

Notes on the genus *Ardisia* (Primulaceae) in Thailand and Peninsular Malaysia

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ABSTRACT

The lectotype for *Ardisia kerrii* is designated here. *Ardisia cordulata* var. *appresso-hirsuta* is placed as a new synonym of *A. demissa*. Additionally, the correct locations of four species that were misinterpreted are also given. Now *A. betongensis* is excluded from the list of Thai *Ardisia*.

KEYWORDS: Coral berry, lectotype, Myrsinaceae, synonym, taxonomy.

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INTRODUCTION

Ardisia Sw. is one of the largest genera in the family Primulaceae described by Swartz (1788) based on five species: *A. coriacea* Sw., *A. lateriflora* Sw., *A. parasitica* Sw., *A. serrulata* Sw. and *A. tinifolia* Sw. The genus comprises approximately more than 500 species in the world and one of the centres of diversity is around Thailand and Indo-China with 104 recorded species, 98 of which are found in Vietnam (Hu & Vidal, 2004). The genus was traditionally placed in the Myrsinaceae, but a new classification based on morphology of the free-central placentation and antipetalous stamens together with molecular studies now place the genus in the Primulaceae subfamily Myrsinoideae (APG III, 2009). The genus *Ardisia* is characterized by having contorted corolla lobes and a punctiform stigma.

The first checklist of Thai species was presented by Craib (1911), six species were listed one of which was a new species, *A. kerrii* Craib. Fletcher (1937) published 27 new species and five new varieties (32 taxa) of the genus based mainly on Kerr's collections. The most extensive work on the genus was the work of Larsen & Hu (1996) who recognized 72 species (79 taxa) for the Flora of Thailand account. Later, Hu (1999) proposed some synonyms of *Ardisia*

species, and some were reduced to varieties. Larsen & Hu (2001) published one new recorded species *A. dawnaea* C.E.Parkinson for Thailand.

During our research carried out mainly on the subgenus *Crispardisia* of genus *Ardisia*, we have surveyed the relevant literature, undertaken herbaria visits and examined the type collections available online of all the members of former Myrsinaceae in Thailand. The result showed that designation of a lectotype is needed for the one species, *A. kerrii*, and *A. cordulata* H.R.Fletcher var. *appresso-hirsuta* H.R.Fletcher is reduced as a new synonym of *A. demissa* Miq. In addition, we have also found that some names of the location of the types in the Flora of Thailand (Larsen & Hu, 1996) were misinterpreted from protologue and one location is now no longer in Thailand.

MATERIALS AND METHODS

The study is based on field collections, herbarium materials and information that have been consulted at, or borrowed from herbaria, namely AAU, ABD, BK, BKF, KKU, PSU and QBG. Additionally, high-resolution images of herbarium specimens were examined on virtual herbaria of BM, E, GH, K, L,

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M, P and S. All herbarium acronyms cited follow Thiers (2020, continuously updated). Barcode numbers of the type specimens, if available, are placed after the herbarium acronym. Nearly all specimens cited here have been seen or from digital images, those that have not been seen are indicated by n.v. For Kerr's localities have also been checked with Kerr's itinerary (Jacobs, 1962). The location of the type is presented with current names and some Thai scripts of the locations which are not commonly found and followed with the old names of locations from the protologue in the square brackets.

LECTOTYPIFICATION

Ardisia kerrii Craib, Bull. Misc. Inform. Kew 1911: 407. 1911. Type: Thailand, Chiang Mai, Doi Suthep [Sootep], 12 June 1910, *Kerr 1216* (lectotype **K** [K000756770] photo seen, designated here (Fig. 1); isolectotypes **BM** [BM000603530] photo seen, **E** [E00284493] photo seen).

Note.— *Ardisia kerrii* is easy to identify by its leaves which are obovate-lanceolate to obovate and leaf apices are rounded or obtuse and abruptly terminated by a short acumen. This species was described by Craib (1911) is based on two collections of Kerr (*Kerr 668* and *1216*), from Doi Suthep, Chiang Mai. The former collection has two sheets at **BM** [BM000603526] and **K** [K000756798] and the latter one has three sheets at **BM** [BM000603530], **E** [E00284493] and **K** [K000756770]. *Kerr 1216* at **K** is designated here as the lectotype because it is a well-preserved specimen with more leaves and very clear inflorescences.

SYNONYMISATION

Ardisia demissa Miq., Fl. Ned. Ind. 2: 1018. 1859. Type: Indonesia, Java, Planta Javanica a cl. Zollinger lecta, *Zollinger 3509* (holotype **U** [U0004866] n.v.; isotypes **BM** [BM000525945] photo seen, **GH** [GH00063320] photo seen, **S** [S09-39276] photo seen).

