

The genus *Prismatomeris* (Rubiaceae) in Thailand

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ABSTRACT

A synopsis of the genus *Prismatomeris* in Thailand is presented. Eight species are recognized and *P. glabra* is newly recorded for Thailand; *P. tetrandra* subsp. *malayana* is no longer recognized as a distinct taxon. Descriptions of the genus and the newly recorded species are provided, as well as a key to the Thai species and notes on ecology, distribution, vernacular names and photographs.

KEYWORDS: nomenclature, Prismatomerinae, Rubioideae, synopsis.

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INTRODUCTION

Prismatomeris Thwaites is a small genus in the Rubiaceae subfamily Rubioideae, Tribe Morindeae Subtribe Prismatomerinae (Robbrecht & Manen, 2006), with a distribution from Sri Lanka, India, southern China and throughout South-East Asia. It was originally described by Thwaites (1856) to accommodate the single species *P. albidiflora* Thwaites, and in the latest monographic revision of the genus, Johansson (1987) reported 15 species. Recently, a species from Peninsular Malaysia, *P. khoonmengiana* Y.W.Low was added (Low, 2015), increasing the number of species in the genus to 16. Most species are widespread along the margins of deciduous, mixed deciduous, evergreen and dry evergreen and pine-dipterocarp forests or in open scrub. The deeply bifid stipules, valvate corolla lobes with a conspicuous distal longitudinal adaxial ridge, median longitudinal ridges usually on each side of the branches and single-seeded drupes are the distinguishing characters of the genus.

Craib (1932) described three new species of *Prismatomeris* from Thailand: *P. filamentosa* Craib, *P. memecyloides* Craib and *P. mollis* Craib. Later, Craib (1934) himself made the first checklist of eight Thai *Prismatomeris* species; Puff *et al.* (2005) accepted seven species, Govaerts *et al.* (2007) seven and one subspecies, and in the recent checklist of Thai Plant Names (Pooma & Suddee, 2014), six species

(seven taxa) were recognized viz. *P. filamentosa*, *P. fragrans* E.T.Geddes, *P. griffithii* Ridl., *P. memecyloides*, *P. sessiliflora* Pierre ex Pit., *P. tetrandra* (Roxb.) K.Schum. and *P. tetrandra* subsp. *malayana* (Ridl.) J.T.Johanss.

During examination of unnamed specimens of the genus *Prismatomeris* at the Herbarium, Royal Botanic Garden, Edinburgh (E), I found a specimen collected from Narathiwat province, peninsular Thailand which was subsequently identified as *P. glabra* (Korth.) Valetton, a new record for Thailand. *P. tetrandra* subsp. *malayana* is not accepted herein as a distinct taxon and placed under *P. tetrandra*. Eight species are enumerated in this paper, including the new species record, preceded by a key to the species. Information such as specimens examined, distribution and ecology, and vernacular names for each taxon is also provided for reference. For the type specimens of this genus, Johansson (1987) indicated that type specimens of *P. multiflora* Ridl. and *P. ovalifolia* Ridl. were holotypes and isotypes. That is an error to be corrected to lectotype, however the lectotypification was effectively done by him. The duplicates of lectotypes are then isolectotypes.

The aim of this paper is to provide a synopsis of Thai species of *Prismatomeris* which will serve as a basis for the treatment of the genus for the Flora of Thailand account.

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MATERIAL AND METHODS

This study is largely based on type specimens and specimens kept at AAU, ABD, BK, BKF, BM, CMU, CMUB, E, K, KKU, KYO, QBG, PSU, TCD and TI. Downloaded high-resolution images were obtained from L, P, SING and U (herbarium acronyms follow Thiers, continuously updated). Relevant taxonomic literature was accessed both from herbarium visits and online from the Biodiversity Heritage Library (biodiversitylibrary.org) and Botanicus Library (botanicus.org). Barcode numbers of the type specimens, if available, are placed after the herbarium acronym. Field observations have also been made. Nearly all specimens cited here have been seen, those that have not been seen are indicated by *n.v.*

PRISMATOMERIS

Thwaites, Hooker's J. Bot. Kew Gard. Misc. 8: 268, t. 7, f. a. 1856. Type species: *P. albidiflora* Thwaites.

— *Morinda* L. sect. *Dibrachia* Baill., Bull. Soc. Linn. Paris 1: 205. 1879.

— *Zeuxanthe* Ridl., Bull. Misc. Inform. Kew 1939(10): 609. 1940 (1939, publ. 6 Jan. 1940). Type species *P. beccariana* (Baill.) J.T.Johansson.

Shrubs to small trees; young branchlets on either side with longitudinal ridges. *Leaves* opposite,

petiolate, blades chartaceous to coriaceous, glabrous, rarely pubescent below; stipules interpetiolar, shortly connate, narrowly triangular. *Inflorescences* terminal on long shoots or on much-contracted short shoots, 1–to many-flowered, umbel-like or head-like, usually sessile, rarely pedunculate. *Flowers* pedicellate or subsessile or subsessile, fragrant, (4–)5(–6)-merous, bisexual, usually heterostylous. *Calyx* campanulate or cup-shaped, usually glabrous; lobes truncate or denticulate, usually without colleters. *Corolla* white, usually glabrous; tube salver-shaped; lobes valvate in bud, narrowly ovate or narrowly triangular, ascending, spreading or reflexed in open flowers. *Stamens* inserted in the upper half of the corolla tube; anthers on short to long filaments, included or slightly exserted (in short-styled flowers); anthers narrowly elliptic to oblong. *Ovary* usually glabrous, 2-locular, each locule usually with a solitary ovule on a placenta inserted above the middle of the septum; style terete, with 2-lobed stigma included or slightly exserted. *Fruits* a drupe, free from each other, with persistent calyx, globose to ellipsoid with 2 one-seeded, thin-walled pyrenes. *Seeds* hemispherical to almost spherical, hollowed out on the side facing the septum.

A genus of 16 species distributed from Sri Lanka, India, southern China throughout SE Asia. Eight species in Thailand.

KEY TO THE SPECIES

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|---|----------------------------------|
| 1. Lower surface of leaves pubescent | 6. <i>P. mollis</i> |
| 1. Lower surface of leaves glabrous | 1. <i>P. filamentosa</i> |
| 2. Leaves with sharp-pointed apices | |
| 2. Leaves without sharp-pointed apices | 3. <i>P. glabra</i> |
| 3. Calyx teeth margin with colleters | |
| 3. Calyx teeth margin without colleters | 4. <i>P. griffithii</i> |
| 4. Flowers sessile or with pedicels less than 5 mm long | 7. <i>P. sessiliflora</i> |
| 5. Calyx and corolla tube hairy; calyx teeth at least 0.5 mm long | |
| 5. Calyx and corolla tube glabrous; calyx teeth less than 0.5 mm long | 2. <i>P. fragrans</i> |
| 4. Flowers with pedicels 5–50 mm long | |
| 6. Calyx teeth with tufted hairs | 5. <i>P. memecyloides</i> |
| 6. Calyx teeth without tufted hairs | 8. <i>P. tetrandra</i> |
| 7. Leaves chartaceous. Corolla thin, delicate | |
| 7. Leaves coriaceous. Corolla thick, fleshy | |

1. *Prismatomeris filamentosa* Craib, Bull. Misc. Inform. Kew 1932(9): 436. 1932. Type: Thailand, Rayong (Rayawng), Ban Pe, 20 Feb. 1930, *Put 2720* (lectotype **K** [K000763862], designated by Johansson (1987), isolectotypes **ABD** [ABDUH:2/705, **BK** [BK257435], **BM** [BM000945321]).

— *Prismatomeris albidiflora* sensu Pit. in Lecomte *et al.*, Fl. Indo-Chine 3: 428. 1924, non Thwaites.

— *Prismatomeris malayana* sensu Craib, Fl. Siam. 2(2): 183. 1934, pro parte, non Ridley.

