

Three New Records of *Premna* L. (Lamiaceae) for Thailand

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ABSTRACT.– Three species of the genus *Premna*, *P. punctulata* C.B. Clarke, *P. rabakensis* Moldenke and *P. stenobotrys* Merr., are newly recorded for Thailand. Descriptions and illustrations are provided.

KEY WORDS: *Premna*, Lamiaceae, new records, Thailand

INTRODUCTION

The genus *Premna* L. belonging to the family Lamiaceae was established by Linnaeus (1771) based on *P. serratifolia*. The genus now contains about 200 species worldwide which are mainly distributed in tropical and subtropical Asia, Africa, Australia and the Pacific Islands (Harley et al., 2004). A preliminary study of the genus in Thailand was first undertaken by Fletcher (1938), enumerating 30 species. Later Moldenke (1980) and the Forest Herbarium (2001) listed 39 and 19 taxa, respectively.

In the process of revising the genus *Premna* for the Flora of Thailand, the following three new records for Thailand, *Premna punctulata* C.B. Clarke, *P. rabakensis* Moldenke and *P. stenobotrys* Merr., were discovered, which are here described and illustrated.

MATERIALS AND METHODS

This revision was based mainly on examination of the field collections and a large number of specimens kept at the following herbaria: Department of Systematic Botany, University of Aarhus (AAU), University of Aberdeen Herbarium (ABD), Kasin Suvathabandhu Herbarium, Chulalongkorn University (BCU); Bangkok Herbarium, Department of Agriculture, Bangkok (BK), Forest Herbarium, Bangkok (BKF), British Natural History Museum (BM), Botanical Museum, University of Copenhagen (C), Chiangmai University Herbarium (CMU), Royal Botanic Garden, Edinburgh (E), Institute of Ecology and Biological Resource, Hanoi (HN), Harvard University Herbarium (HUH), Royal Botanic Gardens, Kew (K), Khon Kaen University Herbarium (KKU), National Herbarium Netherland University of Leiden branch (L); Linnean Society Herbarium (LINN), The New York Botanical Garden

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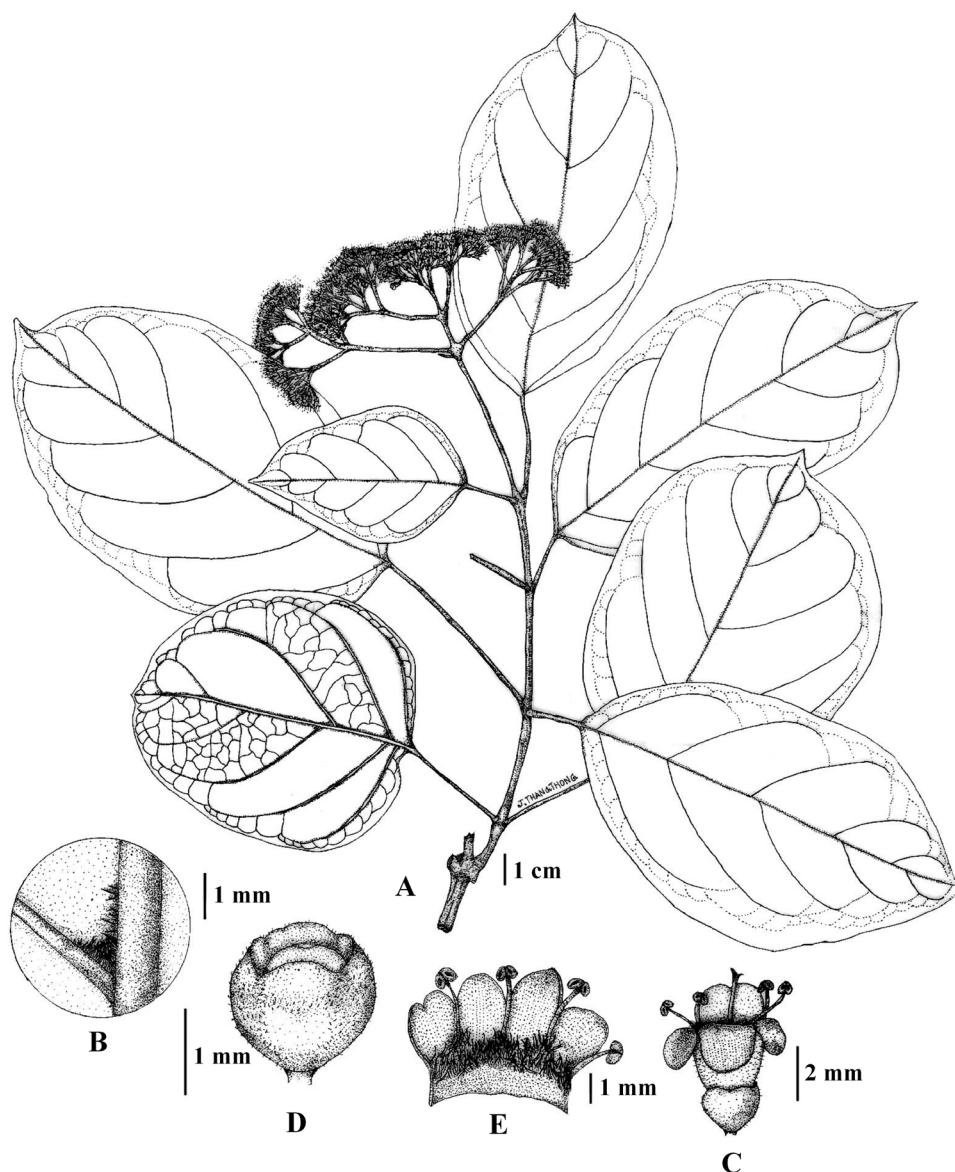


FIGURE 1. *Premna punctulata*: A. flowering branch; B. abaxial surface of leaf with pubescent hairs at nerve axis; C. flower; D. calyx; E. vertical cut of corolla. [C. Leeratiwong 05-243 (KKU)]. Drawn by J. Thangthong.

