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Phytocrene macrophylla var. *macrophylla* (Icacinaceae) - a new record for Thailand

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ABSTRACT

Phytocrene macrophylla var. *macrophylla* (Icacinaceae) is reported as a new record for Thailand. An updated description, photographs and a revised key to the genus in Thailand are provided.

KEYWORDS: Lectotypification, epitypification, Malesia, Icacinales, liana, climbing plants.

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INTRODUCTION

Phytocrene Wall. is a genus of high climbing dioecious shrubs or lianas that belongs to Icacinaceae. The genus has 11 species, with a distribution range spanning from Bangladesh to Papua New Guinea, including Bangladesh, Myanmar, Thailand, Vietnam, Malaysia, Indonesia, Brunei, The Philippines and Papua New Guinea (Utteridge & Schori, 2011; World Checklist of Icacinaceae, 2024). In Thailand, three species are currently reported: *P. bracteata* Wall., *P. oblonga* Wall. and *P. palmata* Wall. (Sleumer, 1970). Of these, *P. bracteata* and *P. palmata* have been recorded as used by local communities for medicinal purposes in the southern regions of Thailand (Meelap, 2014). Recently, during an ethnobotanical survey at Ban Le Tong Ku, Tak Province, a medicinal plant utilized by the Pwo Karen to treat various ailments was identified as a species of *Phytocrene*, which was subsequently identified as *P. macrophylla* (Blume) Blume as a new record for Thailand and is formally reported below.

MATERIALS AND METHODS

The collected specimens were examined by consulting taxonomic literature and comparing them with herbarium specimens deposited in SING. The morphological characters, distribution in Thailand, habitat, and phenology are described based on herbarium specimens collected from Ban Le Tong Ku (BCU, BKF) and SING. The assessment of conservation status was performed by following the IUCN Red List Categories and Criteria, calculating the Area of Occupancy (AOO) and Extent of Occurrence (EOO) with the GeoCAT (Bachman *et al.*, 2011).

DESCRIPTION

Phytocrene macrophylla var. **macrophylla**, Sleumer, Blumea 17: 239. 1969; Fl. Males., Ser. 1, Spermat. 7: 86. 1971. Type: Indonesia, Java, Mt Salak, *Blume s.n.* (lectotype **L** [first-step] designated by Sleumer [1969]; lectotype [second-step] designated here: **L** [L0014955, photo!]; isolectotypes **BM** [BM000839424, photo!], **L** [L0014954, photo!, the staminate inflorescence], **P** [P00834223, photo!, P00834224, photo!, excluding the pistillate inflorescence]); epitype, designated here, **P** [P00834224, photo!, the pistillate inflorescence]. Figs. 1–2.

High climbing liana, stem more than 10 metres, not spiny. *Branchlets* striate, younger parts with spreading of shorter and longer ferrugineous hairs, conical prickles; older parts glabrescent and smooth, the cork with transverse lenticellar cracks. *Leaves* of young shoots palmatifid, obtusely 3 lobed, base deeply cordate; of older parts ovate, entire, base subcordate, coriaceous, glabrous above, undersurface with a tomentum, pale rusty hairs, and less longer strigose rufous hairs on nerves and veins, soft to the touch, 30–33 × 25–28 cm, palmately veined, outer pairs of nerves short, all nerves flat above, raised

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Figure 1. *Phytocrene macrophylla* var. *macrophylla*: A–B. palmatifid leaves (A) and ovate and subcordate leaves (B) of young plant in its natural habitats; C. ferrugineous hairs and conical prickles on younger branchlets; D. undersurface of mature leaves; E–F. staminate inflorescences (arrow in E); G–H. infructescences (arrows in G). Photographed by A. Songsangchun.

beneath; reticulation dense and flat above, raised beneath; petioles 15–25 cm long, 1.5–2 mm thick. *Staminate inflorescences* spike-like panicles born on old branches or stems, cylindrical and dense, shortly greyish-brownish tomentose throughout, up to 40 cm long and 3–4 cm in diam.; lateral racemes 3–4 cm long composed of the flowers in heads 4 mm in diam. *Staminate flowers* 1.5–2 mm in diam.; pedicel 0.5–1 mm long; sepals segmented, 3–5, narrowly obcuneate, apex truncate, hirsute outside, ca 1 × 0.5 mm; petals 3–4, light green to yellowish, connate halfway, lobes recurved, dense brown hair outside, 1.5–2 × 0.5 mm; bracts caducous. *Stamens* 3–4; filament 1–1.5 mm long, white; anther 0.5–1 mm long, yellow. *Pistillate inflorescence and flowers* not seen. *Infructescenses* globose, 25 cm in diam., comprised of ca 60–80 individual drupaceous fruits. *Drupe* obovoid-oblongoid, 7–8 × 3–3.5 cm, rusty-tomentose hairy, these hairs appressed, stiff, shining, easily going; endocarp oblongoid, bony, laterally flattened, the crests less marked on the flattened side, numerous roundish pits ca 1 mm in diam.