Thailand.— NORTH-EASTERN: Udon Thani [Nong Bua Temple Forest, 10 Mar. 1976, *Aekumphon*

D3 (AAU)]; Nakhon Phanom [Tha, 13 Feb. 1924, *Kerr 8438* (AAU)]; EASTERN: Nakhon Ratchasima [Ban Chum Seng, 18 Mar. 1930, *Put 2846* (ABD, BK, BM, K)]; Surin [25 Feb. 1927, *Put 626* (ABD, BK, BM, K)]; Si Sa Ket [Kantarom, 14 Feb. 1959, *Suvankoset 1471* (BKF)]; Ubon Ratchathani [Buntharik, 10 Dec. 1982, *Koyama et al. T-30739* (KYO)]; *ibid.*, Ban Nong Hong, 15 Feb. 1954, *Nilviset 15* (BKF)]; Dong Pha Huan Botanical Garden, 21 Aug. 2001, *Pooma et al. 2170* (BKF)]; near Ban Mai, Dongsamrong, 15 Sept. 2004, *Pooma et al. 4711* (BKF)]; Warinchumrab, 25 Feb. 1914, *Chirayupin 189* (BK)]; Ubon Ratchathani Gene Conservation Station, Ban Bahai, 19 Sept. 2001, *Maxwell 01-496* (BKF, CMUB)]; Khong Chiam, Phu Lone, 23 Feb. 2003, *Wongprasert et al. 032-09* (BKF-2 sheets)]; SOUTH-WESTERN: Uthai Thani [Ban Rai, Huai Nam Wing, 21 Apr. 1963, *Kasem 326* (BK)]; Prachuap Kiri Khan [Bang Saphan, 26 Dec. 1930, *Put 1396* (ABD, BK, BM, K)]; *ibid.*, Sept. 1998, *Phengkklai et al. 11214* (BKF)]; Huai Yang, 7 July 1926, *Kerr 10884* (AAU)]; SOUTH-EASTERN: Sa Kaeo [5 Feb. 1932, *Put 110* (BKF)]; Chon Buri [Sattahip, Toong Brong, 20 Jan. 1958, *Sørensen et al. 499* (BKF)]; *ibid.*, 11 June 1971, *Maxwell 71-440* (AAU, BK)]; *ibid.*, 6 May 1972, *Maxwell 72-209* (AAU, BK)]; Si Racha, 4 Dec. 1927, *Collins 2001* (ABD, BK, BM, K)]; *ibid.*, Ban Dan, 30 Mar. 1920, *Kerr 4122* (BM, K)]; *ibid.*, Nong Kaw, Feb. 1914, *Collins 321* (K)]; *ibid.*, Nong Yai Boo, Feb. 1914, *Collins 370* (K)]; *ibid.*, 29 Mar. 1921, *Collins 756* (K)]; Rayong [Ban Phe, 20 Feb. 1930, *Put 2720* (ABD, BK, K)]; *ibid.*, 14 Dec. 1974, *Geesink & Hiepko 7830* (AAU, BKF, K, KYO)]; Phe Forest Arboretum, 4 Feb. 1987, *C. Niyomdham et al. 1305* (AAU, BKF, E, K)]; Ko Samet, 18 Mar. 1970, *van Beusekom & Santisuk 3245* (AAU, BKF, E, KYO)]; *ibid.*, Feb. 1916, *Collins 552* (ABD, K)]; Chanthaburi [Klung, 3 Jan. 1930, *Kerr 17940* (AAU)]; road from Chanthaburi to Trat, 17 Nov. 1969, *van Beusekom & Smitinand 2261* (AAU, BKF)]; PENINSULAR: Ranong [Khuraburi, Ko Phra Thong, 5 Apr. 2003, *Phengkklai et al. 13752* (BKF)]; Yala [Hala-Bala WS, 24 May 2005, *Middleton et al. 3671* (BKF, E)].

Distribution.— Laos, Cambodia, Vietnam.

Ecology.— In disturbed mixed dipterocarp, evergreen and secondary forests, on sandy soil, 0–800 m alt.

Vernacular.— Pha u (พะอู)(Ubon Ratchathani), phut dong (พุดดง)(Prachin Buri), phut pa (พุดป่า)(Rayong).

Note.— *Prismatomeris filamentosa* is easily identified by its sharp-pointed leaf apices.

2. *Prismatomeris fragrans* E.T.Geddes, Bull. Misc. Inform. Kew 1927(4): 173. 1927. Type: Thailand, Chon Buri, Si Racha (Sriracha), Ban Dan, alt. 20 m, 13 Apr. 1923, *Marcan 1381* (lectotype K [K000763863], designated by Johansson (1987), isolectotypes BM [BM000945319, BM000945320]).

var. **fragrans**

Thailand.— NORTH-EASTERN: Loei [Na Haew, Phu Suan Sai NP, 12 Mar. 2008, *Maknoi 2077* (QBG)]; Udon Thani [Nong Saeng, H.M.H. the Queen's 60th Birthday Anniversary Arboretum, 17 July 2004, *Sidajium 18* (BKF)]; Nong Khai [Phonpisai, Na Tan, 7 June 1963, *Adisai 482* (BK)]; Bueng Kan [Phu Wua WS, 6-7 May 1997, *Puff 970507-1/3* (BKF)]; Nakhon Phanom [Dong Bang, 15 May 1932, *Kerr 21479* (BK, BM, E, K, TCD)]; Mukdahan [Phu Sa Dok Bua NP, 27 June 2010, *Tanaros 561* (QBG)]; EASTERN: Nakhon Ratchasima [Sakaerat, 22 Oct. 1971, *van Beusekom et al. 3302* (BKF, K)]; Wang Nam Khiao, 25 Apr. 1970, Sanoh 718 (BKF)]; Si Sa Ket [Kantalarak, 17 Sept. 2004, *Pooma et al. 4781* (AAU, BKF)]; Ubon Ratchathani [Ubon Ratchathani Gene Conservation Station, Ban Bahai, 1 Aug. 2001, *Greijmans 121* (BKF, CMUB)]; SOUTH-EASTERN: Chon Buri [Si Racha, Ban Dan, 4 Apr. 1920, *Marcan 176* (BM, K)]; *ibid.*, 13 Apr. 1923, *Marcan 1381* (BM-2 sheets, K)]; *ibid.*, 5 Apr. 1920, *Kerr 4156* (BM, K)]; *ibid.*, Nong Pru, 13 Apr. 1923, *Collins 837* (BK, E, K, TCD)]; *ibid.*, Na Kate, Khao Din, 25 July 1923, *Collins 912* (BK, K)]; Khao Khiao, 8 Apr. 1975, *Maxwell 75-33* (AAU)]; *ibid.*, 8 Apr. 1975, *Maxwell 75-383* (AAU, BK)]; *ibid.*, 25 June 1975, *Maxwell 75-645* (AAU, BK)]; *ibid.*, 30 Apr. 1975 (AAU-2 sheets, BK)]; Rayong [Khao Chamao, 5 Sept. 1972, *Larsen et al. 32468* (AAU, BKF, E, K, KYO-2 sheets)]; Chanthaburi [North Soi Dao, 3 May 1975, *Maxwell 75-453* (AAU, BK)].

Distribution.— Laos.

Ecology.— In shaded evergreen or rocky deciduous forest, 100–300 m alt.

Vernacular.— Khao san (ข้าวสาร)(Nakhon Phanom).

Note.—*Prismatomeris fragrans* var. *fragrans* is readily distinguished from all other members of its genus by the larger calyx tube and having tufted hairs on the calyx teeth.

3. *Prismatomeris glabra* (Korth.) Valetton, Bot. Jahrb. Syst. 44: 569. 1910.—*Coffea glabra* Korth., Ned. Kruidk. Arch. 2(2): 254. 1851. Type: Indonesia, Borneo, Kalimantan, South prov., Martapura, *Korthals s.n.* (lectotype **L** [L0001052], designated by Johansson (1987)).