Herbarium (NY), Prince of Songkla University Herbarium (PSU), Queen Sirikit Botanic Gardens Herbarium (QBG), Muséum National d'Histoire Naturelle, Paris (P); Department of Botany, Herbarium and Nature Reserve, Singapore (SING), Trinity

College, University of Dublin (TCD), The University of Texas Herbarium (TEX), The United States National Herbarium, Smithsonian Institution (US) and Department of Biology Herbarium, Chiang Mai University (for abbreviations see

Holmgren and Holmgren, 1998). Morphological, ecological and distributional data were also studied.

SYSTEMATICS

Premna punctulata C.B. Clarke Figures 1 and 3

Premna punctulata C.B. Clarke in Hook. f., Fl. Brit. Ind. 4: 575. 1885; King and Gamble, Mat. Fl. Mal. Pen. 21: 817. 1909; H.J. Lam, Verb. Malay. Arch.: 121. 1919 and in H.J. Lam and Bakh., Bull. Jard. Bot. Buitenzorg, ser. 3, 3: 38. 1921; Ridl., Fl. Mal. Pen. 2: 620. 1923; Kochummen in Ng, Tree Fl. Mal. 3: 307. 1978. *Gumira punctulata* (C.B. Clarke) Kuntze, Revis. Gen. Pl., 1: 508. 1891. Type: Malaysia, Malacca, 6 Jun. 1865, *Maingay* Kew Distribution 1200 (holotype K!).

Woody climber; stem brownish grey to grey, obtusely 4-angled with few lenticels, glabrescent. *Leaves* simple, opposite-decussate, ovate, elliptic-ovate or broadly elliptic, chartaceous to subcoriaceous, 9–15 x 5–9 cm, apex acuminate or acute, rarely retuse, base rounded or slightly oblique, margin entire; adaxial surface glabrous, midrib sunken, sparsely pubescent; abaxial surface glabrous except with pubescent hairs on the axis of midrib, with moderately brown glands, midrib prominent, moderately pubescent, secondary veins 4–6-paired, curved and jointed near margin, conspicuously on both surfaces of leaves, glabrous to sparsely pubescent, tertiary veins reticulate, distinct on both surfaces; petiole 3–6 cm long, slightly slender,

slightly angled, furrowed on upper part, glabrous. *Inflorescence* a terminal corymbose thyrse, 6–10 cm long; peduncle green, 4-angled, slightly thick, 3–5 cm long, sparsely pubescent and brown glandular; pedicels 0.5–1.5 mm long, thick, covered with sparsely pubescent hairs and with densely yellow glands; bracts linear to linear-lanceolate, 1–8 mm long, deciduous, densely pubescent; bracteoles linear, 0.5–1.5 mm long, pubescent. *Calyx* pale green to green, cup-shaped, 1.5–2 mm long, obscurely 2-lipped, outside slightly brownish pubescent, moderately brownish glandular, inside covered with sparsely short brownish hairs and brown glands; tube 1.5–2 mm long, posterior lip subentire; anterior lip 2-lobed, 0.1–0.15 by 0.2–0.3 mm, triangular ovate, apex obtuse. *Corolla* greenish-white or white, with yellow patch at the inside base of the middle lobe of lower lip, 2-lipped, 5–6 mm long; tube 2.7–3.5 mm long, swollen, outside mostly glabrous or sparsely pubescent at upper part, inside slightly densely white villous along middle to upper parts; corolla lobes outside and inside glabrous; posterior lip 1-lobed, ovate or obovate, 1.5–1.7 by 1.8–2 mm, apex deeply retuse, separated more than a half of lobe; anterior lip 3-lobed, middle lobe obovate, 1.8–2 by 1.8–2 mm, apex obtuse or shallowly retuse, lateral lobes broadly oblong to oblong-ovate, 1.5–1.7 by 1.2–1.5 mm, apex obtuse. *Stamens* 4, didynamous, filaments slightly slender, exerted, long filaments 2.2–3 mm long, short filaments 2–2.5 mm long; anthers ovate, 0.4–0.5 mm long. *Ovary* superior, ovoid, 0.5–1 mm long, sparsely pubescent hairs at the apex; style slightly slender, 3.5–4 mm long; stigma 0.15–0.3 mm long. *Fruits* unknown.