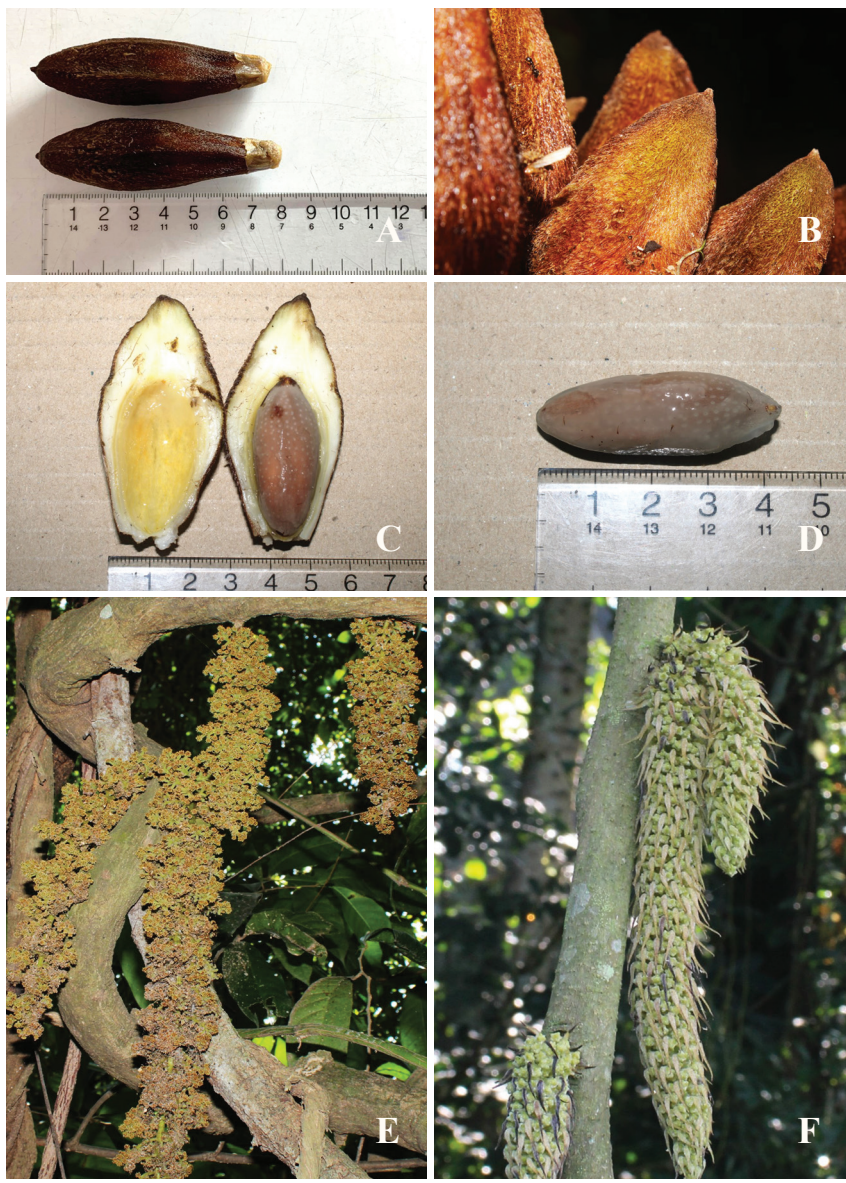

Figure 2. A. Fruits of *Phytocrene macrophylla* var. *macrophylla*; B. rusty-tomentose hairs on fruit surface; C. longitudinal section of fruit showing endocarp with numerous roundish pits; D. endocarp enclosing seed; E. staminate inflorescences of *P. macrophylla* var. *macrophylla* at Ban Le Tong Ku; F. staminate inflorescences of *P. bracteata* at the Singapore Botanic Gardens. Photographed by A. Songsangchun.

Distribution.— Bangladesh, Myanmar, Thailand, Malaysia (Borneo), Indonesia and The Philippines.

Habitat.— In Thailand, this species has only been observed growing along streams in the limestone lowland dry evergreen forest near the border of Thailand and Myanmar.

Phenology.— Flowering January–March; fruiting April–July.

Uses.— The Pwo Karen boil the stems in water, and drink the boiled water to treat various ailments, such as those related to bone and joint disorders and gastrointestinal disorders (Songsangchun & Seelanan, 2024).

Conservation.— Least Concern (LC) based on the IUCN red list categories and criteria (IUCN, 2012). Upon this report, *Phytocrene macrophylla* var. *macrophylla* is currently documented in India, Myanmar, Thailand, Indonesia, and the Philippines, resulting in its overall estimated extent of occurrence of 7,643,656.459 km^2 and an area of occupancy of 32.000 km^2 when estimated by GeoCAT (Bachman *et al.*, 2011). In Thailand, this species is thus far exclusively found in a single locality, sparsely distributed along streams in Ban Le Tong Ku, Mae Chan Subdistrict, Umphang District, Tak Province. However, it should be noted that its natural habitat in Ban Le Tong Ku has been extensively modified and degraded due to human activity, therefore it is likely that its population will be diminished in the near future.