—*Coffea neurophylla* Miq., Fl. Ned. Ind. 2: 1079. 1857. Type: Indoneisa, Sumatra, Banka, Mentulang, *Horsfield 13* (lectotype **K** [K000763854], designated by Johansson (1987), isolecotypes **K** [K000763855, U0006159]). —*Prismatomeris neurophylla* (Miq.) Ridl., Bull. Misc. Inform. Kew 1939(10): 606. 1940 (1939, publ. 6 Jan. 1940).

—*Coffea lepidophloia* Miq., Fl. Ned. Ind., Eerste Bijv. 3: 548. 1861. Type: Indonesia, Sumatra, Banka, *Teymann 19347* (lectotype **U** [U0006161], designated by Johansson (1987), isolecotypes **BO n.v.**, **L** [L0001051]). —*Paracoffea lepidophloia* (Miq.) Miq. fide Froehner, Engler's Bot. Jahrb. 25: 248. 1898, **pro syn.**, **sphalm.** —*Prismatomeris lepidophloia* (Miq.) Ridl., Bull. Misc. Inform. Kew 1939(10): 601. 1940 (1939, publ. 6 Jan. 1940).

—*Prismatomeris tetrandra* sensu Merrill, J. Straits Branch Roy. Asiat. Soc., special no: 581. 1921, pro parte, non (Roxb.) K. Schum.

—*Prismatomeris malayana* sensu Ridley, J. Fed. Malay States Mus. 10: 142. 1920b, pro parte, & Fl. Malay Penins. 2: 116. 1923, pro parte, non Ridley.

Tree 8 m tall. *Leaves* with petioles 4–7 mm long; lamina 6–10 by 1.8–2.5 mm, narrowly elliptic, chartaceous, glabrous, base narrowly cuneate, apex acute or acuminate, margin straight; lateral veins 7–12 pairs. *Flowers* in terminal or axillary cymes, 1–10; pedicels 10–17 mm long, glabrous. *Calyx* pale green; tube 0.8–1 mm long, denticulate, glabrous; teeth 4–6, 0.3–0.5 mm long; calyx rim and particularly teeth with minute sessile cushion-shaped or shortly stalked colleters and between teeth. *Corolla* white; tube (10–) 13–14 mm long; lobes (4–) 5, (7–) 9–13 mm long, narrowly acute. *Stamens* (4–) 5; filaments 0.5–0.6 mm long, inserted in corolla tube 2–2.3 mm from orifice; anthers 2–2.3 by 0.3–0.4 mm. *Style* 13–17.2 mm long; stigma 2.8–3 mm long. *Fruit* globose to subglobose, 9–10 by 9 mm.

Thailand.—PENINSULAR: Yala [Betong, Hala-Bala WS, 25 May 2005, *Middleton et al. 3577* (**BKF, E**)].

Distribution.—Sumatra, Peninsular Malaysia, Singapore, Borneo.

Ecology.—On ridge of wet evergreen forest, 1,000 m alt.

Vernacular.—Duk kai tai (ดูไกไต้).

Note.—*Prismatomeris glabra* is characterized by having colleters along the rim of the calyx tube. The specimen from Betong, Yala province (*Middleton et al. 3577*) is the first record of this species in Thailand. The Thai collection extends the range of *P. glabra*, previously restricted to Sumatra, Peninsular Malaysia and Borneo. The description of fruit is based on Johansson's work (1987).

4. *Prismatomeris griffithii* Ridl., J. Fed. Malay States Mus. 10: 96. 1920. Type: Thailand, Chumphon, Tasan, 5 Nov. 1919, *Kloss 6940* (lectotype **K** [K000763866], designated by Johansson (1987), isolecotypes **SING** [SING0058839, SING0058840]).

Thailand.—EASTERN: Si Sa Ket [22 Mar. 1983, *Smitinand s.n.* (**BKF** [103650])]; SOUTH-WESTERN: Kanchanaburi [Si Sa Wat, 2 June 1962, *Kasem 203* (**BK**)]; SOUTH-EASTERN: Chanthaburi [Makham, Philiu Waterfall NP, 1 July 2001, *Chamchumroon VC1121* (**BKF**)]; PENINSULAR: Chum Phon [Phato, Nam Tok Ngao NP, 13 Dec. 2005, *Gardner ST2081* (**BKF, K**)]; Surat Thani [Viphavadi, Khlong Yan WS, 31 Aug. 2002, *Middleton et al. 1481*, (**BKF, CMUB**); *ibid.*, 10 May 2006, *Gardner & Sidisunthorn ST2708* (**BKF, K**); Khao Klak, 21 Sept. 1963, *Smitinand & Sleumer 1195* (**BKF, K**); Takuapa, Khao Lak Lam Ru NP, 28 Apr. 2006, *Gardner ST2666* (**BKF, K**); Krabi [Khao Phanom Bencha NP, Tham Khao Pheung, 17 June 2006, *Williams 1830* (**BKF-2** sheets, **E**)]; Nakhon Si Thammarat [Khao Luang, 16 May 1973, *Geesink & Santisuk 5466* (**AAU, BKF, E, K, KYO**); Khiriwong, 23 July 1951, *Smitinand 677* (**BKF**)]; *ibid.*, Tabchang, 8 May 1954, *Ploenchit 791* (**BKF**); Phatthalung [Tamote, 5 Oct. 1986, *Maxwell 86-758* (**BKF, PSU**)]; Trang [Khao Chong, 23 Mar. 1966, *Bunnab 466* (**BKF**); *ibid.*, 31 Oct. 1984, *Maxwell 84-388* (**BKF, PSU**); Khao Soi Dao, 27 Apr. 1930, *Kerr 19141* (**BK, BM, E, K, TCD**); *ibid.*, 28 Apr. 1930, *Kerr 19177* (**BK, BM, K, TCD**); Yan Ta Khao, Khao Banthat, 6 Apr.

2003, *Middleton et al. 1909* (**BKF, E**); Songkhla [Boripat Waterfall, 23 June 1992, *Larsen et al. 43072* (**AAU, BKF**); Hat Yai, 27 Oct. 1993, *Larsen et al. 44074* (**AAU, BKF**); Yala [Than To, Bang Lang NP, 19 May 2005, *Middleton et al. 3470* (**BKF-2 sheets, E**); Narathiwat [22 Apr. 1961, *Sangkhachand 79* (**BKF**)].

Distribution.— Myanmar, Peninsular Malaysia.

Ecology.— In disturbed evergreen forest, 50–500 m alt.

Vernacular.— Kraduk kai dam (กระตูดกไต่ดำ) (Nakhon Si Thammarat), duk kai (ตูดกไต่) (Trang), duk kai khao (ตูดกไต่ขาว) (Nakhon Si Thammarat).

Note.— *Prismatomeris griffithii* has distinctive very short pedicels, and a hairy calyx tube and corolla.

5. Prismatomeris memecyloides Craib, Bull. Misc. Inform. Kew 1932(9): 437. 1932. Type: Trat, Ko (Kaw) Chang, Salak Kawk, 6 June 1925, *Rabil 37* (lectotype **K** [K000763860], designated by Johansson (1987), isoelectotypes **ABD** [ABDUH:2/706], **BK** [BK257436], **BM** [BM000945318], **E** [E00327813], **K** [K000763861], **TCD** [TCD0018313].

— *P. albidiflora* sensu Pit. in Lecomte *et al.*, Fl. Indo-Chine 3: 428. 1924, pro parte, non Thwaites.

— *P. parviflora* Ridl., Bull. Misc. Inform. Kew 1939(10): 605. 1940 (1939, publ. 6 Jan. 1940), pro parte.