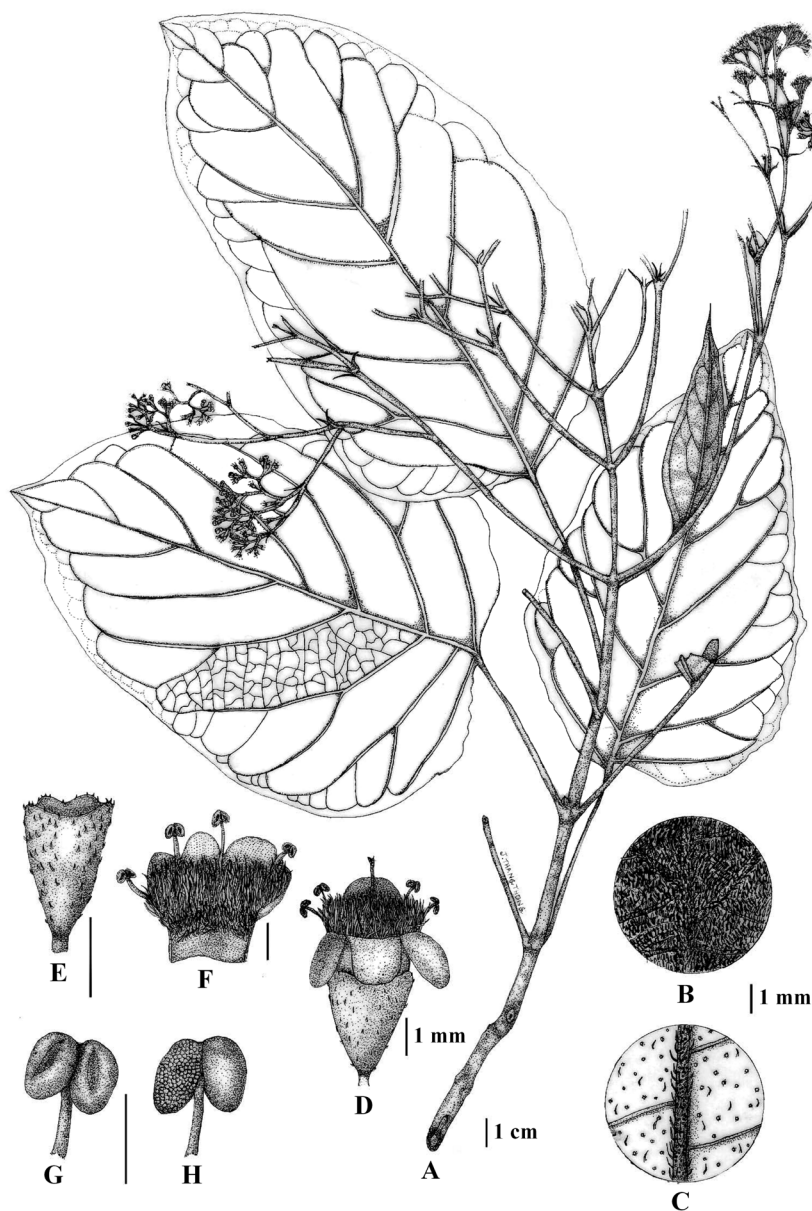


FIGURE 2. *Premna rabakensis*: **A.** flowering branch; **B.** adaxial surface of leaf with densely pubescent hairs; **C.** abaxial surface of leaf with sparsely pubescent hairs; **D.** flower; **E.** calyx; **F.** vertical cut of corolla; **G.-H.** stamen ventral and dorsal views, respectively [C. Leeratiwong 05-218 (KKU)]. Drawn by J. Thangthong.

Thailand.- PENINSULAR: Phatthalung [Pa Bon reservoir, Pa Bon, alt. ca. 150 m, 8 Apr. 2005, C. Leeratiwong 05-243 (KKU)],

Narathiwat [Muang, Khao Wang forest, 24 May 2006, C. Leeratiwong 06-330 (KKU, PSU)].