—*A. cordulata* H.R.Fletcher var. *appresso-hirsuta* H.R.Fletcher, Bull. Misc. Inform. Kew 1937: 28. 1937, **syn. nov.** Type: Thailand, Narathiwat, Cho-airong, Bukit (บุ๊คอิ๊ด) [former in Pattani, Bukit], *Put 3612* (holotype **K** [K000756783] photo seen; isotypes **ABD** [ABDUH:2/766] n.v., **BK** [BK257195!], **E** [E00284500] photo seen, **P** [P00496092] photo seen).

Note.— *Ardisia demissa* is distinguished by a very small shrub with a maximum of 40 cm in height. Julius & Utteridge (2012) noted that the species has variable size and shape of the leaves. The Peninsular Malaysian specimens have rather larger leaves than in Java and Sumatra. Hu (1999) placed two of Fletcher's taxa, *A. cordulata* var. *cordulata* and *A. cordulata* var. *patulo-hirsuta* H.R.Fletcher except *A. cordulata* var. *appresso-hirsuta* as synonyms of *A. demissa*. Fletcher (1937) described *A. cordulata* var. *appresso-hirsuta* as a distinct taxon because it differs from the typical variety and *A. cordulata* var. *patulo-hirsuta* by having appressed hirsute hairs on the lower surface of the leaves and more than 13 pairs of lateral veins. Examination of the type materials of *A. demissa* and all three taxa of Fletcher, *A. cordulata* var. *cordulata*, var. *patulo-hirsuta* and var. *appresso-hirsuta* showed that the differences between them are so small and unreliable that they are best united under *A. demissa*. Therefore, *A. cordulata* var. *appresso-hirsuta* is placed herein as a new synonym of *A. demissa*.

LOCALITY CORRECTION

Ardisia betongensis H.R.Fletcher, Bull. Misc. Inform. Kew 1937: 27. 1937. Type: Malaysia, Perak, Gunung Inas [Betong, Gunong Ina], 12 Aug. 1923, *Kerr 7598* (holotype **K** [K000756778] photo seen; isotypes **ABD** [ABDUH:2/765] n.v., **BK** [BK257194!], **BM** [BM000997030] photo seen, **E** [E00284502] photo seen, **P** [P00492420] photo seen).

Note.— *Ardisia betongensis* is characterized by its axillary flowers, leaves with an entire margin with fine and numerous lateral veins, and the petiole much longer than the peduncle. Fletcher (1937) described *A. betongensis* based on *Kerr 7598* from Gunung Inas, Betong. We have checked Kerr's itinerary of this species from Jacobs (1962) with the map of Thailand and Malaysia. The present area is in the Perak frontier, Peninsular Malaysia (Fig. 2A). Consequently, the species no longer exists in the list of the Thai *Ardisia*.

Ardisia impressa H.R.Fletcher, Bull. Misc. Inform. Kew 1937: 31. 1937. Type: Thailand, Kanchanaburi [Kanburi], Bo Rae (บ่อแร่) [Baw Ré], 21 July 1926, *Put 216* (holotype **K** [K000756796] photo seen; isotypes **BK** [BK257201!], **BM** [BM000027553] photo seen, **E** [E00284494] photo seen, **K** [K000756797] photo seen).



Figure 1. Lectotype of *Ardisia kerrii* Craib. Image © The Trustees of the Royal Botanic Gardens, Kew.