Thailand.— NORTH-EASTERN: Loei [Wang Saphung, Phu Luang WS, 14 May 1998, *Wongprasert s.n.* (**BKF-2 sheets, SN161543**)]; EASTERN: Nakhon Ratchasima (Chan Tuek); SOUTH-EASTERN: Trat [Ko Chang, Salak Kawk, 6 June 1925, *Rabil 37* (**ABD, BM, E, K-2 sheets, TCD**); Ko Kut, Ao Salak, 5 Apr. 1959, *Sørensen et al. 7174* (**BKF**); *ibid.*, 5 Apr. 1959, *Smitinand 5682* (**BKF**)]; PENINSULAR: Surat Thani [Mueang, Khao Thaphet Non-hunting Area, 18 Dec. 2006, *Pooma et al. 6391* (**BKF-2 sheets, E**)].

Distribution.— Cambodia, Vietnam.

Ecology.— In shaded evergreen of deciduous forest, 150–200 m alt.

Vernacular.— Phrik pa (พริกป่า) (Trat).

Note.— *Prismatomeris memecyloides* is distinctive on account of its chartaceous leaves.

6. Prismatomeris mollis Craib, Bull. Misc. Inform. Kew 1932(9): 437. 1932. Type: Thailand, Krabi, Khao Phanom (Panom), 2 Apr. 1930, *Kerr 18825* (lectotype **K** [K000763864], designated by Johansson (1987), isoelectotypes **ABD** [ABDUH:2/707, **BK** [BK257437], **BM** [BM000945317], **K** [K000763865], **TCD** [TCD0018312].

Thailand.— PENINSULAR: Krabi [Khao Phanom, 2 Apr. 1930, *Kerr 18825* (**ABD, BK, BM, K-2 sheets, TCD**)].

Distribution.— Myanmar.

Ecology.— In shaded evergreen forest.

Vernacular.— Duk kai bai kon (ตูดกไต่ขาว).

Note.— *Prismatomeris mollis* has distinctive leaves which are softly pubescent on the lower surface.

7. Prismatomeris sessiliflora Pierre ex Pit. in Lecomte *et al.*, Fl. Indo-Chine 3: 429. 1924. Type: Vietnam, Dinh prov. de Baria, Mt. Mu-Xoai, Apr. 1868, *Pierre 3175* pro parte, (lectotype **P** [P00836903], designated by Johansson (1987), isoelectotype **P** [P00836904]. Fig. 1.

Thailand.— NORTHERN: Chiang Mai [18 Apr. 1960, *Smitinand & Alsterlund 6732* (**BKF**)]; NORTH-EASTERN: Phetchabun [Lom Kao, Nam Nao, 23 May 1951, *Smitinand & Suvaenakoset 548* (**BKF**)]; Loei [Na Haew, Phu Suan Sai NP, 14 May 2008, *Maknoi & Srisanga 2182* (**BKF**)]; Nong Khai [Mueang, Ban Hin Ngam, 4 May 2002, *Pooma et al. 3488* (**BKF**)]; Bueng Kan [Phu Wua WS, 30 July 2005, *Pooma et al. 7339* (**BKF-2 sheets**); Seka, Chet Si Waterfall, 20 May 2004, *Pooma et al. 4111* (**AAU, BKF**)]; Nakhon Phanom [Dong Bang, 16 May 1932, *Kerr 21505* (**ABD, BK, BM, K**); Phu Langka, Tad Kham Falls, 25 Aug. 2001, *Pooma et al. 2650* (**BKF-2 sheets**)]; Mukdahan [13 June 1932, *Lakshnakara 922* (**ABD, BK, BM, K**); *ibid.*, 11–12 May 1997, *Puff 970611-2/2* (**BKF**), Mukdahan NP, 23 Aug. 2001, *Pooma et al. 2450* (**BKF-2 sheets**)]; EASTERN: Chaiyaphum [Ban Nam Phrom, Tunkamang WS, 25 May 1974, *Geesink et al. 6962*, (**AAU, BKF, K, KYO**)]; Hua Ham Pok, 7 July 1971, *Phengkklai 174* (**BKF**); Phu Khiao Game Reserve, 8 Nov. 1984, *Murata et al. T-50035* (**BKF**); Nakhon Ratchasima [Pak Thong Chai, Sakaerat Forest Research, 28 Oct. 1969, *van Beusekom & Charoenpol 1850* (**AAU,**

BKF, E, K, KYO); *ibid.*, 29 Oct. 1969, *van Beusekom & Charoenpol 1897 (AAU, BKF, E)*; *ibid.*, 11 Nov. 1963, *Pradit 560 (BK)*; Ubon Ratchathani [Kang Tana NP, 13 May 1997, *Puff 970513-1/1 (BKF)*]; *ibid.*, near Gene Conservation Station, 22 Aug. 2001, *Pooma et al. 2296 (BKF-2 sheets)*, Nachaluai, Phu Chong Na Yoi NP, 13 May 2005, *Puudjaa 1435 (BKF-2 sheets)*; *ibid.*, Kang Kalao, 1 July 2010, *Tanaros 588 (QBG)*; SOUTH-WESTERN: Uthai Thani [Huai Kha Khaeng WS, year 1991, *Santisuk et al. 472 (BKF-2 sheets)*]; Phetchaburi [Kaeng Krachan NP, trail to Than Thip Waterfall, 12 May 2005, *Middleton et al. 3394 (BKF)*]; CENTRAL: Saraburi [Phu Khae, 18 Dec. 1981, *Santisuk s.n. (BKF)*]; SOUTH-EASTERN: Rayong [Ban Phe Arboretum, 22 Apr. 1983, *Soejarto et al. 6040 (BKF)*]; Trat [Ko Chang, May 1920, *Vanpruck 952 (BKF)*]; PENINSULAR: Ranong [15 Aug. 1973, *Pochanart 434 (BKF-2 sheets, K)*; Ban Bangman, 23 Apr. 2005, *Pooma et al. 5233 (AAU, BKF)*; Ban Kam Phuran, Kaper, 7 Dec. 1979, *Shimizu et al. T-26338 (KYO)*; Punyaban Waterfall, 8 Sept. 1984, *Fukuoka et al. T-36011 (KYO)*]; Surat Thani [Viphavadi, Khlong Yan WS, 7 May 2002, *Pooma et al. 3546 (BKF)*]; Nakhon Si Thammarat [Khao Luang, 23 May 1968, *van Beusekom & Phengkklai 935 (KYO)*].

Distribution.— Laos, Cambodia, Vietnam.

Ecology.— In dry evergreen and dry dipterocarp forests, 220–700 m alt.

Vernacular.— Siao ngoen liang (เสี่ยวเงินเลี้ยง), i lam (อีล่า) (Northeastern).

Note.— *Prismatomeris sessiliflora* is similar to *P. griffithii* by its sessile flowers or with pedicels less than 5 mm long, but is distinguished from the latter by its glabrous calyx tube and corolla (Fig. 1).

8. *Prismatomeris tetrandra* (Roxb.) K.Schum. in Engler & Prantl, *Nat. Pflanzenfam.* 4(4): 138. 1891.— *Coffea tetrandra* Roxb., [Hort. Bengal.: 85. 1814, **nom. nud.** ex] *Fl. Ind.*, ed. Carey & Wall., 2: 193. 1824. Type: *Drawing 2123* in *Icones Roxburghanae* (lectotype **K**, designated by Johansson (1987)). Fig. 2.

— *Coffea pedunculata* Roxb., [Hort. Bengal.: 86. 1814, **nom. nud.** ex] *Fl. Ind.*, ed. Carey & Wall., 2: 195. 1824. Type: India, without collection note, *Roxburgh s.n.* (lectotype **BR** [BR0000005314713], designated by Johansson (1987)).

— *P. fergusonii* Thwaites ex Bedd., *Fl. Sylv. S. India Forester's Man. Bot.* 134: 10. 1871.— *P. albiflora* Thwaites var. *fergusonii* (Bedd.) Trimen, *Handb. Fl. Ceylon* 2: 356. 1894. Type: Sri Lanka, without locality or date, *Ferguson s.n.*, *C.P. 728* pro parte, (neotype **PDA n.v.**, designated by Johansson (1987)).