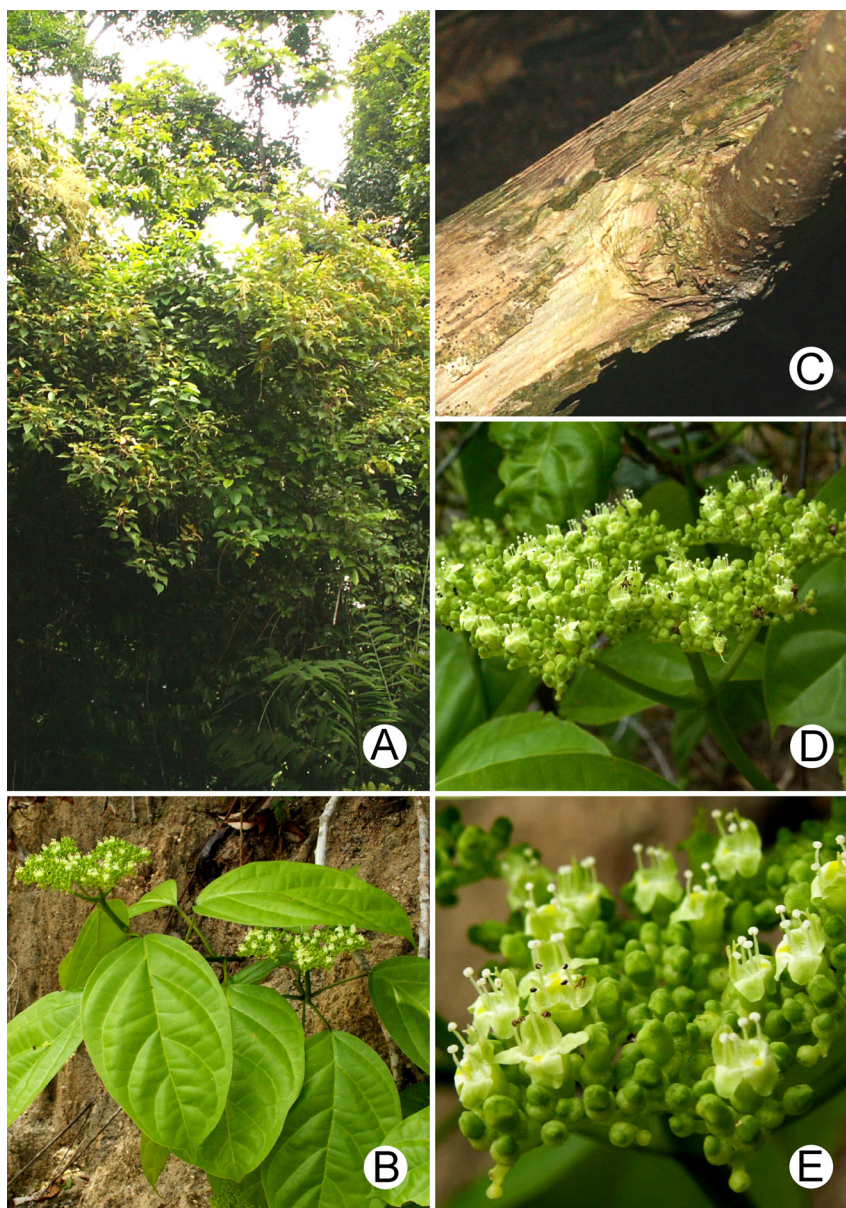


FIGURE 3. *Premna punctulata*: A. habit; B. flowering branch; C. bark; D. inflorescence; E. flowers. Photographed by C. Leeratiwong.

Distribution.- Malaysia (Malacca).

Ecology.- In the edge of primary evergreen forest; alt. *ca.* 150 m; flowering March to May.

Note.- *Premna punctulata* in Thailand is different from Malaysian material in having sparsely pubescent hairs on the apex of ovary (glabrous in Malaysia). Formerly known only from Malaysia but now known

to occur in southern Thailand in the Phaththaluang and Narathiwat provinces.

Premna rabakensis Moldenke

Figures 2 and 4

Premna rabakensis Moldenke, Phytologia 5 (3): 88. 1954; Moldenke, Phytologia Mem. 2: 289. 1980. Type: Cambodia, Rabak Ran Chien, Monts Kuang Krepeu, May 1870, *L. Pierre* 939 (holotype NY!, isotypes BKF!, HUH!, K!, P!).

Tree 6–30 m high, stem greyish-brown or light brown, obtusely 4-angled with large lenticels, glabrescent. *Leaves* simple, opposite-decussate, ovate, cordate-ovate or elliptic-ovate, chartaceous, 10–20 by 5–15 cm, apex acuminate or caudate, base cuneate, slightly cordate or rarely oblique, margin entire sometimes slightly serrate; adaxial surface densely to moderately brown pubescent, with sparse, brown or brownish-red glands, midrib flat, more densely pubescent and glandular than leaf surface; abaxial surface moderately to densely greyish-brown to pale brown pubescent or villous, with dense, reddish-brown or brown glands, midrib prominent, densely villose and glandular, secondary veins 6–8-paired, curved and jointed near margin, prominent on both surfaces, densely pubescent, tertiary veins reticulate, distinct on both surfaces; petiole 3–10 cm long, slightly thickened, cylindrical, furrowed on upper part, densely pubescent and glandular. *Inflorescence* a terminal corymbose thyrse, 7–20 cm long, moderately to densely pubescent and glandular; peduncle green to brownish green, obtusely 4-angled, thickened, 2–7 cm long, densely dark brownish to brownish pubescent, with moderately glands; pedicels

thick to slender, 0.2–2.5 mm long, covered with moderately to sparsely pubescent hairs, with dense, reddish-brown to brown glands; bracts linear or ovate, 5–25 mm long, densely pubescent or glandular; bracteoles linear, 1–10 mm long, pubescent. *Calyx* yellowish-green to green, united, cup-shaped, obscurely 2-lipped, 1–1.5 mm long, outside moderately to sparsely pale brownish pubescent and brownish glandular, inside glabrous with few brownish glands; tube 0.9–1.4 mm long; posterior lip subentire or 2-lobed, 0.1–0.2 by 0.3–0.5 mm, triangular-ovate or ovate, apex rounded; anterior lip entire. *Corolla* greenish-white to white, 2-lipped, 3–4 mm long; tube 2–3 mm long, slightly thick, outside glabrous at middle to lower part, sparsely pubescent at the top, inside densely long white pubescent along the middle to apex; corolla lobes outside moderately to sparsely pubescent, inside glabrous; posterior lip 1-lobed, ovate to broadly oblong-ovate, 1.2–1.5 by 1–1.5 mm, apex mostly deep retuse, rarely shallowly retuse or obtuse; anterior lip 3-lobed, middle lobe ovate or broadly oblong 1.2–1.5 by 0.5–0.8 mm, apex rounded or obtuse, lateral lobe ovate to oblong-ovate, 1–1.3 by 0.5–0.8 mm, apex obtuse. *Stamens* 4, didynamous, white, filaments slightly slender, exserted, long filaments 1.8–2.5 mm long, short filaments 1.5–2 mm long; anther ovate, 0.3–0.5 mm long. *Ovary* superior, ovoid, 0.3–0.8 mm long, glabrous with sparse to moderate glands spreading at apex; style slightly slender, 2–4 mm long; stigma 0.2–0.3 mm long. *Fruits* drupe, ovoid to subglobose, 3–7 mm long with several glands, young fruit green, ripening fruit black, persistent calyx 1–1.5 mm long; fruit stalk 0.5–3 mm long.

