).

Notes.— In August 2020, photos were posted on Facebook showing plants from Loeng Nok Tha district, Yasothon province, that were confirmed by

NC as *A. gyrobracteata*. This photo record temporarily stands *in lieu* of a voucher specimen and serves to draw attention to another distribution point for a rather rare species in the Thai flora.

**Argyreia inaequisepala** Traiperm & Staples, Syst. Bot. 41: 1025. 2016.

A full description and summary of biological and ecological information were provided by Traiperm & Staples (2016).

Thailand.— NORTHERN: Chiang Mai, Tak. Endemic.

**Argyreia mastersii** (Prain) Raizada, Indian Forester 93: 754. 1967. Types: India. “Assam” [Nagaland], Naga hills, *Masters s.n.* (syntype **CAL** n.v., **K** [K000197304!]); [Megalaya] Garo hills, Chima, Dec. 1890, *King's collector s.n.* (syntype **CAL** n.v., **K** [K000197305!], **P** [P00584827] photo seen); Myanmar. [Chin State] Chin hills, *King s.n.* (syntype **CAL** n.v.).

A description in English was provided by Fang & Staples (1995: 319) and the species was illustrated by Fang & Huang (1979: 132, plate 28, Figs. 4–6, under the misapplied name *A. roxburghii* var. *ampla*). In Thailand, *A. mastersii* had been confused with and misidentified until now as *A. ionantha*

Thailand.— NORTHERN: Chiang Mai, Phitsanulok, Tak, Uttaradit; NORTH-EASTERN: Loei; also Nepal, NE India, China (Yunnan).

Notes.— This species is similar to *A. ionantha* (Staples & Traiperm 2010: 348), but differs consistently in the short (ca 2 cm or less), stout peduncles; the densely capitate inflorescences with crowded flowers (due to short secondary and tertiary branches); the sepals more lanceolate, apically long-tapering acuminate, reflexed in fruit; and the corolla whitish to pale purplish on the spreading limb, darker inside the tube.

**Argyreia mollis** (Burm.f.) Choisy

[Syn. *Argyreia obtecta* (Choisy) C.B. Clarke]

Thailand.— NORTHERN: Chiang Mai, Chiang Rai, Lamphun, Lampang, Tak, Phitsanulok; NORTH-EASTERN: Phetchabun, Loei, Nong Bua Lum Phu, Sakon Nakhon, Mukdahan; EASTERN: Chaiyaphum, Nakhon Ratchasima, Buri Ram, Surin, Si Sa Ket, Ubon Ratchathani; SOUTH-WESTERN: Kanchanaburi, Prachuap Khiri Khan; CENTRAL: Phra Nakhon Si Ayutthaya, Saraburi, Nakhon Nayok, Bangkok;

SOUTH-EASTERN: Chachoengsao, Prachin Buri, Chon Buri, Rayong, Chanthaburi, Trat; PENINSULAR: Chumphon, Ranong, Surat Thani, Phangnga, Krabi, Nakhon Si Thammarat, Satun, Trang, Songkhla.

Notes.— The name *A. mollis* had long been used indiscriminately in herbaria and in the botanical literature for an array of morphotypes surely representing several species. Now that the nomenclature for all published names in *Argyrea* has been clarified (Staples & Traiperm, 2017) the names in use for Thailand change as a result. The species we called *A. oblecta* in the Flora of Thailand (Staples & Traiperm, 2010: 357–359)—recognizable by a strigose adaxial leaf surface—should actually be called *A. mollis*. Plants we called “*A. mollis*” (Staples & Traiperm, 2010: 355–357)—those with a glabrous adaxial leaf surface—are here divided between *A. cheliensis* and *A. monglaensis*.

In the revised taxonomic concept adopted here, the characters useful for recognizing *A. mollis* are: adaxial side of leaves strigose, often densely so; laminae tending to be broadest at or above the middle; veins not raised on adaxial side (in dry state), e.g., the lamina surface is flat beneath the strigose hair coat; abaxial side of leaves sericeous to strigose, dull coloured and not shining silvery; sepals broadly ovate to ovate-elliptic; inner sepals with glabrous margins, these are reddish in life and dry blackish (Staples & Syahida-Emiza, 2015).

**Argyrea monglaensis** C.Y.Wu & S.H.Huang, Fl. Reip. Pop. Sinicae 64(1): 164. 1979. Type: China. Yunnan. Mengla Xian, Sang-Yong, Oct. 1974, *C.H. Yang 010835* (2 sheets **HITBC** [sheet numbers 043901!, 081536!]).

A full description and illustrations are provided by Staples (2018). There are two sheets of the type number in **HITBC**, both labelled as “Typus” and no indication which sheet is the holotype; a lectotype will have to be selected from them.

Thailand.— NORTHERN: Mae Hong Son, Chiang Mai, Nan, Tak; also China (Yunnan), Laos, Myanmar.

Notes.— *Argyrea monglaensis* corresponds in the greater part with what was called ‘*A. mollis*’ in the Flora of Thailand (Staples & Traiperm, 2010: 355–357) and is also similar to *A. laotica* Gagnep. It can be recognised by its glabrous adaxial leaf surfaces, sepals oblong-elliptic, the outer 3 longer than the

inner, 9.5–13.0 mm long, the sepal apices are obtuse and not at all undulate like those of *A. laotica*. Most of the Thai specimens examined match closely with the type gathering and other Chinese material. A few Thai specimens are intermediate between *A. monglaensis* and *A. cheliensis*.

**Argyrea monosperma** C.Y.Wu, Rep. Stud. Pl. Trop. Subtrop. Yunnan 1: 127. 1965. Type: China. Yunnan. Pingbian Miao Autonomous Xian, 27 July 1934, *H.T. Tsai 61295* (holotype **KUN** [KUN1218349!]; isotypes A [00054262!], **KUN** [KUN0315093!]).

Misapplied name: *Argyrea sikkimensis* sensu Staples & Traiperm, Fl. Thailand 10(3): 365. 2010, non (C.B. Clarke) Ooststr.

An accurate description for *A. monosperma* can be found in Flora of Cambodia, Laos and Vietnam (Staples, 2018: 62–63); the description published in Flora of Thailand is correct for the vegetative and fruiting characters, but the floral characters are taken from the literature and do not match what we now know to be correct.

Thailand.— NORTHERN: Chiang Mai, Nan; NORTH-EASTERN: Loei; also China, Laos, Myanmar, Vietnam.

Notes.— In the Flora of Thailand Convolvulaceae, we took up the name *A. sikkimensis* (C.B. Clarke) Ooststr. for fruiting collections from northern Thailand that matched well—based on leaf shape, indumentum, and sepal characters—with that Himalayan species. After the Flora of Thailand account was published, a flowering specimen from Thailand (*Maknoi 2499*) was examined and it quickly became clear that the Thai plants were different from the Himalayan ones. When compared with Chinese material called *A. monosperma*, the Thai specimens were an exact match, so we now correct the earlier misapplication of the name.