— *Prismatomeris albidiflora sensu* Hook.f., *Fl. Brit. India* 3: 159. 1880, pro parte, non Thwaites

— *Octotropis terminalis* C.B. Clarke, *J. Linn. Soc., Bot.* 25: 33, t. 17. 1889. Type: India, Naga hill, 15 Oct. 1885, *Clarke 40816* (lectotype **K** [K000031583], designated by Johansson (1987), isolectotype **K** [K000031584]).

— *Prismatomeris albidiflora sensu* King & Gamble, *J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist.* 73: 90. 1904, pro parte; Ridl., *J. Straits Branch Roy. Asiat. Soc.* 59: 119. 1911, non Thwaites.

— *P. malayana* Ridl., *J. Fed. Malay States Mus.* [10: 96. 1920, **nom. nud.**, ex] 10: 142. 1920.— *P. tetrandra* subsp. *malayana* (Ridl.) J.T. Johanss., *Opera Bot.* 94: 29, f. 21. 1987. Type: Thailand, Delisle Island off Ranong, *Kloss 6647* (lectotype **K** [K001067637], designated by Johansson (1987)).

— *Prismatomeris albidiflora sensu* Pit. in Lecomte *et al.*, *Fl. Indo-Chine* 3: 428. 1924, pro parte, non Thwaites.

— *P. harmandii* Pit. in Lecomte *et al.*, *Fl. Indo-Chine* 3: 429. 1924. Type: Laos, Attopeu, Mar. 1877, *Harmand 1281*, (lectotype **P** [P00836901], designated by Johansson (1987), isolectotype **P** [P00836902]).

— *Prismatomeris multiflora* Ridl., *Bull. Misc. Inform. Kew* 1939(10): 603. 1940 (1939, publ. 6 Jan. 1940). Type: Thailand, Chiang Mai, Doi Inthanon (Doi Ang Ka Noi), 27 June 1927, *Garrett 390* (lectotype **K** [K000763867] designated by Johansson (1987), isolectotypes **ABD** [ABDUH:2/708], **C** [C10018290], **E** [E00327812], **K** [K000763868, K000763869]).

— *P. ovalifolia* Ridl., *Bull. Misc. Inform. Kew* 1939(10): 603. 1940 (1939 publ. 6 Jan. 1940). Type: Indonesia, Anambas island, Tanjung Suka, Siantan, 3 Apr. 1928, *Henderson 20228* (lectotype **K** [K000763859] designated by Johansson (1987), isolectotypes **K** [K000763858], **SING** [SING0058844]).

— *P. tetrandra* (Roxb.) K.Schum. var. *philippinensis* Ridl., *Bull. Misc. Inform. Kew* 1939(10): 603. 1940 (1939, publ. 6 Jan. 1940). Type: Philippines, Luzon,



Figure 1. *Pristomeris sessiliflora* Pierre ex Pit.: Young flowers. Photographed by Teerawat Srisuk.



Figure 2. *Pristomeris tetrandra* (Roxb.) K.Schum.: Flowers and fruits. Photographed by Phongsak Phonsena.

Tagcauyan, Prov. of Tayabas, Mar. 1911, *Ramos 13315*, lectotype **K** [K000763850] designated by Johansson (1987), isolectotypes **BM** [BM000945389], **CAL** *n.v.*, **E** [E00327885], **F** [F0070155F], **G** [G00436439], **L** [L0001056, L2943754], **LD** *n.v.*, MO797109 & SS-G-5063).

— *P. parkinsonii* Ridl., Bull. Misc. Inform. Kew 1939: 605. 1940 (1939 publ. 6 Jan. 1940). Type: Myanmar (Burma), Tenasserim, Nyaungbinkwin, 20 Feb. 1926, *Parkinson 1933* (lectotype **K** [K000031589], designated by Johansson (1987), isolectotype **K** [K000031588]).

— *P. parviflora* Ridl., Bull. Misc. Inform. Kew 1939: 605. 1940 (1939 publ. 6 Jan. 1940). Type: Malaysia, Perlis, Chupeng, Mar. 1910, *Ridley 15000*, (holotype **K** [K000763870], isotypes **BM** [BM000945390], **SING** [SING0058843]).

Thailand.— NORTHERN: Mae Hong Son [Ban Huai Pheng, Huai Pha, 20 July 2014, *Srisanga et al.* 3834 (**AAU**, **QBG**); Pai, 25 Sept. 1995, *Larsen et al.* 46922 (**AAU**, **BKF**); *ibid.*, Huai Nam Dang, 26 June 2011, *Pongamornkul 2912* (**QBG**); Sob Moei, Ban Mae Lai, 13 July 2013, *Pongamornkul 3686* (**QBG**); Chiang Mai [28 July 1992, *Larsen et al.* 43723 (**AAU**, **BKF**); *ibid.*, 28 July 1992, *Larsen et al.* 43724 (**AAU**); Bo Luang, Chom Thong, Mae Soi Ridge, 20 July 1991, *Maxwell 91-678* (**CMU**, **E**); Doi Chiang Dao, 1 Jan. 1921, *Kerr 5536* (**ABD**, **BK**, **BM**, **K**); Doi Inthanon NP, 7 May 1958, *Sørensen et al.* (**BKF**); *ibid.*, 26 July 1988, *Phengklai et al.* 6943 (**BKF**-2 sheets, **TI**); *ibid.*, 26 July 1988, *Phengklai et al.* 6978 (**BKF**); *ibid.*, Ang Kanoi, 26 June 1978, *Phengklai et al.* 4127 (**BKF**, **K**); *ibid.*, Mae Pan Waterfall, 16 Oct. 1979, *Shimizu et al.* T-18973 (**KYO**); *ibid.*, 16 Oct. 1979, *Shimizu et al.* T-19009 (**KYO**); *ibid.*, Ban Pa Khem, 27 Dec. 1999; *Hara & Kanzaki B389* (**CMUB**); *ibid.*, Ban Mae Klang Luang, 1 Dec. 1999, *Hara E179* (**CMUB**); *ibid.*, 30 Aug. 2003, *Hara et al.* 18 (**BKF**, **CMUB**); *ibid.*, 5 May 2010, *Giorgiadis 287* (**CMUB**); *ibid.*, Mae Awn, 16 July 2005, *Maxwell 05-452* (**BKF**, **CMUB**); *ibid.*, along Mae Klang River, 20 July 1988, *Fukuoka T-62572* (**BKF**, **KYO**); Doi Nang Ka, 17 Nov. 1930, *Put 3455* (**ABD**, **BK**, **BM**, **E**, **TCD**); Doi Suthep, 17 June 1909, *Kerr 683* (**K**, **TCD**); *ibid.*, 17 June 1909, *Kerr 683A* (**BM**, **K**, **TCD**); *ibid.*, 3 Dec. 1911, *Kerr 2262* (**E**, **K**, **TCD**); *ibid.*, 17 May 1958, *Sørensen et al.* 3501 (**K**); *ibid.*, 22 June 1958, *Sørensen et al.* 3677 (**BKF**); *ibid.*, 1 Aug. 1958, *Sørensen et al.* 4546 (**K**); *ibid.*, 18 Dec.