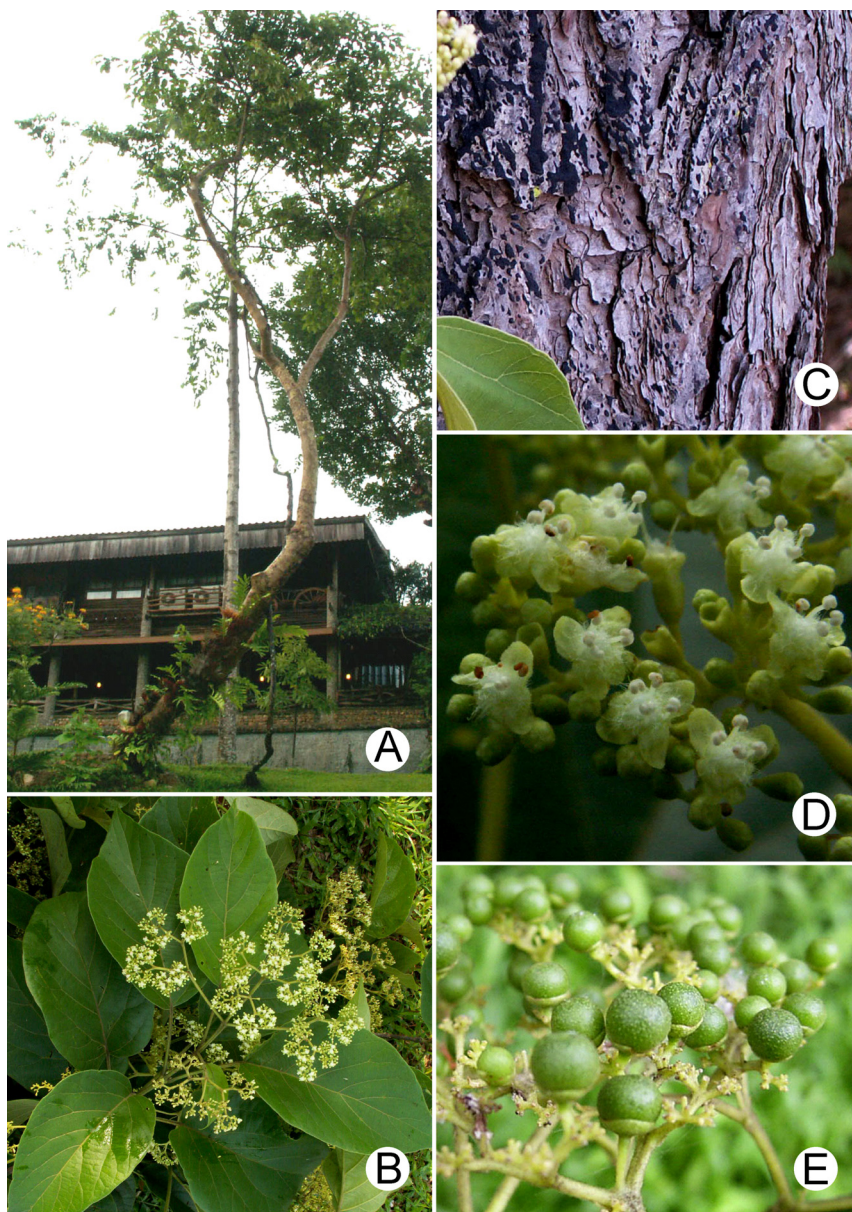


FIGURE 4. *Premna rabakensis*: A. habit; B. flowering branch; C. bark; D. flowers; E. fruits. Photographed by C. Leeratiwong.

Thailand.- **NORTHERN:** Mae Hong Son [Ban Huai Sai, Mae Sariang, alt. 250 m, 12 Jul. 1968, *K. Larsen, T. Santisuk and E. Warncke* 2375 (BKF, C, E, L)], [Mae Sariang, 8 Jul. 1966, *Prayad* 346

(BK)], Chiang Mai [Doi Suthep, alt. 725 m. 18 Aug. 1988, *J.F. Maxwell* 88-1026 (BKF, CMU, L)], [Ban Pha Mon, Chomthong, alt. 900 m, 31 May 1979, *J.E. Vidal, Y. Vidal and C. Niyomdham*