**Argyrea pierreana** Bois, Rev. Hort. (Paris) 78: 560. 1906. Type. “Haute Tonkin” [Vietnam. Lang Son Prov., Van Linh distr.], Kai Khin, par le col du Deo Benh, 11 Dec. 1902, *D. Bois 323* (holotype **P** [P00584836!]).

A full description, illustrations, and summary of ecology and biology were provided in Staples (2018).

Thailand.— NORTHERN: Chiang Rai, Nan; also in China, Laos, Myanmar, Vietnam.



Notes.— For a long time two similar taxa have been confused and misidentified in herbaria under the name *A. wallichii* Choisy. Field study in Thailand and Laos in 2012 demonstrated that the living plants are quite distinctive, even though the dried, pressed specimens look very much alike. We here rectify the confusion, adding *A. pierreana* as new for the Thai flora and revising the description for genuine *A. wallichii*. *Argyreia pierreana* is a large woody liana with short-peduncled, capitate inflorescences; the bracts are large, venose, tightly overlapping, from which pale rose flowers with a white centre emerge.

**Argyreia pseudosolanum** Traiperm & Suddee, PhytoKeys 149: 110. 2020.

A full description, illustrations, and summary of ecology and biology were provided in Traiperm & Suddee (2020).

Thailand.— NORTH-EASTERN: Bueng Kan. Endemic.

**Argyreia stenophylla** (Kerr) Staples & Traiperm, Thai For. Bull. (Bot.) 33: 42. 2005.— *Lettsomia stenophylla* Kerr, Bull. Misc. Inform. Kew 1941: 16. 1941. Type. Thailand. Chiang Mai: Mî Têng [Mae Taeng], 30 Oct. 1922, *A.F.G. Kerr 6490* (holotype **K** [K000097487!], isotypes **BK** [BK257821!], **BM** n.v.).

— *Argyreia linearifolia* C.Y.Wu, Yunnan Trop. Subtrop. Flor. Res. Rept. 1: 134. pl. 38, fig. 1. 1965. Type. China. Yunnan: Chu Hsiung, Cho-Mo-Hsan, 16 Sept. 1938, *M.K. Li 0007* (holotype **KUN** [KUN1218201!], isotypes **KUN** [KUN1218346!], **PE** [PE00029542] photo seen).

An updated description, illustration, and ecological summary are provided in Staples (2018: 73).

Thailand.— NORTHERN: Mae Hong Son (see Notes), Chiang Mai; also China (Yunnan), widely disjunct to Vietnam.

Notes.— In the Flora of Thailand account (Staples & Traiperm, 2010) we used the name *A. popahensis* (Collett & Hemsl.) Staples for a rare species in Thailand with linear-oblong leaves and showy large flowers. This concept combined all plants with the distinctive linear-oblong leaves from Myanmar, China and Thailand and reduced two later names to synonymy (Staples & Traiperm, 2008: 97). In 2012, study of types and other Chinese specimens in **KUN** and **HITBC** revealed this concept was too

far reaching. Actually, there are two species involved, both with linear-oblong leaves but distinctly different in sepal morphology. Genuine *A. popahensis* is restricted to Myanmar: it has elongate, attenuate-acuminate sepal apices, the sepals are covered outside in stiff, spreading, coarse yellowish hairs. We are resurrecting the name *A. stenophylla* for plants from Thailand, China, and Vietnam characterised by shorter sepals with an acute or obtuse apex, covered outside in appressed, whitish, hirsute hairs. All specimens examined for *A. stenophylla* are cited in the Appendix to correct our earlier determinations.

One final note is that, in November 2020, photos were posted on the social media nature app iNaturalist (2020) showing plants from Pha Bong, Mae Hong Son province, that match *A. stenophylla*. This photo record temporarily stands *in lieu* of a voucher specimen and serves to draw attention to another distribution point for a rather rare species in the Thai flora.

**Argyreia suddeana** Traiperm & Staples, Phytotaxa 164: 281. 2014.

A full description, illustrations, and summary of biological and ecological information were provided by Traiperm & Staples (2014).

Thailand.— SOUTH-WESTERN: Ratchaburi. Endemic.

**Argyreia versicolor** (Kerr) Traiperm & Staples

Thailand.— SOUTH-EASTERN: Sa Kaeo.

Notes.— In the Flora of Thailand account (Staples & Traiperm, 2010), we had no new information to add to what was known in 1924 when A.F.G. Kerr collected the type specimen. Then, in 2018, living plants were discovered in a patch of dry evergreen forest on the campus of Burapha University in Wattana Nakhon district; until 1993, this region was part of Prachin Buri province. The rediscovery is in the same district where Kerr first collected it, but by contemporary political boundaries Wattana Nakhon is now in Sa Kaeo and not in Prachin Buri, as stated in Staples & Traiperm (2010: 371).

Only two mature plants were found in 2018 and one of them succumbed due to road construction. Further survey work is urgently needed to determine the size and status of the population for *A. versicolor* because conservation measures may be needed to

protect it. This is an attractive species when flowering and plant collectors could easily be tempted to dig up plants for sale in local markets. Likewise, the death of 50% of the known population does not bode well for plants growing on a university campus with development plans underway. Field collectors are urged to look for it and better document the occurrence and natural history for this beautiful endemic species.

**Argyrea wallichii** Choisy, Mém. Soc. Phys. Genève 6: 421. [Conv. Or. 39] 1834. Type: Myanmar. [Bago Division: Prome] ‘Toang Dong’, 19 Nov. 1826, *Wallich Cat. 1413* [field ticket 780] (holotype **G-DC** [G00134962!]; isotype **K-W!**).

Thailand.— NORTHERN: Chiang Mai, Chiang Rai, Nan, Lamphun, Phrae, Tak, Kamphaeng Phet; SOUTH-WESTERN: Uthai Thani; also Myanmar.

Notes.— The description published in the Flora of Thailand (Staples & Traiperm, 2010: 371) for *A. wallichii* later proved to be a composite of two similar taxa. The following diagnosis identifies bona fide *A. wallichii* when contrasted with the similar *A. pierreana*.

Erect or prostrate herb; stem 40–60 cm long; leaves ovate, dark green, glabrous and rugose adaxially, ashy whitish hairy abaxially, 17.5–30 × 14–21.5 cm, base shallowly cordate, with 14 or 15 secondary veins either side of the midvein; the inflorescence capitate, crowded, axillary, shorter than subtending leaf; bracts ovate, ca. 1.5–2.5 cm long, hairy like leaves, bracteoles diminishing in size; calyx unequal, outer 2 sepals larger, oblong-lanceolate, 1.9–1.95 cm long, 0.45–0.6 cm wide, apex tapering-acuminate, densely long hairy abaxially; corolla tubular-funnel-form, pure white throughout, ca. 3 cm long, limb shallowly lobed, midpetaline bands appressed hairy outside; stamens and pistil included, white; fruits globose, tightly enclosed in accrescent, pinkish, calyx and bracts.