Specimens examined.— Thailand. SOUTHWESTERN: Tak [Umphang District, Ban Le Tong Ku, alt. 200 m, 2 June 2022 (fr. only), *Songsangchun et al. 131A* (**BCU**, **BKF**); ibid., 10 Jan. 2023 (stam. fl.), *Songsangchun et al. 131B* (**BCU**, **BKF**); ibid., 4 July 2023 (st.), *Songsangchun et al. 198* (**BCU**, **BKF**)]. Indonesia. Sumatra [Sibolangit, Bukit Kheang, 4 Aug. 1921, *S.F. 7441* (**SING**)]. Phillippines. Luzon [Rizal, Jan.–Mar. 1905, *F.B.2439*; Mindanao [Davao, Mati, Mar.–Apr. 1927, *Ramos & Edano 2107* (**SING**)].

Notes.— 1) *Phytocrene macrophylla* (Blume) Blume was originally published as *Gynocephalum macrophyllum* Blume based on specimens collected in Mt Salak, Java (Blume, 1825). There are six specimens deposited at **L** (L0014953, L0014954, L0014955), **BM** (BM000839424), and **P** (P00834224, P00834223). Two specimens, L0014954 and L0014955, are with magenta labels which state "Holotype of *Gynocephalum macrophyllum* Bl." though the former has "(*Gynocephalum macrophyllum* Bl., ad. holotypum pertinet)" on the determination slip, whereas L0014953 is with the magenta label "possibly part of Holotype of *Gynocephalum macrophyllum* Bl." All other specimens, i.e. BM000839424, P00834223, and P00834224, have "isotype of *Gynocephalum macrophyllum* Bl." on the determination slips. Although Blume did not specifically designate any specimen as the holotype in his publication, during his work for the revision of *Phytocrene* as a precursor for the Flora Malesiana and Flora of Thailand account, Sleumer (1969) cited the *Blume s.n*. material as '**BM**; **L**, type of *Gynocephalum macrophyllum*; **P**' and thus indicated the **L** sheets as type but without reference to any particular sheet; and, in addition, it is most likely that he placed the magenta labels to designate all three specimens in **L** as the holotype, i.e. performing lectotypification. However, this lectotypification [first-step] included more than one specimen, and thus only a single specimen should further be selected to serve as the lectotype [second-step] to conform with Article 9.17 of the Shenzhen Code. At **L**, the various specimens have the following material: L0014953 is from a pistillate plant and comprises of two young infructescences; L0014954 clearly consists of two different plants – a staminate inflorescence (i.e., from a staminate plant) and a young infructescence (i.e., from a different pistillate plant) and it is not certain from which plant the single leaf specimen on this sheet belongs to; finally, L0014955 is a branch from a staminate plant with one staminate inflorescence and three leaves. Based on this information, L0014955 is selected to serve as the [second-step] lectotype of *P. macrophylla*, and the isolectotypes include the staminate inflorescence in L0014954, BM000839424, P00834223 and the staminate inflorescences in P00834224. In addition, in the original protologue Blume (1825) described both staminate and pistillate flowers and because the [second-step] lectotype and isolectotypes constitute only staminate plants, therefore the pistillate inflorescence on P00834224 is designated here as the epitype of *P. macrophylla*.

2) The leaves of *Phytocrene macrophylla* bear a resemblance to those of *P. bracteata*. However, the distinguishable character for identification is in the staminate inflorescences, i.e. caducous bracts are found in *P. macrophylla*, whereas the bracts are persistent in *P. bracteata* (Fig. 2E–F).

3) The size of the drupe is useful for distinguishing among different varieties of *Phytocrene macrophylla*. The largest drupes are found in var. *macrophylla* (7–8 × 3–3.5 cm).

4) In Myanmar, *Phytocrene bracteata* and *P. macrophylla* were also found in Kayin and Mon States, as well as in the Taninthayi Division (Kress *et al.*, 2003). These areas are adjacent to the western part of Thailand, thus naturally *P. macrophylla* should be found in Thailand but it may be overlooked unless falling infructescences and/or showy staminate inflorescences are present to be observed.

REVISED KEY TO THE SPECIES OF *PHYTOCRENE* IN THAILAND

(Adapted from Sleumer, 1970)

1. Leaves entire in flowering specimens
  2. Leaves entire, or undulate-subdentate, oblong or oblong-lanceolate, early glabrescent; staminate inflorescences elongate to 5 cm long **P. oblonga**
  2. Leaves entire or ± broadly 3-lobed in flowering specimens (sometimes palmatifid in sterile juvenile specimens); staminate inflorescences elongate to 26 cm long
    3. Flower bracts to 1 cm long and persistent **P. bracteata**
    3. Flower bracts caducous **P. macrophylla** var. **macrophylla**
1. Leaves usually deeply and narrowly (3–)5(–7)-lobed in flowering specimens **P. palmata**

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