1969, *van Beusekom & Phengklai 2595* (**BKF**); *ibid.*, 4 July 1987, *Maxwell 87-594* (**BKF**); *ibid.*, 19 Sept. 1987, *Maxwell 87-1026* (**BKF**); *ibid.*, 7 Nov. 1987, *Maxwell 87-1385* (**BKF**, **CMU**); *ibid.*, 30 May 1988, *Maxwell 88-710* (**BKF**, **CMU**); *ibid.*, 9 July 1992, *Maxwell 92-368* (**CMUB**); *ibid.*, 19 Sept. 1995, *Larsen et al.* 46698 (**AAU**); *ibid.*, 23 June 2002, *Chamchumroon VC1625* (**BKF**-2 sheets); Huai Chang Khian, 1 Aug. 1921, F.H.W. Kerr 161 (**K**); Huai Thung Thao, 6 June 1994, *BGO Staff 862* (**QBG**); Mae Cham, Ban Chan, Huai Hom, 11 Dec. 2007, *Tanaka et al.* HN8111 (**QBG**, **TI**); *ibid.*, Mae Cham, Ban Pang Hinfon, 15 Dec. 2016, *Pongamornkul 5843* (**QBG**); *ibid.*, Wat Chan, 3 June 1998, *Wiboonkoon 301* (**CMUB**); *ibid.*, Mae Cham, Wat Chan, Huai Miang, 29 Nov. 2007, *Srisanga 3064* (**KYO**, **QBG**); Mae Pan Waterfall, 29 July 1988, *Fukuoka T-62320* (**BKF**, **KYO**); Mae Rim, Hua Huai Mae Mae, **QBG**, 24 July 1996, *BGO Staff 6928* (**QBG**); *ibid.*, Mae Rim, Botanic Gardens, 10 May 1994, *BGO Staff 677* (**QBG**); Mae Suai, Ban San Sa At, 11 July 1967, *Prayad 902* (**BK**); Mae Wang, 11 Dec. 2004, *Maxwell 04-787* (**BKF**, **CMUB**); Ob Luang Tableland, 11 June 1968, *van Beusekom & Phengklai 1096* (**BKF**, **E**, **K**); Samoeng, Doi Mon Angget, 15 July 1997, *Maxwell 97-773* (**BKF**, **CMUB**); Wiang Hang, Ban Lao Wu, 18 July 2001, *Norsaengsri 1592* (**CMUB**, **QBG**); Chiang Rai [Ban Saen Sa, 22 July 1967, Bunchuai & Nimanong 1418 (**BKF**); Mae Chand, Ban Bah Kah Sook Jai, Doi Mae Salong, 6 Nov. 1993, *Maxwell 93-1361* (**BKF**, **CMUB**); Wieng Pa Pao, Doi Luang NP, 25 May 1998, *Maxwell 98-572* (**CMUB**); *ibid.*, Doi Pee Pan Nam, 26 June 2007, *Wattana 2362* (**QBG**); Nan [Doi Phu Kha NP, 19 Mar. 1999, *Srisanga 571* (**BKF**, **CMUB**, **QBG**); Lamphun [Doi Bah Bae, 13 Oct. 2004, *Maxwell 04-576* (**CMUB**); Mae Tha, Doi Khun Tan NP, just below Yaw 2, 15 July 1993, *Maxwell 93-751* (**BKF**, **CMUB**); Lampang [Hang Chat, Doi Khun Tan NP, 9 Sept. 1994, *Nanakorn et al.* 1556 (**QBG**); Mae Sela, 5 Mar. 1925, *Winit 1278* (**BK**, **BKF**, **K**); Mueang Pahn (Pan), Jae Sawn NP, 31 May 1996, *Maxwell 96-765* (**BKF**, **CMUB**); *ibid.*, 28 July 1996, *Maxwell 96-1020* (**BKF**, **CMUB**); Ngao, Khun Yeang, 26 Apr. 2001, *Niyomdham 6478* (**BKF**-2 sheets); Wang Nua, Doi Luang NP, 7 Nov. 1998, *Petrmitr 322* (**BKF**, **CMUB**); Phrae [25 June 1911, *Vanpruck 249* (**BKF**, **K**); Me Song, 30 May 1912, *Vanpruck 305* (**BKF**, **QBG**); Uttaradit [near officer house, Lan Son, Phu Soi Dao NP, 18 Mar. 2992,