6215 (AAU, BKF, C, L, K, P)], [Doi Suthep, alt. 500–900 m, 18 Sept. 1967, *T. Shimizu, H. Koyama and M. Hutoh* T-10419 (AAU, BKF, K, L)], [16 Aug. 1951, *Soradet* 482 (BKF, HUH)], [alt. 660 m, 21 Jun. 1914, *A.F.G. Kerr* 3258 (BM, C, E, K)], [16 Jun. 1949, *Native collector* S482 (HUH, P)], [16 Jun. 1949, *Native collector* 172 (P)], [Doi Suthep-Pui National Park, Mae Sa Botanical Gardens, Mae Rim, alt. 650 m, 9 May 1989, *J.F. Maxwell* 89-586 (BKF, CMU, L)], [Doi Suthep-Pui National Park, Mae Rim Watershed Station, Sameung/Hang Dong, alt. 900 m, 11 Jul. 1990, *R. Pooma* 87 (CMU)], [Doi Suthep, Pah Laht, Muang, alt. 725 m, 16 Jun. 1988, *J.F. Maxwell* 88-770 (BKF, CMU, L)], [3 Aug. 1995, *S. Kopachon* s154b1 (Herb., Biology, Chiang Mai University)], [Botanic Garden, Mae Rim, alt. 800 m, 6 May 1994, *W. Nanakorn et al.* 662 (QBG)], [5 Jul. 1996, *W. Nanakorn et al.* 6712 (QBG)], [Doi Suthep-Pui National Park, Mae Sa Mai, Mae Rim, alt. 1,100 m, 11 Jul. 2000, *N. Zaezong* MS090 (Herb., Chiang Mai University)], [Mae Sah Mai, Bong Yaeng, Mae Rim, alt. 1,100 m, 8 May 2000, *J.F. Maxwell* 00-265 (Herb., Biology, Chiang Mai University)], Chiang Rai [alt. 430 m, 24 Aug. 1923, *Winit* 1160 (BKF, E)], [Mae Suai, 7 Jul. 1967, *K. Bunchuai and B. Nimanong* 1361 (BKF, C, K, L, P)], [Ban San Sa At, Mae Sruai, 23 Jun. 1967, *Prayad* 846 (BK)], Chiang Rai [Doi Tung, Wat Noi Temple, Mae Sai, alt. 1350 m, 29 Apr. 2005, *J.F. Maxwell* 05-308 (Herb., Biology, Chiang Mai University)], [Mae Kok, Doi Tam Tupu cave, alt. ca. 380 m, 7 Jun. 1925, *H.B.G. Garrett* 224 (BKF, BM, C, E, K, SING)], Lamphun [Doi Khun Dahn National Park, Yaw 2 to Yaw

3, alt. 1,150 m, 26 Sept. 1994, *J.F. Maxwell* 94-671 (BKF, Herb., Biology, Chiang Mai University, HUH, L)], [alt. 1,150 m, 28 Sept. 1994, *J.F. Maxwell* 94-860 (BKF, Herb., Biology, Chiang Mai University, HUH)], Phrae [Huai Khamin, 24 Aug. 1940, *Somkhid* 471 (BKF)], Lampang [Ngao, 16 Jul. 1931, *Put* 4011 (BK, BM, E, K, SING)], [Pa Matak, Ma Tuad, Ngao, alt. ca. 300 m, 16 May 1954, *Suwit* 3 (BKF)], [Doi Luang National Park, Wang Kaew Waterfall, Wang Nua, alt. 670 m, 10 Jul. 1997, *S. Gardner and P. Sidisunthorn* 2229 (Herb., Biology, Chiang Mai University)], [Ngao, Mae Huat, alt. ca. 350 m, 20 May 1954, *T. Smitinand* 1598 (BKF, HUH)], Nan [alt. ca. 220 m, 29 Jul. 1926, *Winit* 1779 (BK, E)], [Doi Pu Kah National Park, Doi Yao, Yom Subdistrict, Tah Wahng Pah, alt. 400 m, 23 Jul. 1994, *J.F. Maxwell* 94-793 (BKF, Herb., Biology, Chiang Mai University, HUH)], [Nam Heng, alt. 340 m, 13 Jul. 1926, *Winit* 1750 (BK)], Phitsanulok [Kaeng Sopha, 29 Jun. 1967, *S. Phusomsaeng* 271 (BKF, C, E, K, L)]; Nakhon Sawan [Klong Lan, Mae Wong National Park, alt. 266 m, 11 May 1999, *M. van de Bult* 329 (Herb., Biology, Chiang Mai University)]; NORTH-EASTERN: Loei [Phu Ruea National Park, Phu Ruea, alt. 1,000 m, 26 Apr. 2004, *C. Leeratiwong* 04-16 (KKU, PSU, QBG)], [10 May 2005, *C. Leeratiwong* 05-191 (KKU, PSU, QBG)]; EASTERN: Nakhon Ratchasima [Klong Duea, Si Khiew, 15 Jun. 1986, *Asa* s.n. (BKF)], [Wang Nam Khieo, 24 May 1968, *Damrongsak* 15 (BKF)], [Pak Thongchai, 27 May 1968, *S. Phengnaren* 531 (BKF)], Ubon Ratchathani [Chiet, alt. ca. 100 m, 22 May 1932, *A.F.G. Kerr* 21559 (BK, BM, E, K,