A colour photo of a living plant of genuine *A. wallichii* is available in Staples *et al.* (2015: 226, Fig. 3D).

**BONAMIA** Thouars

**Bonamia semidigyna** (Roxb.) Hallier f.

Add to Thailand.— SOUTH-EASTERN: Rayong; PENINSULAR: Phangnga.

**CORDISEPALUM** Verdc.

**Cordisepalum phalanthopetalum** Staples

In 2015, photos of a living plant from Kanchanaburi were sent to GS for identification; the photos showed flowers and leaves of this rare, endemic species from the vicinity of the Mahidol University campus, Sai Yok district. A voucher specimen was collected (T. Phutthai pers. comm. Aug. 2015) but was not yet available to the authors for the present compilation. Previously, *C. phalanthopetalum* was known only from the type gathering, so the species is highlighted here to draw attention to its rarity and the need for collecting further voucher specimens, including the fruits, which have not yet been described.

**ERYCIBE** Roxb.

**Erycibe stapfiana** Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 63: 87. 1894.

A full description, illustrations, ecology and conservation assessment were provided by Koichaiphath *et al.* (2020).

Thailand.— SOUTH-WESTERN: Prachuap Khiri Khan; PENINSULAR: Narathiwat, Surat Thani.

Distribution.— Peninsular Malaysia.

**IPOMOEAL**

**Ipomoea cambodiensis** Gagnep. & Courchet, Notul. Syst. (Paris) 3: 143 (1915).

A full description, illustrations, and summary of biological and ecological information were provided by Staples *et al.* (2014).

Thailand.— NORTH-EASTERN: Udon Thani.

Distribution.— Cambodia, Laos, Malaysia (Sabah), Vietnam. The distribution in Indochina was further elucidated by Staples (2018). The disjunction from continental South-East Asia to Sabah on the island of Borneo is remarkable.

**LEPISTEMON** Blume

One orthographic correction is necessary. According to Art. 62.2.(a) of the ICN (Turland *et al.*, 2018) generic names ending in *-stemon* are masculine (R. Govaerts pers. comm. 2016), and specific epithets combined with them must agree in gender. For this reason:

**Lepistemon binectarifer** (Wall.) Kuntze (masculine) should replace *Lepistemon binectariferum* (neuter).

Add to Thailand.— SOUTH-WESTERN: Prachuap Khiri Khan.

MERREMIA Dennst. ex Endl.

In 2017, the tribe Merremieae was formally dissolved and the genus *Merremia* was divided into several smaller genera, each based on a monophyletic clade teased out of the highly polymorphic grade *Merremia s.l.* (Simões & Staples, 2017). Morphological diagnoses for the newly elevated and expanded genera *Camonea* Raf., *Decalobanthus* Ooststr., and *Distimake* Raf., as well as a key for identification of all genera formerly classified in tribe Merremieae, are provided in Simões & Staples (2017). This taxonomic reorganization results in several name changes for the Thai flora and we take the opportunity to list selected new distribution records while reporting the new names here. The key to species of *Merremia* in Flora of Thailand (Staples, 2010: 432–433) requires no update at this time; a revised key to all genera will be provided in a later update.

The species remaining in a much-narrowed *Merremia s.s.* are *M. emarginata* (Burm.f.) Hallier f., *M. gemella* (Burm.f.) Hallier f., *M. hederacea* (Burm.f.) Hallier f., *M. hirta* (L.) Merr., *M. poranoides* (C.B. Clarke) Hallier f., *M. subsessilis* (Courchet & Gagnep.) Nguyen Thi Nanh, *M. thorelii* (Gagnep.) Staples, and *M. verruculosa* S. Y. Liu. The taxonomic status for *M. vitifolia* (Burm.f.) Hallier f. is ambiguous: although it was given a new name in *Camonea* (Simões & Staples, 2017), it was later realized that this placement contradicts the molecular analysis by Stefanović *et al.* (2002), which placed *M. vitifolia* with the clade eventually named *Distimake* (Simões *et al.*, 2015). A recent molecular phylogenetic study of the Indian species formerly assigned to tribe Merremieae (Tamboli *et al.*, 2021) corroborated the findings of Stefanović *et al.* (2002) but Tamboli *et al.* (2021) equivocated about the correct placement for *M. vitifolia* and made no taxonomic changes. Further molecular sampling and analysis are needed to clarify the best placement for this species.

A follow-up study is ongoing for the SE Asian taxa taken out of tribe Merremieae (Pisuttimarn, pers. comm. 2018) and when this is completed

further taxonomic changes are anticipated. A few specimens we examined appear to represent undescribed species; these are set aside for a later update, after the conclusion of this PhD research can resolve their status. In the interim the following name changes and distribution updates are necessary to bring the Flora of Thailand up to date.

*Merremia bambusetorum* Kerr ≡ **Camonea bambusetorum** (Kerr) A.R.Simões & Staples

*Merremia cissooides* (Lam.) Hallier f. ≡ **Distimake cissooides** (Lam.) A.R.Simões & Staples

Note.— Although few collections exist in herbaria, field trips in 2009 and 2010 demonstrated that *D. cissooides* is now widespread and abundant in Central, South-Eastern, and Eastern Thailand, where it forms vine blankets in thickets along road verges and invades agricultural fields.

*Merremia kingii* (Prain) Kerr ≡ **Camonea kingii** (Prain) A.R.Simões & Staples

*Merremia mammosa* (Lour.) Hallier f. ≡ **Decalobanthus mammosus** (Lour.) A.R.Simões & Staples

Add to Thailand.— NORTHERN: Tak; EASTERN: Nakhon Ratchasima.

*Merremia peltata* (L.) Merr. ≡ **Decalobanthus peltatus** (L.) A.R.Simões & Staples

Add to Thailand.— PENINSULAR: Phangnga.

*Merremia quinata* (R.Br.) Ooststr. ≡ **Distimake quinatus** (R.Br.) A.R.Simões & Staples

**Merremia subsessilis** (Courchet & Gagnep.) Nguyen Thi Nhan

Add to Thailand.— NORTHERN: Uttaradit; NORTH-EASTERN: Nong Khai.

**Merremia thorelii** (Gagnep.) Staples

Add to Thailand.— NORTHERN: Phitsanulok; NORTH-EASTERN: Sakhon Nakhon.

*Merremia umbellata* (L.) Hallier f. subsp. *orientalis* (Hallier f.) Ooststr. = **Camonea pilosa** (Houttuyn) A.R.Simões & Staples

OPERCULINA Silva Manso

The genus *Operculina* has been monographed on a global basis (Staples *et al.*, 2020) and this added some distribution data for all three species present in Thailand.

**Operculina petaloidea** (Choisy) Ooststr.

Add to Thailand.—NORTHERN: Tak, Uttaradit.

Distribution.—Still not documented from Laos but surely present there, given the species presence in the surrounding countries of Thailand, Cambodia, and Vietnam.

**Operculina riedeliana** (Oliv.) Ooststr.

Add to Thailand.—PENINSULAR: Phatthalung, Surat Thani.