- Chamchumroon & PuffVC1451* (**BKF-2** sheets); Tak (Phop Phra, Pa Charoen Waterfall, 20 June 2011, *Chamcumroon et al.* 4960 (**BKF**); Thung Yai Naresuan East WS, the way to Thung Na Noi Protection Unit, 24 Mar. 2013, *La-onsri et al.* 2362 (**QBG**); Sukhothai [Si Satchanalai NP, 7 Mar. 2012, *Poonlap 15* (**QBG**); *ibid.*, route to Pha Cho, Mae San, 1 Apr. 2015, *Maknoi 7726* (**QBG**); *ibid.*, route to Tham Kangkao, 22 July 2015, *Maknoi 8037* (**QBG**); *ibid.*, route to Pang Kwai, Mae San, 27 Aug. 2015, *Maknoi 8267* (**QBG**); *ibid.*, 27 Aug. 2015, *Maknoi 8287* (**QBG**); Phitsanulok [Kaeng Sopha, 27 June 1967, *Phusomsaeng 254* (**BKF**); Phu Soi Dao, start of Noen Praab Sean, *Suksathan 1685* (**QBG**); Thung Salaeng Luang NP, 2 May 1961, *Phengkklai 163* (**BKF, K**); *ibid.*, 25 July 1973, *Murata et al.* T-17065 (**BKF**); *ibid.*, 25 July 1973, *Murata et al.* T-17070 (**BKF, KYO**); *ibid.*, 11 Apr. 1964, *Pradit 788* (**BK**); *ibid.*, 25 June 1973, *Murata et al.* T-17050 (**BKF, QBG**); Kamphaeng Phet [Khlong Khung, 31 May 1922, *Kerr 6042* (**AAU, ABD, BM, BK**)]; NORTH-EASTERN: Phetchabun [Nam Nao NP, 27 Oct. 1984, *Murata et al.* T-51490 (**BKF**); *ibid.*, 26 Nov. 2003, *Chantaranoethai et al.* 20/2003 (**KKU**); *ibid.*, 20 Mar. 2004, *Chantaranoethai et al.* s.n. (**KKU-112590**; *ibid.*, 7 May 2004, S.N. (**KKU-11901**); *ibid.*, Phu Pha Jit, 3 Sept. 2014, *Maknoi 7175* (**QBG**)]; Loei [Na Haew, 26 Apr. 1994, *BGO Staff 2106* (**QBG**); *ibid.*, *Nanakorn et al.* 3166 (**AAU, KYO**); *ibid.*, 26 Apr. 1994, *Nanakorn et al.* 3180 (**AAU, QBG**); *ibid.*, 26 Apr. 1996, *Nanakorn et al.* 6288 (**QBG**); *ibid.*, 26 Apr. 1996, *BGO Staff 37* (**QBG**); *ibid.*, 26 Apr. 1996, *BGO Staff 6323* (**QBG**); Pak Chom, 2 Sept. 1968, *Phengnaren 662* (**BKF**); Phu Kradueng NP, 11 Mar. 1924, *Kerr 8644* (**ABD-2** sheets, **BK, BM, K, TCD**); *ibid.*, 12 Mar. 1924, *Kerr 8700* (**AAU, ABD-2** sheets, **BK, BM, K**); *ibid.*, 2 Apr. 1933, *Lakshnakara 1378* (**BK, BM, K**); *ibid.*, 3 Apr. 1933, *Lakshnakara 1391* (**BK, BM, K**); *ibid.*, 10 Apr. 1941, *Suvarnasuddhi 486* (**BKF**); *ibid.*, 6 Mar. 1948, *Suvatabhandu 172* (**BK**); *ibid.*, 14 May 1954, *Bunpheng 801* (**BKF**); *ibid.*, 20 Apr. 1955, *Bunchai 16* (**BKF**); *ibid.*, 20 Oct. 1957, *Bunpheng 943* (**BKF**); *ibid.*, 20 Oct. 1957, *Bunpheng 944* (**BKF**); *ibid.*, 30 Nov. 1965, *Tagawa et al.* T-904 (**BKF, KYO**); *ibid.*, 20 Oct. 1967, *Pradit 1064* (**BK**); *ibid.*, 24 Dec. 1971, *van Beusekom et al.* 4547 (**BKF, K, KYO**); *ibid.*, 6 Mar. 1979, *Koyama et al.* T-15657 (**BKF**); *ibid.*, 14 Nov. 1979, *Shimizu et al.* T-22612 (**KYO**); *ibid.*, 14 Nov. 1979, *Shimizu et al.* T-22696 (**KYO**); *ibid.*, 30 Oct. 1984, *Murata et al.* T-40240 (**BKF, KYO**); *ibid.*, 30 Oct. 1984, *Murata et al.* T-42094 (**BKF**); *ibid.*, 2-3 Nov. 1984, *Murata et al.* T-42910 (**KYO**); *ibid.*, 4 Nov. 1984, *Murata et al.* T-43105 (**BKF, KYO**); *ibid.*, Sam Haek, 29 Aug. 1988, *Fukuoka T-63695* (**BKF, KYO-2** sheets, **TI**); *ibid.*, Than Sawan Waterfall, 31 Aug. 1988, *Fukuoka T-63767* (**BKF, KYO, TI**); *ibid.*, Pha Lom Sak, 8 Sept. 1988, *Takahashi & Tamura T-63439* (**BKF, KYO**); Phu Luang WS, 3 Dec. 1965, *Tagawa et al.* T-1020 (**BKF**); 27 Nov. 1967, *Bunpheng 987* (**BKF**); *ibid.*, 15 Apr. 1968, *Chermsirivathana 892* (**BK**); *ibid.*, 16 Apr. 1968, *Chermsirivathana 911* (**BK**); *ibid.*, 13 May 1998, *Chayamarit 1378* (**BKF-2** sheets); *ibid.*, Phu Yong Plui, 15 May 1998, *Wongprasert s.n.* (**BKF-SN122368**); *ibid.*, Kok Nokraba, trail to Pha Somdet, 15 Mar. 2002, *Chamchumroon VC1396* (**BKF-2** sheets); Phu Ruea NP, 24 Apr. 2005, S.N. (**KKU-13089**); Phu Suan Sai, route TK2 to Hua Hom, 14 May 2008, *Maknoi & Srisanga 2214* (**BKF**); *ibid.*, route to Sam Nuek Bab, 15 May 2008, *Maknoi & Srisanga 2306* (**BKF, QBG**); Bueng Kan [Ban Non Sa-nga, Chaiyaphon subdistrict, 10 Mar. 2008, *Sawangawatt 67* (**QBG**); Nakhon Phanom [Phu Langka, Tad Kham Falls, 25 Aug. 2001, *Pooma et al.* 2645 (**BKF-2** sheets)]; Maha Sarakham [Mahasarakham University Farm, 22 Mar. 2010, *Rukarcha 44* (**QBG**)]; Khon Kaen [Chum Phae, Dong Lan, 27 Mar. 1952, *Bunpheng 532* (**BKF**)]; EASTERN: Chaiyaphum [Phu Khiao, 24 Feb. 1931, *Kerr 20254* (**AAU, ABD, BK, BM, K**); *ibid.*, 1-3 May 1997, *Puff 970502-1/10* (**BKF**); Phu Khiao Game Reserve, 8 Nov. 1984, *Murata et al.* T-500368 (**BKF**)]; Nakhon Ratchasima [Chan Tuek, Khao Si Siat Aa, 1 Sept. 1924, *Kerr 9111* (**ABD, BK, BM, K, TCD**); Khao Yai, 2 Sept. 1967, *Hardial 590* (**BKF, K**); Khao Yai NP, Heo Suwat, without date, *Kritsana 42* (**BKF**); Lat Bua Kao, 7 Nov. 1931, *Put 4328* (**AAU, BK, K**); Pak Thong Chai, Sakaerat Forest Research, 23 Mar. 1968, *Santisuk et al.* 58 (**BKF**); *ibid.*, 15 June 1968, *Phengnaren 487* (**BKF**); *ibid.*, 2 Oct. 1968, *Hambananda 367* (**BKF**); *ibid.*, 28 Oct. 1969, *van Beusekom & Charoenpol 1853* (**AAU, BKF, E, K, KYO**); *ibid.*, 28 Oct. 1969, *van Beusekom & Charoenpol 1880* (**AAU, BKF, E**); *ibid.*, 18 Apr. 1970, *Phengnaren 730* (**BKF**); *ibid.*, 22 Oct. 1971, *van Beusekom et al.* 3282 (**BKF, K, KYO**); Wang Nam Khiao, 3 July 1967, *Damrongsak 4* (**BKF**); *ibid.*, 10 July 1967, *Damrongsak 77* (**BKF**); *ibid.*, 19 Sept. 1967, *Damrongsak 207* (**BKF**); *ibid.*, 15 Nov. 1967, *Damrongsak 412* (**BKF**); *ibid.*, 15 Nov.