SING)]; SOUTH-WESTERN: Kanchanaburi [P-Guest house resource, Sangkhaburi, 16 May 2005, C. Leeratiwong 05-218 (KKU, PSU, QBG)], [Kwae Noi, Wangka, 7 May 1946, alt. 150 m, A.J.G.H. Kostermans 533 (BK, HUH, K, L, P, SING)], [Hin Dat, 28 Jun. 1926, Put 28 (BK, BM, E)], [Muang Cha, Sahng Kraburi, alt. 700 m, 7 Jul. 1973, J.F. Maxwell 73-195 (AAU, BK)], [Kritee and Cha, alt. 600–800 m, 7 Jul. 1973, R. Geesink and C. Phengkklai 6151 (AAU, BKF, C, E, K, L, P)], [Kritee, Thong Pha Phume, 8 Jul. 1973, S. Suthesorn 2568 (BK)], [Tee Nooy Station, Tung Yai Naresuan Wildlife Sanctuary, Thong Pha Phum, alt. 840 m, 5 Jun. 2002, M. van de Bult 539 (Herb., Biology, Chiang Mai University)], [Prangkasi, Wangka, alt. 100–150 m, 6 Jul. 1946, A.J.G.H. Kostermans 1457 (HUH, L)]; CENTRAL: Saraburi [Sahm Lahn, Muang, alt. 150 m, 20 May 1974, J.F. Maxwell 74-533 (AAU, BK)], [30 Jun. 1974, J.F. Maxwell 74-641 (BK, HUH, L)], [R. Geesink, T. Hattink and J.F. Maxwell 6834 (BK, K, L)], [Muak Lek, alt. 400 m, 30 Apr. 1922, A. Marcan 815 (BM)].

Distribution.- Laos and Cambodia.

Ecology.- In disturbed, open and streamsides in secondary to evergreen, dry evergreen, mixed deciduous and dipterocarp forests, rarely on limestone, hill evergreen and swamp forests; alt. 100–1200 m. Flowering January to May. Fruiting June to September.

Note.- Most material of *P. rabakensis* in Thailand was previously identified as *P. villosa*, a synonym of *P. coriacea* var. *villosa*. *P. rabakensis* is different from *P. coriacea* var. *villosa* in having a tree habit and by the presence of reddish-brown

glands mixed with yellow or brown glands on both surfaces of leaves, but *P. coriacea* var. *villosa* is a scandent shrub or woody climber and has only yellow glands on both surfaces of leaves. *P. rabakensis* is variable in the indumentum characteristic which is found densely pubescent to subglabrous on the abaxial surface of leaves.

Premna stenobotrys Merr.

Figure 5

Premna stenobotrys Merr., J. Arnold Arbor. 21: 384. 1940; Moldenke, Phytologia Mem. 2: 289. 1980. Type: Vietnam, Tonkin, Cho Ganh Province, Oct. 1923, Petelot 1179 (holotype HUH).

Woody climber or scandent shrub; stem brown, obtusely 4-angled or terete with large lenticels, glabrous. *Leaves* simple, opposite-decussate, cordate-ovate, ovate or elliptic-ovate, chartaceous, 8–11 by 4–6 cm, apex caudate or acuminate, base cordate or oblique-cordate, margin entire; adaxial surface glabrous except with ciliate hairs at margin, midrib, slightly raised, covered with sparse, pubescent hairs; abaxial surface glabrous, with sparse, yellowish-brown to brown glands, midrib prominent, glabrous, secondary veins 4–8-paired, curved and jointed near margin, prominent on both surfaces, glabrous, tertiary veins reticulate, more distinct on the abaxial surface; petiole 4-angled, slender, 1.5–5 cm long, deeply furrowed on upper part, glabrous or sparsely brown pubescent. *Inflorescence* a terminal, mostly pyramidal-shaped or rarely corymbose thyrse, (2.5–) 4.5–10 cm long; peduncle green, obtusely 4-angled, thickened, 1–2 cm long, moderately to