Add to Distribution.—Australia (Queensland), Brunei, China (Yunnan).

**Operculina turpethum** (L.) Silva Manso

Add to Thailand.—PENINSULAR: Phatthalung, Surat Thani.

Add to Distribution: Bhutan, Singapore, Solomon Islands, U.S.A. (Hawaii), Vanuatu.

**PORANOPSIS** Roberty**Poranopsis discifera** (C.K.Schneid.) Staples

Add to Thailand.—NORTHERN: Mae Hong Son.

Add to Distribution.—Laos.

**STICTOCARDIA** Hallier f.**Stictocardia tiliifolia** (Desr.) Hallier f.

Add to Thailand.—CENTRAL: Bangkok; SOUTH-EASTERN: Chon Buri; SOUTH-WESTERN: Prachuap Khiri Khan.

**TRIDYNAMIA** Gagnep.**Tridynamia bialata** (Kerr) Staples

Add to Thailand.—SOUTH-WESTERN: Kanchanaburi.

**Tridynamia megalantha** (Merr.) Staples

Add to Thailand.—SOUTH-WESTERN: Phetchaburi, Prachuap Khiri Khan.

**Tridynamia spectabilis** (Kurz) Parmar

Add to Distribution.—Laos (Staples, 2018: 372).

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### Appendix: Specimens Examined that document new records

In the case of new species described since 2010, we do not repeat here the specimens cited in the place of first publication; readers are referred to the references cited in the text entry for lists of specimens examined up to that time. Only more recent Thai collections that are not previously cited are included here.

#### *Aniseia martinicensis* (Jacq.) Choisy

NORTHERN: Nakhon Sawan [Bung Boraphet, near swamp, 14 Dec. 1999, *Sasirat 113* (QBG)]; NORTH-EASTERN: Nakhon Phanom [Tha Uthen, Chai Buri, roadside, 28 July 2008, *Pooma et al. 7256* (BKF)]; Maha Sarakham [Paa Bung Sheloum, Kosum Pisa, 7 Jan. 1997, *BGO staff s.n.* (QBG)]; PENINSULAR: Phatthalung [Khuan Khanum Distr., bridge separating Lake Songkhla and Thale Noi (at Phatthalung end), 23 Oct. 2012, *Staples et al. 1485* (BKF, PSU, SING)].

#### *Argyreia cheliensis* C.Y.Wu

NORTHERN: Mae Hong Son [outskirts of Sop Moei village, along Hwy 105 just before Sop Moei Wittaya Kom School, 10 Jan. 2010, *Staples et al. 1366* (BKF, QBG, SING)]; along Hwy 108 before Pha Bong viewpoint, 27 Aug. 2017, *Chitchak et al. 18* (BKF); "Phayap" (now Mae Hong Son) 9 km N of Mae La Noi, 27 Dec. 1965, *Hennipman 3500* (L, P); Chiang Mai [Doi Inthanon, Phamon [=Pha Mawn], 29 Nov. 1996, *BGO staff 7944* (QBG)]; Ban Pha Mon, 2 Oct. 1971, *Vidal 5280B* (AAU, BKF, P); Doi Inthanon National Park, about Km 20.5 along Rte 1009, road to the summit, just across from Wachirathan Waterfall, 15 Dec. 1985, *Staples 415* (A, AAU, BKF, C, L, P); Doi Inthanon National Park, from 1,279 m peak E to Doi Song Mia ridge, 28 Dec. 1997, *Hara & Kanzaki B-417* (BKF); Maerim, Queen Sirikit Botanic Garden, Huai Wai, 22 Oct. 1997, *Nanakorn et al./BGO staff 9756* (QBG); Queen Sirikit Botanic Garden, upper part of Doi Mon Khom Long escarpment, 28 Sept. 2005, *Tillich 5046* (BKF); Mon Long, 18 Sept. 1995, *BGO staff 4585* (QBG); summit area of Doi Mon Kommlong, 6 Jan.

2010, *Staples & Suksathan 1359* (QBG), 1362 (QBG); Maerim, Pong Yaeng, Banphanokkok, 7 Dec. 2007, *Jatuphol 07-124* (HITBC, QBG); Chom Thong, 9 Dec. 2000, *Saemyarm 138* (QBG); San Pan Sri, 13 Oct. 1998, *Pongamornkul 351* (QBG); en route from Mae Klang watershed to Sop Aep, 1 Oct. 1971, *Murata et al. T-15411* (BKF)]; Chiang Rai [Chang Kian, Mueang, 28 Oct. 1994, *Nanakorn et al./BGO staff 2422* (QBG), same loc. and date, *Nanakorn et al./BGO staff 2428* (QBG)]; Tak [Mae Sot, 5 Oct. 2019, *Kochaiphath & Rujisansakul 356* (BKF)]; Tha Songyang, along Hwy 105 near The-Mo-Bo waterfalls, 22 Nov. 2005, *Pooma et al. 5802* (BKF, SING); Tha Songyang, ca 1 km to Mae Moi National Park, 6 Nov. 2012, *Pooma et al. 7571* (BKF); in the Mae Ta Wo Ranger Unit areas: Tha Songyang to Mae Ta Wo, 6 Nov. 2012, *Pooma et al. 7565* (BKF)].

#### *Argyreia dokmaihom* Traiperm & Staples

SOUTH-WESTERN: Kanchanaburi [Thong Pha Phum, along the side of the road to Chokkradin waterfall, 5 July 2018, *Rattanakrajang et al. 136* (BKF)].

#### *Argyreia mastersii* (Prain) Raizada

NORTHERN: Chiang Mai [Mae Rim, in Highland Research Station of Queen Sirikit Botanic Garden, 27 Oct. 2010, *Bongcheewin et al. 914* (BKF, K, SING)]; Uttaradit [Nam Pat, 11 Oct. 2018, *Chitchak & Arthan 30* (BKF)]; Tak [Mae-Ramad – Ban Tak border, on Ban Tak side, checkpoint to Doi Soui Malai, 7 Nov. 2010, *Pooma et al. 7615* (BKF)]; Phitsanulok [Ban Rong Klao garden, located off Hwy 1268, along dirt track through undeveloped area of garden, 17 Jan. 2010, *Staples et al. 1395* (BKF, QBG, SING)]; uphill behind garden in disturbed forest, 29 Oct. 2010, *Staples et al. 1452* (BKF, QBG, SING)]; NORTH-EASTERN: Loei [Na Haew, Phu Suan Sai National Park, route from HQ to TK1 the Hua Hom, 2 Sept. 2008, *Maknoi 2769* (QBG)]; route to Sam Nuk Bap, 3 Sept. 2008, *Maknoi 2811* (BKF, QBG)].