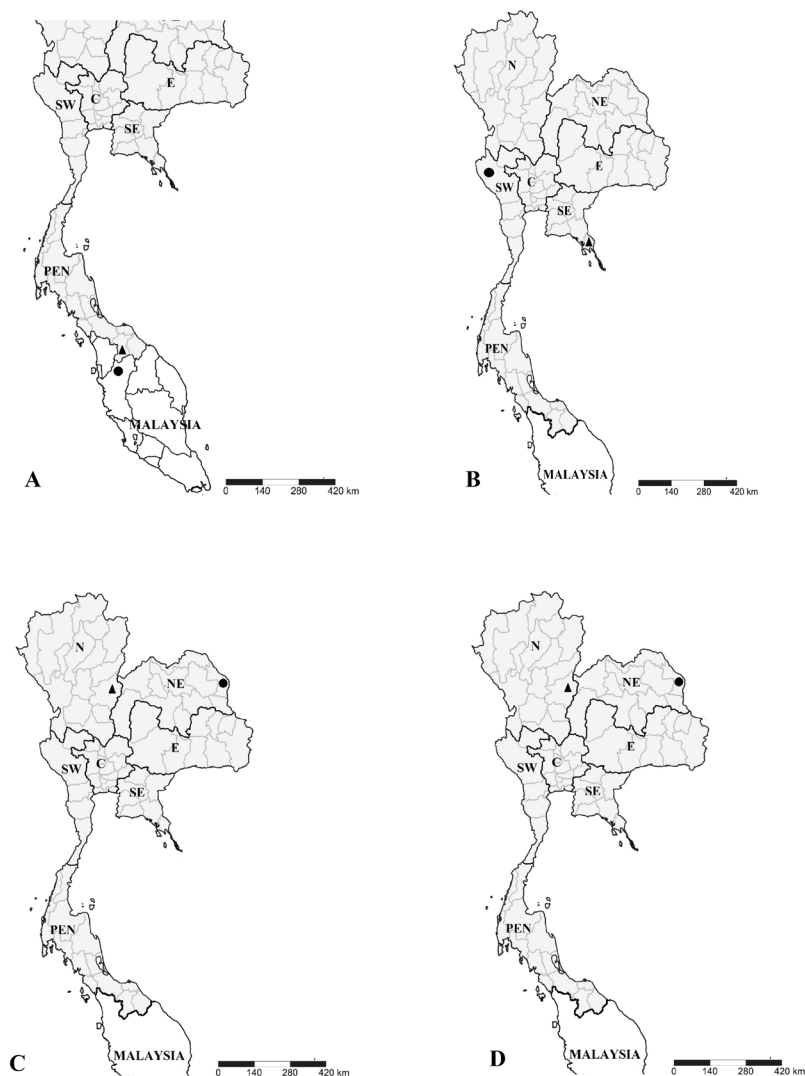


Figure 2. Distribution map of *Ardisia* showing misinterpretation (closed triangle) and correction (closed circular). A. *A. betongensis* H.R.Fletcher; B. *A. impressa* H.R.Fletcher; C. *A. longipedicellata* H.R.Fletcher; D. *A. stipitata* H.R.Fletcher.

Note.— *Ardisia impressa* is distinguished by its axillary flowers, dentate leaf margin, glabrous, dark green and shiny on the adaxial surface but rusty scales on the midrib and veins on the abaxial surface. Chen & Pipoly (1996) placed this species as a synonym of *A. hanceana* Mez, but both species are clearly different, in which *A. hanceana* has terminal flowers and a crenate leaf margin. In the original description, the type specimen was collected from Baw Ré, Kanburi. The present name is Bo Rae, Thong Pha Phum district, Kanchanaburi Province in the South-Western floristic region of Thailand. But in the Flora

of Thailand account (Larsen & Hu, 1996) has been misinterpreted the location as Bo Rai (บ่อไร่) district in Trat Province in the South-Eastern floristic region (Fig. 2B).

Ardisia longipedicellata H.R.Fletcher, Bull. Misc. Inform. Kew 1937: 32. 1937. Type: Thailand, Nakhon Phanom, Ta Uten, Chaiyaburee (ไชยบุรี) [Nawngkai, Chaiyaburi], *Kerr* 8523 (holotype **K** [K000756801] photo seen; isotypes **BK** [BK257203!], **E** [E00284487] photo seen).

Note.— The species is, like *A. crenata* Sims, recognized by its terminal flowers on the specialized flowering branches. But unlike that species, the leaves and inflorescence of *A. longipedicellata* are not punctate and simple, respectively. In the original description, the species was collected from Nawngkai, Chaiyaburi. We also checked Kerr's itinerary (Jacobs, 1962) and the correct location is Chaiyaburee, Ta Uten District, Nakhon Phanom Province in the North-Eastern floristic region of Thailand not in Nakhon Thai District, Phitsanulok Province in the Northern floristic region as mentioned in Flora of Thailand account (Larsen & Hu, 1996) (Fig. 2C).

Ardisia stipitata H.R.Fletcher, Bull. Mics. Inform. Kew 1937(1): 38. 1937. Type, Thailand, Nakhon Phanom, Ta Uten, Chaiburee (ไชยบุรี) [Nawngkai, Chayaburi], 21 Feb. 1924, *Kerr 8523A* (holotype **K** [K000756819], photo seen; isotypes **BK** [BK257217!], **BM** [BM000997110] photo seen, **E** [E00284545] photo seen).

Note.— *Ardisia stipitata* is distinguished by the indistinctly undulate leaf margin and the intramarginal vein which is ca. 2 mm away from the leaf margin. The location of the type of this species in the Flora of Thailand account (Larsen & Hu, 1996) has been misinterpreted as the same location of *A. longipedicellata* and is corrected here (Fig. 2D). Chatan & Promprom (2017) overlooked the specimen which was already written as the type, and they selected the specimen, K000756819 as the lectotype. Thus, this case is considered a mistake.

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