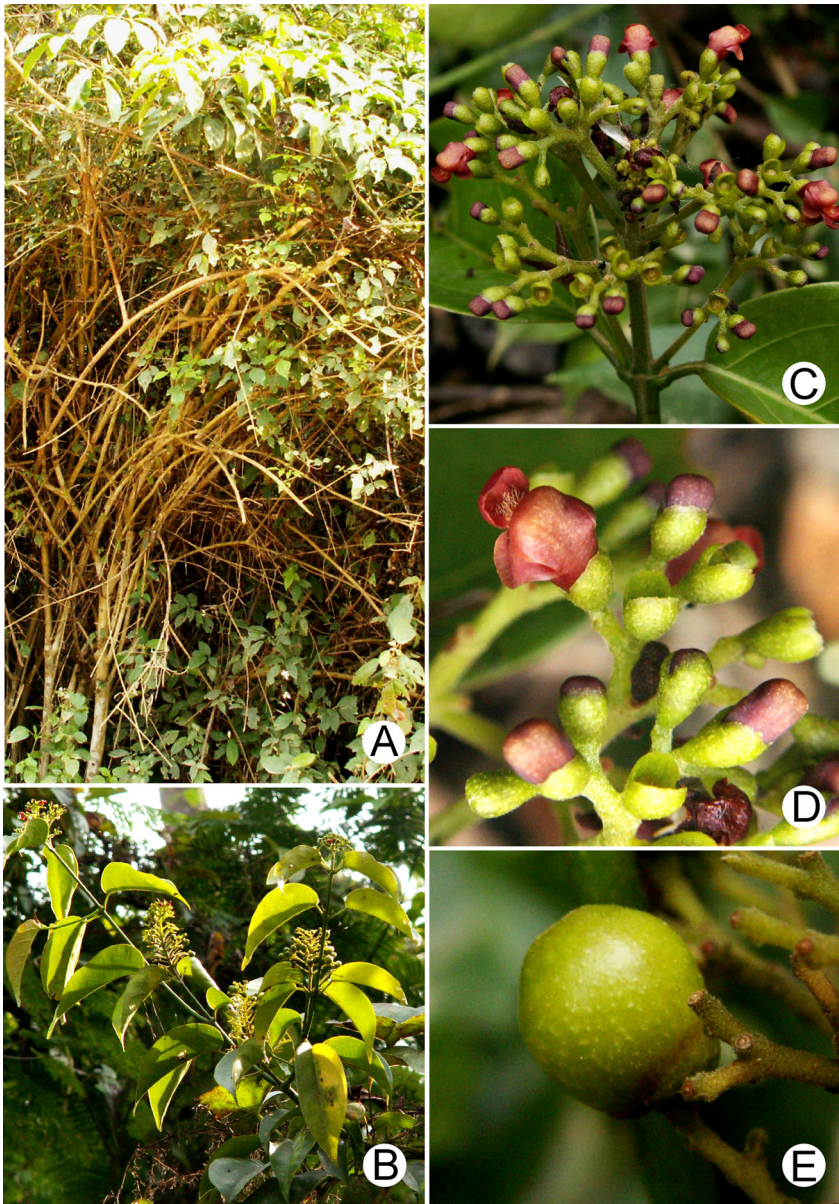


FIGURE 5. *Premna stenobotrys*: **A.** habit; **B.** flowering branch; **C.** inflorescence; **D.** flowers; **E.** fruit. Photographed by C. Leeratiwong.

densely brown pubescent or glandular; pedicels thickened, 0.5–2 mm long, moderately brown pubescent or glandular; bracts falcate-linear to lanceolate-linear, 0.5–7 mm long, deciduous, moderately

pubescent; bracteoles linear or lanceolate-linear, 0.2–2.5 mm long, pubescent. *Calyx* green, united, bell-shaped, (2.2–) 3–3.5 mm long, 2-lipped, outside sparsely brownish pubescent, covered with moderate-

ly brown glands, inside moderately pubescent; tube 2–2.5 mm long; posterior lip subentire or with minutely 3 lobes, triangular-ovate, apex obtuse, 0.05–0.15 by 0.2–0.5 mm; anterior lip minutely 2-lobed, triangular-ovate, 0.1–0.5 by 0.2–0.5 mm, apex acute. *Corolla* red, 2-lipped, (4–) 4.5–7 mm long; tube broadly cylindrical, 2.5–5 mm long, outside glabrous, inside with moderately white villose hairs along the middle to upper parts; corolla lobes outside glabrous on upper lip or with slightly pubescent hairs at the base of middle lobe of lower lip, inside glabrous except with moderately villose hairs on the base of middle lobe of lower lip; posterior lip 1-lobed, broadly oblong-obovate, obovate, (2–) 2.5–3 by (1.5–) 2.8–3 mm, concave, apex obtuse; anterior lip 3-lobed, middle lobe rounded or obovate, (1–) 1.8–2.5 by (1.2–) 2–2.5 mm, concave, apex obtuse, lateral lobes broadly oblong-ovate or ovate, (0.8–) 1.5–1.8 by (1.2–) 1.8–2 mm, apex obtuse. *Stamens* 4, didynamous, filaments reddish-white, slightly slender, included, long filaments (1.5–) 2.5–3.5 mm long, short filaments 1–3 mm long; anther brown, cordate-ovate, 0.3–0.5 mm long. *Ovary* superior, obovoid, (0.6–) 0.8–1.5 mm long, glabrous or with sparse, pubescent hairs near the apex; style white or whitish-red, slightly slender, 3.5–4.5 mm long; stigma (0.05–) 0.2–0.5 mm long. *Fruits* drupe, obovoid or obovoid-ellipsoid, 6–8 mm long, sparsely to moderately glandular; persistent calyx enlarged, 2–3.5 mm long; fruit stalk 1.5–3 mm long.

Thailand.- NORTHERN: Chiang Mai [Doi Suthep, Pah Ngeub-Kohntatahn stream valley, Muang, alt. 600 m, 12 Oct. 1988, *J.F. Maxwell* 88-1186 (BKF, CMU, L)]; NORTH-EASTERN: Sakon Nakhon

[Bang Mae, 1866-1868, *Thorel* s.n. (P)]; SOUTH-WESTERN: Kanchanaburi [Srisawat, alt. 600–700 m, 27 Jun. 1974, *K. Larsen and S.S. Larsen* 33855 (AAU, BKF, K, TEX)], Phetchaburi [Ban Krang Camp, Kaeng Krachan National Park, alt. ca. 350 m, 30 Dec. 2005, *C. Leeratiwong* 05-269 (KKU, PSU)].

Distribution.- Vietnam

Ecology.- At the edge of evergreen forest; alt. 350–700 m; flowering June to December; fruiting October to February.

Note.- *Premna stenobotrys* is readily distinguished from all other members of its genus in Thailand by the presence of a red corolla. Merrill (1940) described this species from Vietnam and reported that it has a glabrous ovary but, in contrast, the Thai specimens examined all have sparse hairs on the apex of ovary.

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