**Argyreia mollis** (Burm.f.) Choisy [Syn. *A. obtecta* (Choisy) C.B. Clarke]

NORTHERN: Chiang Mai [Doi Chiang Dao, 18 Nov. 1945, *Khantchai* 309 (BKF), 3 Dec. 1955, *Ploenchit* 928 (BKF), Feb. 1958, *Bunchuai* 728 (BKF), 9 Dec. 1961, *Bunchuai* 59 (BKF), 11 Nov. 1962, *Bunchuai* 1196 (BKF), Chiang Dao, Mae Sarieng, 16 Dec. 1986, *Chermsirivathana* 3359 (BKF); Doi Inthanon, Mae Jam, 21 Oct. 1988, *Na Songkhla* 572 (BCU), Doi Inthanon National Park, Chomthong Distr., Wachirathan Falls, 19 Oct. 1999, *Wongprasert s.n.* (BKF), Doi Inthanon National Park, along main access road from the Wachirathan Water Falls to the Park checkpoint, 16 Dec. 1998, *Konta et al.* 4578 (BKF); Saithong waterfall, Nov. 1986, *Phengkklai & Smitinand* 6059 (AAU); Doi Luang National Park, 20 Nov. 1997, *Petrmitr* 156 (BKF); Mae Rim, Maesa Botanical Garden, 18 Feb. 1986, *Pooma* 3 (BKF); Mae Rim, Queen Sirikit Bot. Garden in sampling plot forest, 23 Nov. 1997, *Boonchai* 23 (BCU, BKF, QBG), QSBG, upper part of Doi Mon Khom Long escarpment, 28 Sept. 2005, *Tillich* 5046 (MSB); Mae Sa Valley, along road from Pong Yaeng to Pong Khrai, 3 Mar. 1974, *Jackson* 6194 (BKF), Mae Sa, Pong kraai, 17 Sept. 1976, *Boulanger* 1050 (BR); Mueang Distr., Doi Sutep, 19 Sept. 1958, *Sorensen et al.* 5132 (BKF); Doi Sutep, 10 Feb. 1926, *Collins* 1217 (BK), 10 Sept. 1948, *Soradet* 194 (BKF), 17 Sept. 1948, *Soradet* 220 (BKF), 11 Nov. 1948, *Soradet* 297 (BKF), Feb. 1997, *Chayamarit & Phatacharoen* 709 (BKF); Doi Sutep, Ban Huay Chang Khian, 19 Oct. 1978, *Bjornland & Schumacher* 400 (BKF); Doi Sutep, near Maeo village, 19 Sept. 1967, *Tagawa et al.* T-10497 (BKF), same locality, T-10501 (BKF); Doi Sutep, E side, below Doi Sutep Temple, 14 Oct. 1987, *Maxwell* 87-1185 (BKF); Phrao Distr., along Hwy 1150 in pass between Wiang Papao and Phrao, 12 Dec. 1998, *Konta et al.* 4458 (BKF); Chiang Rai [Doi Luang National Park, W side, summit ridge of Doi Maek, 26 Oct. 1997, *Maxwell* 97-1209 (BKF); Khunkorn Waterfall Forest Park, 4 Nov. 1999, *Kansuntisukmongkol* 1565 (BCU); Kuhn Jae (Chae) National Park, Wiengbahbao Distr., above park HQ, 6 Dec. 1997, *Maxwell* 97-1485 (BKF); Lamphun [Doi Kuhn Dahn Natl. Park, trail from Yaw 2 to Yaw 3, 25 Oct. 1993, *Maxwell* 93-1312 (BKF)]; Lampang [Jae Sawn National Park, along the dirt road to Bah Miang village, 25 Sept. 1995, *Maxwell* 95-704 (BKF); Mae Long, 22 Nov. 1924, *Winit* 810 (BKF); Mè Saloi,

30 Oct. 1925, *Winit* 1499 (BKF)]; Tak [Umphang, road to Ban Pa-la-tha, 7 Nov. 1998, *Puudjaa* 510 (BKF); Phitsanulok [Ban Pan, 26 Dec. 1966, *Prayad* 634 (BK)]; NORTH-EASTERN: Phetchabun [Nam Nao National Park, 5 Dec. 1985, *Staples & Wongprasert* 404 (BKF); Nam Nao National Park, trail to Suan Son Ban Pak, 16 Jan. 2010, *Staples et al.* 1391 (A, L, P, QBG, SING)]; “Khon Kaen” actually Loei [Pha Nok Khao, 9 Sept. 1963, *Smitinand & Sleumer* 1134 (BKF, SING)]; Nong Bua Lam Phu [Ledor (sp?), 17 Nov. 1963, *Pradit* 662 (BK)]; Mukdahan [Mueang Distr., along Rte 212, Dongman village, 12 Dec. 1982, *Koyama et al.* T-30868 (BKF)]; Sakon Nakhon [Phu Phan National Park, ca 30 km SW of Sakon Nakhon city, 13 Nov. 1984, *Murata et al.* T-51943 (BKF)]; EASTERN: Chaiyaphum [Pa-Hin-Ngam Forest Park, 3 Sept. 1993, *Suddee* 150 (BCU); Phu Khieo Wildlife Sanctuary, 9 Oct. 1998, *Wilkin et al.* T-957 (BKF); Thung Kra Mang, 9 Aug. 1972, *Larsen et al.* 31593 (B, K)]; Nakhon Ratchasima [Chan Tuek, 1 Sept. 1924, *Kerr* 9097 (BK, E, K)]; Khao Yai National Park, Khao Kieo, 18 Oct. 1969, *van Beusekom & Charoenpol* 1698 (AAU, BKF, C, E, K, P); Khao Yai National Park, along road to Haew Suwat Waterfall, 15 Oct. 1985, *Staples & Wongprasert* 143 (BKF); Khao Yai National Park, 17 Dec. 1962, *Phengkklai* 552 (BKF, C); Lat Bua Kao, 9 Nov. 1931, *Put* 4372 (B, BK, E, K)]; Buri Ram [without locality, 18 Nov. 1976, *Phengkklai et al.* 3276 (BKF)]; Si Sa Ket [Kan Tara Rom Distr., 4 Mar. 1959, *Ploenchit* 1528 (BKF)]; Surin [along Hwy 24, ca Km 183.5, 28 Nov. 1985, *Staples & Wongprasert* 349 (BKF, K, P); Thatum Distr., outskirts of Thatum town, 27 Nov. 1985, *Staples & Wongprasert* 338 (BKF)]; Ubon Ratchathani [Ban Soksang, Na Chaluay 16 Sept. 2004, *Pooma et al.* 4763 (BKF); Nam Yuen Distr., road to Emerald Triangle, 23 Nov. 2005, *Suddee et al.* 2583 (QBG); Phu Chong Nayoi National Park, Na Chaluay, near park HQ, 20 Oct. 2009, *Middleton et al.* 5199 (E, SING)]; along Hwy 212, ca Km 23.1, 30 Nov. 1985, *Staples & Wongprasert* 366 (BKF)]; SOUTH-WESTERN: Kanchanaburi [Sai Yok Distr., Phu Mai Deang, 1.5 km N of Wat Sataban Anapanasati, 7 Dec. 2012, *van de Bult* 1299 (BKF)]; Prachuap Khiri Khan [Bangtapan, 25 Dec. 1927, *Put* 1370 (BM); Kao Yai, Kuiburi, 20 Nov. 1964, *Adisai* 966 (BK)]; CENTRAL: Ayutthaya [near Phra Nakhon Si Ayutthaya, 16 Oct. 1984, *Murata et al.* T-52544 (BKF)]; Saraburi [Hin Lap, 19 Aug. 1929, *Put* 2412 (B, BK, E, SING), 2413 (E)]; Mueang Distr., Sahn