- 1967, *Damrongsak* 432 (**BKF**); *ibid.*, 1 Sept. 1968, *Damrongsak* 793 (**BKF**); *ibid.*, 26 Apr. 1968, *Sanoh* 469 (**BKF**); *ibid.*, 18 Sept. 1968, *Sanoh* 636 (**BKF**); Sikhiu, Moo See, Ban Khlong Duea (now Pak Chong), 17 June 1943, *Aa-sa s.n.* (**BKF**-053922)]; Surin [Bua Ched, Nam Tok Tham Suea, Huai Thaptan-Huai Samran WS, 26 Nov. 2005, *Suddee et al.* 2638 (**BKF**-2 sheets, **QBG**); Mueang, Arloor-Doonban Community Forest, 2 Feb. 2008, *Petrimitr* 834 (**CMUB**)]; Yasothon [Maha Chanachai, 16 Feb. 1984, *Smitinand s.n.* (**BKF**-2 sheets, SN114286, SN114287)]; Ubon Ratchathani [Boontarik, Phu Pang, 14 May 2005, *Puudjaa* 1440 (**BKF**-2 sheets); Phu Chong Na Yoi NP, 10 June 2005, *Wangwasit* 05066615-20 (**QBG**)]; SOUTH-WESTERN: Uthai Thani [Huai Kha Khaeng & Thung Yai Naresuan, Kong Kho, 18 Jan. 1991, *Eiadthong* 55 (**BKF**-2 sheets); *ibid.*, 13 Feb. 1991, *Santisuk et al.* 234 (**BKF**-2 sheets); *ibid.*, 20 Jan. 1992, *Santisuk et al.* 1026 (**BKF**-2 sheets); *ibid.*, Khlong Plu, 6 Feb. 1992 *Santisuk et al.* 1129 (**BKF**-2 sheets); *ibid.*, 1 Mar. 1993, *Smitinand et al.* 555 (**BKF**); *ibid.*, Nang Rum, 23 Jan. 1991, *Santisuk et al.* 166 (**BKF**-2 sheets)]; Kanchanaburi [Mon Bala Ming, 5 km North-west of Kong Mong Tah Village, Thung Yai Naresuan West WS, 25 Feb. 2005, *van de Bult* 826 (**BKF**, **CMUB**); Laiwo, Thung Yai Naresuan WS, 24 Mar. 2004, *Webb* 29 (**CMUB**); Sesawo, Thung Yai Naresuan West WS, Khao Yai, 19 Mar. 2002, *van de Bult* 522 (**CMUB**); Sangkhla, Khao Yai, 30 Mar. 1968, *van Beusekom & Phengklai* 239 (**AAU**, **BKF**, **K**, **KYO**); Thong Phaphum, Huai Etong, Pilok, 30 Apr. 1949, *Charoenmayu* 482 (**BKF**)]; Phetchaburi [Kaeng Krachan NP, 6 Aug. 1995, *Larsen et al.* 45457 (**AAU**, **QBG**); *ibid.*, 27 Mar. 2003, *Middleton et al.* 1733 (**BKF**, **E**, **K**); *ibid.*, 12 May 2005, *Middleton et al.* 3423 (**BKF**, **E**); *ibid.*, 29 Nov. 2013, *Tagane et al.* T-2185 (**BKF**)]; Prachuap Khiri Khan [Bang Saphan, 7 Sept. 1998, *Phengklai et al.* 14369 (**BKF**-2 sheets); Hua Hin, Kaeng Krachan NP, 16 Aug. 2002, *Middleton et al.* 1100 (**BKF**, **CMUB**); Payawn, Khao Ngam, 8 July 1924, *Kerr* 10906 (**ABD**, **BK**, **BM**, **K**)]; CENTRAL: Saraburi [Pu Kae, 23 Apr. 1947, *Bunpheng* 93 (**BKF**); Sam Lan Forest, 13 Apr. 1974, *Maxwell* 74-266 (**BKF**, **BK**); *ibid.*, 1 Mar. 1975, *Maxwell* 75-172 (**AAU**, **BK**); *ibid.*, 18 July 1975, *Maxwell* 75-701 (**AAU**, **BK**); Khao Yai, route to Heo Suwat, 7 June 1979, *Vidal & Vidal* 6353 (**AAU**, **KYO**); Nakhon Nayok [Khao Yai NP, Mo Singto, 15 July 1996, *Charoenchai* 62 (**BKF**, **CMUB**); *ibid.*, 15 July 1996, *Charoenchai* 562 (**CMUB**); *ibid.*, 22 June 2004, *Chongko & Boonkongchart* 356 (**CMUB**); Nang Rong Waterfall, 29 July 1959, *Smitinand & Floto* 6103 (**BKF**, **K**); Pakphli, June 1991, *Parinya et al.* 355 (**BK**); *ibid.*, June 1991, *Somprasong & Sangchachand* 37 (**BK**)]; SOUTH-EASTERN: Chachoengsao [Khao Takrup, 29-30 Apr. 1997, *Puff* 970430-1/3 (**BKF**)]; Chonburi [Si Racha, Nong Nam Khiao, 15 Nov. 1926, *Collins* 1293 (**ABD**, **K**); *ibid.*, 19 Nov. 1969, *van Beusekom & Smitinand* 2279 (**AAU**); Rayong [Klang, Sak Pong Subdistrict, 17 Oct. 2008, *Sawangawat* 83 (**KYO**, **QBG**); Chanthaburi [Kaeng Hangmaeo, Khao Soi Dao, Khun Chong, 21 Feb. 2010, *Wessumritt & Bunchai* 21 (**QBG**); Khao Soi Dao WS, 17 May 2013, *Tagane et al.* T-1568 (**BKF**)]; Trat [Khao Kuap, 24 May 1930, *Put* 3007 (**AAU**, **ABD**, **BK**, **BM**, **K**)]; PENINSULAR: Chumphon [Ban Pak Khlong, 12 Jan. 1927, *Kerr s.n.* (**BK**-222412); Bang Son, 11 Mar. 1928, *Put* 1526 (**ABD**, **BK**, **BM**, **E**, **K**); Ban Tung Maha, 13 Jan. 1927, *Kerr* 11405 (**AAU**, **ABD**, **BK**, **BM**, **K**); Haadsai Ree, 16 Feb. 1968, *Vacharapong* 51 (**BK**); Khao Mudtree, 6 Apr. 1967, *Sutheesorn* 2136 (**BK**); Paknam Tago, 24 Feb. 1968, *Vacharapong* 126 (**BK**); Pa Khao Kra Por, 14 June 1959, *Khanchai* 1140 (**BKF**); Pathieu, 24 May 1969, *Jaray* 27 (**K**); *ibid.*, 24 May 1969, *Jaray* 29 (**BK**); Ban Namphu, Pak Khlong, 16 June 2000, *Niyomdham* 6243 (**BKF**); *ibid.*, 17 Dec. 2006, *Pooma et al.* 6381 (**BKF**, **E**); *ibid.*, Ban Nam Phu, Pak Khlong, 16 June 2000, *Niyomdham* 6235 (**BKF**-2 sheets); Sawi, Ban Tha Kradan, Tha Hin, 29 Mar. 2009, *Sawangawat* 133 (**KYO**, **QBG**); Ta Sae, Khao Pong, 11 Apr. 1967, *Sutheesorn* 2188 (**BK**)]; Ranong [8 Aug. 1973, *Pochanart* 416 (**BKF**, **K**); Delisle Island off Ranong, without date, *Kloss* 6647 (**K**); Hadsin Dam, 24 June 1974, *Geesink et al.* 7455 (**AAU**, **BKF**, **K**, **KYO**); Kraburi, Khao Num Kao, 13 Apr. 1967, *Sutheesorn* 2261 (**BK**, **E**); Mueang, Ngao Waterfall, 20 Feb. 2006, *Middleton et al.* 3864 (**BKF**); Suk Samran, 27 June 2004, *Gardner & Sidisunthorn* ST0880 (**BKF**, **K**)]; Surat Thani [Bang Bao, 9 Mar. 1957, *Smitinand* 3826 (**BKF**, **KYO**); *ibid.*, 14 Apr. 1965, *Phengklai* 985 (**BKF**, **K**); Ban Krut, 20 Feb. 1930, *Kerr* 18151 (**ABD**, **BK**, **BM**, **K**); Chan Cro, 9 Aug. 1955, *Suvanakoset* 861 (**BKF**); Kanchanadit, 1 Aug. 1927, *Kerr* 13063 (**ABD**, **BK**, **BM**, **K**); Kantuli, 9 Sept. 1931, *Put* 4173 (**AAU**, **ABD**, **BK**, **BM**, **K**); Khao Pra Thong, 15 July 1966, *Sutheesorn* 1361 (**BK**); Ko Tao, 12-17 Apr. 1927, *Kerr* 12739 (**AAU**, **ABD**, **BK**, **BM**,

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Sidisunthorn ST2547* (**BKF, K**); Khlong Jetmas, along the forest, without date, *Premrasmi 13* (**BKF**); Ko Butong, 13 Apr. 1928, *Kerr 14050* (**AAU, ABD, BK, BM, E, K**); Tarutao NP, 12 Mar. 1980, *Congdon 476* (**AAU**); Pattani [Sai Khao Waterfall, 9 Oct. 1991, *Larsen et al. 42260* (**AAU, BKF**); Yala [29 Jan. 1931, *Put 3650* (**ABD, BK, BM, K, TCD**); Narathiwat [Bacho NP, 11 Oct. 1991, *Larsen et al. 42328* (**AAU, BKF, PSU**); *ibid.*, 18 June 1992, *Larsen et al. 42992* (**AAU, BKF, PSU**)].

Distribution.— Sri Lanka, India, Bangladesh, Bhutan, Myanmar, China, Vietnam, Peninsular Malaysia, Singapore, Indonesia, Philippines.

Ecology.— Open-grassy pine-dipterocarp forest, along stream, roads, in evergreen and dry evergreen forests or sandy area along sea, 0–1,400 m alt.

Vernacular.— Kra duk kai (กระตูกไก่)(Peninsular), krak (กรัก)(Prachuap Khiri Khan), krak phi (กรักผี)(Peninsular), son pa (ซ็อนป่า)(Nakhon Ratchasima), duk kai khao (ตูกไก่ขาว)(Peninsular), duk kai dam (ตูกไกด้า)(Peninsular), to kraduk (ต่อกระตูก)(Loei), pha hom (ผ่าโฮม)(Satun), phut pa (พุดป่า)(Saraburi), son kra (สนกระ)(Central), ta lai (ตะไหล)(Chaing Mai).

Note.— *Prismatomeris tetrandra* shows a wide range of variation, especially in the lamina size and shape. Ridley (1920) described a new species from southern Thailand as *P. malayana*. Later two subspecies have been distinguished by Johansson (1987) under *P. tetrandra*: subsp. *tetrandra* and subsp. *malayana*, distinguished largely on their different leaf shape and fruits. Examinations of the type and non-type material of these subspecies showed that the differences between them are so small and unreliable that there are best united under *P. tetrandra* (Fig. 2).

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