Lahn forest, top of Kow Kieo, 17 Jan. 1974, *Maxwell 74-22 (BK)*, 20 Oct. 1974, *Maxwell 74-949 (BK)*; Nakhon Nayok [Khao Yai National Park, 26 Sept. 1994, *Boyce 1043 (K)*, 9 Oct. 1979, *Shimizu et al. T-19696 (AAU, C, P)*, near Kong Kaeo waterfall, below park HQ, 15 Oct. 1985, *Staples & Wongprasert 147 (BKF)*, Nahng Rawng Falls, Mueang Distr., 16 Sept. 1972, *Maxwell 72-378 (BK)*, training centre area, 21 Jan. 2002, *Maxwell 02-14 (BKF)*, ca Km 2.6 along Rte 3077, new road to Prachinburi, 17 Oct. 1985, *Staples & Wongprasert 167 (BKF)*, ca Km 22 along Rte 3077, 18 Oct. 1985, *Staples & Wongprasert 174 (BKF)*, ca Km 11 along road to summit of Khao Khieo, just below radar tower, 16 Oct. 1985, *Staples & Wongprasert 150 (BKF)*; Bangkok [Krung Thep Maha Nakhon, Sam Roi Yawt, 30 Nov. 1929, *Put 2478 (BK, E, P)*]; SOUTH-EASTERN: Prachin Buri [Huay Kasian, 14 Nov. 1964, *Sakol 116 (BK)*; Krabinburi Distr., Ban Kang, 10 Nov. 1930, *Marcan 2582 (BM, K)*, *Kerr 19825 (BK, K)*; Mueang Prachinburi, Khao Shepid, 29 Nov. 2010, *Norsaengsri 7341 (QBG)*; Training Center of Khao Yai Mountains, ca 80 km SSW of Nakhon Ratchasima, 2 Oct. 1984, *Murata et al. T-37140 (AAU, BKF)*]; Chachoengsao [Khao Ang Rua Nai Wildlife Sanctuary, 5 Nov. 1993, *Larsen et al. 4421 (AAU)*]; Chon Buri [Sattahip Distr., Toong Brong, Feb. 1972, *Maxwell 72-44 (BK)*; Sriracha Distr., 26 Sept. 1923, *Collins 989 (BK, K)*; Khao Khieo, 12 Oct. 1969, *Uasum 620 (BK)*; Khao Khieo, 28 Dec. 1975, *Maxwell 75-1140 (BK)*; Pong Namrawn, Map Khla, 3 Oct. 1956, *Smitinand 3524 (L)*; near Sriracha, 1916, *Collins 463 (P)*, 29 Oct. 1927, *Collins 2037 (BK, SING)*]; Chanthaburi [Makam, 26 Nov. 1930, *Lakshnakara 550 (BK, K)*]; Rayong [Ban Phe, ca 1 km along Rte 3145 from jct. with Rte 3, 5 Nov. 1985, *Staples & Promdej 248 (BKF)*]; Trat [Koh Chang island, 7 Nov. 1985, *Staples & Promdej 262 (BKF)*, 263 (A, BKF); ca Km 15.5 along Rte 3156, 7 Nov. 1985, *Staples & Promdej 266 (BKF)*]; PENINSULAR: Chumphon [no locality, 21 Oct. 1987, *Khunwasi 22 (BCU)*]; Sawee Distr., Khao Thalu, 5 Dec. 1999, *Wongprasert 9912-10 (BKF)*]; Ranong [Hot Springs park, no date, *Mat s.n. (SING)*]; Kraburi Distr., Klong Paksawa, 5 Dec. 1999, *Wongprasert 9912-3 (BKF)*; without locality, 17 Oct. 1982, *Ubolchalakert 303 (AAU)*]; Phangnga [Phangnga Bay, in mangrove area, 3 Sept. 1984, *Fukuoka T-35835 (BKF)*]; Similun National Park, 26 Nov. 1992, *Niyomdham & Puudjaa 3324 (BKF)*; Thai Mueang beach, 3 Apr. 2008, *Maknoi 2421 (QBG)*]; Krabi [Khlonthom Distr., ca Km 76 along

Rte 4, between Trang and Krabi, 25 Oct. 1985, *Staples & Ueachirakan 196 (BKF)*]; Nakhon Si Thammarat [La Tang Si, 22 Jan. 1916, *Annandale 1694 (SING)*]; Satun [Tarutao National Park, Adang Island, beach near park HQ, 23 Oct. 1979, *Congdon 93 (A, AAU, PSU)*]; Trang [Yantakhao Distr., Thungkhai Forest Reserve, 24 Oct. 1985, *Staples & Ueachirakan 179 (BKF, P)*; Thung Khai Botanical Garden, 15 Dec. 1995, *Mauric 20 (BKF)*]; Songkhla [Had Yai Distr., Dton Nga Chong Reserve, 29 Nov. 1984, *Maxwell 84-508 (BKF, PSU)*]; Khao Kho Hong, behind Prince of Songkhla University campus, 19 Dec. 1978, *Hamilton & Congdon 89 (AAU, BKF, PSU)*; Mueang Distr., Suan Dtoon Falls, 19 Feb. 1985, *Sirirugsa 994 (BKF, E, PSU)*, 16 Nov. 1984, *Maxwell 84-427 (PSU)*, Suan Toon waterfall at Khao Gaeo, ca 10 km S of Songkhla, on highway from Songkhla to Chana, 1 Nov. 1993, *Larsen et al. 44187 (AAU, BKF, L)*; Rattaphum, 21 Dec. 1965, *Umphai 285 (BK)*; Sadao Distr., Padang Besar, 23 Dec. 1927, *Kerr 13565 (B, BK, K, SING)*]; Surat Thani [Ban Bang Bao, 8 Aug. 1985, *Smitinand 2889 (BKF)*]; Ko Samui, 20 Nov. 1927, *Put 1324 (BK, P)*; Tha Chana, Ban Khanthuli, 26 Dec. 2006, *Pooma et al. 6659 (A, BKF)*; without locality, 5 Jan. 1927, *Kerr 12877 (K)*].

#### *Argyrea monglaensis* C.Y.Wu & S.H.Huang

NORTHERN: Mae Hong Son [between Mae La Noi and Khun Yuam Dists., along Hwy 108 near marker 137, 10 Jan. 2010, *Staples et al. 1370 (A, BKF, L, P, QBG, SING)*]; Chiang Mai [Chaiprakarn Distr., along road from Ban Arunothai to Doi Angkang, 24 Oct. 2010, *Bongcheewin & Suddee 894 (BKF, K, SING)*, 905 (BKF); Doi Chiang Dao, 25 Sept. 1971, *Murata et al. T-14909 (BKF)*]; W flank of Doi Inthanon, Mae Pau, 5 Dec. 1969, *van Beusekom & Phengklai 2308 (AAU, BKF, E, L, P)*; Doi Sagot Distr., Bah Miang Subdistr., above Ban Bahng Pan, 13 Nov. 1992, *Maxwell 92-713 (P)*; Jawm Tong Distr., Mae Soi Subdistr., West of Ban Bah Gluey (a Meo village), 28 Sept. 1992, *Maxwell 92-582 (P)*; Maerim Distr., Mon Long, 18 Sept. 1995, *BGO staff 4585 (QBG)*; Maerim, Queen Sirikit Botanical Garden sampling plot in deciduous forest, 23 Nov. 1997, *Boonchai 23 (QBG)*, QSBG, Huai Mae Mae, 27 Oct. 1998, *Nanakorn et al. 12511 (QBG, SING)*; "Phayap" [now Chiang Mai], Doi Phra Kao, Me Hawngka drainage, 1 Sept. 1931, *Garrett 713 (B, BKF, E, K, L, P)*; Doi Suthep Pui National Park, summit area of Doi Mon Kommlong, 6 Jan. 2010, *Staples & Suksathan 1359 (QBG)*]; Nan [Doi Phu



Kha National Park, Chalerm Pra Kiat, Wiang Peian Waterfall, 15 Nov. 2001, *Srisanga 2277* (**BKF, KEP, QBG, SING**); Tak [Mae Sot, near Phrawo Spirit House, 5 Nov. 2012, *Pooma et al. 7519* (**BKF**)].

Intermediate specimen between *A. cheliensis* and *A. monglaensis*:

NORTHERN: Chiang Rai [Khun Chae National Park, 21 Nov. 1997, *Udompean 50* (**BKF**)].

**Argyreia monosperma** C.Y.Wu

[Misapplied: *Argyreia sikkimensis* sensu Staples & Traiperm (2010: 365)].

NORTHERN: Chiang Mai [Doi Chiang Dao Wildlife Sanctuary, trail to Doi Luang, Khun Haui Makok ranger station, 29 Oct. 2009, *Chamchumroon & Suphuntee VC-1918* (**BKF**); 12 km N of Doi Chiang Dao, Pong Pho, 30 July 1968, *Larsen et al. 2835* (**AAU**)]; Nan [Doi Phu Kha, along Hwy 1256 between Km markers 32 and 33, 15 Jan. 2010, *Staples et al. 1385* (**QBG, SING**), scenic viewpoint between Km 33 and 34, highest point on Hwy 1256, 15 Jan. 2010, *Staples et al. 1385a* (**BKF, QBG, SING**); Doi Phu Kha, ca 70 km NE of Nan, 13 Dec. 1990, *Larsen et al. 41956* (**AAU, BKF, PSU**); Amphoe Pua, [Doi] Phu Kha National Park, 21 Nov. 1993, *Larsen et al. 44681* (**AAU**); Doi Phukha National Park, road to Ban Bo Kluea, 26 June 2008, *Pooma & Tamura 7098* (**BKF**)]; NORTH-EASTERN: Loei [Na Haew Distr., Phu Suan Sai National Park, 9 July 2008, *Maknoi 2499* (**BKF, QBG**)].

**Argyreia pierreana** Bois

NORTHERN: Chiang Rai [Mae Fah Luang Distr., Doi Tung Development Project offices along road to Ton Nam accommodation area at Phrathamnak, 11 Sept. 2010, *van de Bult 1061* (**BKF**); Phu Chifa, 24 July 2000, *unknown SC-470* (**BKF**); Mae Sai, Tham Luang-Khun Nam Nang Norn Forest Park, 4 Nov. 2011, *Norsaengsri & Tathana 8265* (**BKF, QBG**); Mae Sai, Doi Dung [Tung], summit ridge of Doi Chang Moop, 29 Sept. 2006, *Maxwell 06-691* (**L, QBG**); without locality, 4 Nov. 1995, *Nanakorn et al. 5217* (**QBG**); Nan [Doi Phu Kha National Park, Doi Phu Wae, Chalerm Pra Kiat, 5 Sept. 2001, *Srisanga 2161* (**QBG, SING**); same locality, 12 Dec. 2002, *Srisanga 2672* (**QBG**); Doi Phu Wae, 4 July 1999, *Srisanga et al. 875* (**QBG, SING**); Doi Phu Kha National Park, Bo Kluea, near entrance to park, 15 Aug. 2012, *Middleton et al. 5611* (**BKF, E**)].

Comprehensive lists of specimens from Lao

PDR and Vietnam are cited in Staples (2018: 72).

**Argyreia stenophylla** (Kerr) Staples & Traiperm

Thailand.—NORTHERN: Chiang Mai [Wiang Haeng Distr., Mae Hat falls, 27 Sept. 1999, *Indhamusika 71* (**QBG**); Chiang Dao, Ban Thung Kha Puang, 19 Nov. 2010, *Pongamornkul 2844* (**QBG**); Mae Taeng, 30 Oct. 1922, *Kerr 6490* (**BK, BM, K**)].

China.—Yunnan [Chu Hsiung Hsien, Cho-Mo-Hsan, 16 Sept. 1938, *Li 0007* (**KUN, PE**); Jingdong Xian, Taizhong Gayang hamlet, 3 Sept. 1981, *Li 331* (**HITBC**)].

Vietnam.—see Staples (2018: 73) for voucher specimen citations.

**Argyreia versicolor** (Kerr) Traiperm & Staples

SOUTH-EASTERN: Sa Kaeo [Wattana Nakhon Distr., Burapha University, Sa Kaeo Campus, 15 Sept. 2018, *Traiperm 630* (**BKF**); same locality & date, *Traiperm 631* (**BKF**)].

**Argyreia wallichii** Choisy

NORTHERN: Chiang Mai [Doi Suthep, 17 Oct. 1910, *Kerr 1481* (**K, P**); same locality, 28 Nov. 1911, *Kerr 1481B* (**K, P**); Nam Tok Mae Krang, 20 Nov. 1965, *Sangkhachand 79* (**BK**); Samông [Sameung], 19 Oct. 1922, *Kerr 6389* (**BK, K, P**); Chiang Rai [Doi Tung, 25 Sept. 1967, *Iwatsuki et al. T-11049* (**BKF, L**); Nan [Tham Pa Tok, 10 km N of Nan, 16 Nov. 1993, *Larsen et al. 44421* (**AAU**); Phrae [Ban Nam Klai, ca 20 km E of Phrae, 15 Nov. 1993, *Larsen et al. 44367* (**AAU**); Tak [Mae Sot Distr., Wat Tham Manorah, 11 Sept. 2009, *Middleton & Triboun 4852* (**BK, BKF, E**); Manoora cave, 7 Nov. 2012, *Staples et al. 1529* (**SING**); Kamphaeng Phet [Khao Son, Ban Nam Tok, 24 Nov. 1977, *Phengklai et al. 3896* (**BKF**); Lamphun [Mae Kow, moist forest, 9 Sept. 1924, *Winit 1230* (**BKF, K**)]; SOUTH-WESTERN: Uthai Thani [Khao Hin Deang, Ban Rai, 24 Oct. 1974, *Suktheesorn & Sangkhachand 3099* (**BK**)].

**Bonamia semidigyna** (Roxb.) Hallier f.

SOUTH-EASTERN: Rayong [about 3 Km along Rte 3145, on roadside near coast, 6 Nov. 1985, *Staples & Promdej 257* (**AAU, BKF**)]; PENINSULAR: Phangnga [Kopah-Jayan to old Kopah, 8 Dec. 1917, *Mohd. Haniff & Mohd. Nur SF-2075* (**SING**)].

**Decalobanthus mammosus** (Lour.) A.R. Simões & Staples [syn. *Merremia mammosa*]

NORTHERN: Tak [Tha Song Yang, ca 1 km to Mae

Moi National Park, 6 Nov. 2011, *Pooma et al.* 7570 (**BKF**); EASTERN: Nakhon Ratchasima [Bua Yai, Ban Chaeng Yai, 17 Oct. 2008, *Norsaengsri* 4277 (**QBG, SING**)].

**Decalobanthus peltatus** (L.) A.R. Simões & Staples [syn. *Merremia peltata*]

PENINSULAR: Phangnga [Kapong, Takuapa, 17 Feb. 1929, *Kerr* 17112 (**K, TCD**); Kopah—Jau Jau, 8 Dec. 1917, *Mohd. Haniff & Mohd. Nur SF-2052* (**SING**)].

**Erycibe stapfiana** Prain

SOUTH-WESTERN: Prachuap Khiri Khan [Hua Hin, Kaeng Krachan National Park, on the way to Phraek Ta Khraw waterfall, 19 Jan. 2004, *Middleton et al.* 2245 (**BISH, BKF, E, K, KEP**)]; PENINSULAR: Surat Thani [Phanom Distr., Khlong Cha-un, Klong Bang Sai Nuan Dam, 19 Feb. 2020, *Kochaiphath & Atirat.* 394 (**BKF, K KU**); Narathiwat [Sukhirin Distr., Phukhao Thong, To-Moh mining site, 9 Oct. 2019, *Kochaiphath et al.* 389 (**BKF, K KU, QBG**)].

**Ipomoea cambodiensis** Gagnep. & Courchet

NORTH-EASTERN: Udon Thani [Na Yung, near entrance to Wat Ba Phu Kon, 29 Nov. 2013, *Traiperm et al.* 596 (**BKF**)].

**Lepistemon binectarifer** (Wall.) Kuntze

SOUTH-WESTERN: Prachuap Khiri Khan [Bangtapan, 30 Dec. 1927, *Put* 1447 (**BM, K**)].

**Merremia subsessilis** (Courchet & Gagnep.) Nguyen Thi Nhan

NORTHERN: Uttaradit [along Hwy 1239, between Kms 45–46, 29 Oct. 2010, *Staples et al.* 1456 (**BM, QBG**)]; NORTH-EASTERN: Nong Khai [Bungkhla Distr., Tambon Nong Dern, 10 Aug. 2004, *Nielsen et al.* 1623 (**BKF**)].

**Merremia thorelii** (Gagnep.) Staples

NORTHERN: Phitsanulok [1.8 km N of Ban Noi village, plot 2 in Ban Noi community forest, 18 Dec. 2008, *van de Bult* 1019 (**BKF**)]; NORTH-EASTERN: Sakhon Nakhon [Phu Phan National Park, Khamhom waterfall, 19 Oct. 1993, *Herbarium Trip* 693 (**BCU**)].

**Operculina petaloidea** (Choisy) Ooststr.

NORTHERN: Uttaradit [Ta Pla Distr., along Hwy 1339, Kms 30–31, 15 Jan. 2010, *Staples et al.* 1388 (**A, BM, E, KEP, P, QBG, SING**)]; Tak [Tha Song Yang, Mae Sareang – Mae Sod road, no. 105, Kms

109–108, near Moei River, 21 Mar. 2005, *Pooma et al.* 5006 (**BKF, P**)].

**Operculina riedeliana** (Oliv.) Ooststr.

PENINSULAR: Surat Thani [Kiriratnikom Distr., Ban Tam Neab Subdistr., Klong Nan, in an old rubber plantation, 6 Feb. 1987, *Tepnarin* 314 (**A, PSU**)]; Phatthalung [Ta Mod Distr., along access road to Tha Chang waterfall, 26 Oct. 2012, *Staples & Suddee* 1492 (**BKF**)].

**Operculina turpethum** (L.) Silva Manso

PENINSULAR: Surat Thani [Don Sak, Hat Nang Kam, road along seashore, 19 Dec. 2006, *Pooma et al.* 6451 (**A, AAU, BKF, E, L**)]; Phatthalung [Khuang Khanum Distr., Bak Klong village, roadside, 23 Oct. 2012, *Staples et al.* 1486 (**BKF, PSU, SING**)].

**Poranopsis discifera** (C.K. Schneid.) Staples

NORTHERN: Mae Hong Son [Bang Ma Pa Distr., on Hwy 1095 just across from entry gate for Mae Hong Son Rice Research Station, 11 Jan. 2010, *Staples et al.* 1374 (**A, BKF, K, QBG, SING**)].

Laos.— see Staples (2018: 348) for voucher specimen citations.

**Stictocardia tiliifolia** (Desr.) Hallier f.

SOUTH-WESTERN: Prachuap Khiri Khan [Pran, 25 Nov. 1929, *Put* 2450 (**BK, K**)]; CENTRAL: Bangkok [in scrub jungle, 9 Jan. 1920, *Kerr* 3917 (**K**); tidal area, 5 Feb. 1920, *Kerr* 3992B (**K**, mixed with *Ipomoea violacea* L.)]; SOUTH-EASTERN: Chon Buri [Sriracha, 16 Nov. 1926, *Put* 468 (**AAU, BK, K**); Khw Chalok Hill near Sriracha, 16 Nov. 1926, *Collins* 1345 (**K**)].

**Tridynamia bialata** (Kerr) Staples

SOUTH-WESTERN: Kanchanaburi [Mahidol University campus, near football field, 15 Sept. 2013, *Staples et al.* 1556 (**BKF, K KU**)].

**Tridynamia megalantha** (Merr.) Staples

SOUTH-WESTERN: Phetchaburi [Kaeng Krachan National Park, road from Visitor Center to Phanoen Thung mountain, 21 Oct. 2010, *Staples et al.* 1417 (**BKF, K, QBG, SING**)]; Prachuap Khiri Khan [mountains W of Huai Yang, 12 Aug. 1966, *Larsen et al.* 1529 (**AAU**)].