

## One new combination and four new species of the genus *Psydrax* (Rubiaceae, Vanguerieae) in Thailand

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### ABSTRACT

*Psydrax* comprises ten species in Thailand. Here, four new species, *Psydrax celatus*, *P. maxwellii*, *P. minoriflorus*, and *P. pilosus* are described from Thailand, and one lectotype is designated. *Psydrax abbreviatus* is a new combination.

KEYWORDS: Flora of Thailand, lectotype, new records, taxonomy.

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### INTRODUCTION

Presently, the account of Rubiaceae for the Flora of Thailand is nearing completion, and it is necessary to complete the contribution of the genus *Psydrax* Gaertn. This requires the formal publication of the following four new species and one new combination.

We like to note here that we studied the “Annotated key to *Psydrax* species” (Wong, 1989: 400) in which several unnamed species are enumerated. Some of these have subsequently been described, but there are still undescribed species left, which could possibly occur in Thailand. However, the Thai material seen by us was different from that mentioned by K.M. Wong.

### TAXONOMIC TREATMENT

***Psydrax abbreviatus*** (Craib) W.J.de Wilde & Duyfjes, **comb. & stat. nov.**— *Canthium dicoccum* (Gaertn.) Merr. var. *abbreviatum* Craib, Fl. Siam. 2: 137. 1932; Sangratt., Stud. Canthium: 12. 2013. Type: Thailand, South-Eastern, Chonburi, Sriracha, 4 June 1920, *A.F.G. Kerr 4259* (lectotype **BM** [BM000945462], photo seen, designated here; isolectotype **TCD**, photo seen).

Shrubs or trees 3–5 m tall; twigs 2–3 mm diam. *Stipules* ca 5 mm long including a ca 3 mm long cusp. *Leaves*: blade without domatia, drying green, somewhat glossy above, dull beneath, glabrous, chartaceous, broadly elliptic, 5.5–8.5 × 3–5 cm, base cuneate or broadly rounded, apex rounded with a ca 0.5 cm rounded tip; midrib and lateral veins flat or slightly raised above, raised beneath; lateral veins 3–4(–5) on each side; tertiary venation inconspicuous; petiole 0.5–1 cm long. Inflorescences glabrous, a 10- to 20-flowered cyme, composed of few subcymes; primary peduncle ca 2 mm long, at apex with a small bract less than 1 mm long, split into several parts, secondary peduncles 0–1 mm long. *Flowers* only seen in bud; bud ca 4 mm long; pedicel not seen; calyx limb short, calyx lobes ca 0.5 mm long, with few hairs at apex; corolla tube inside hairy. *Ovary* ca 1 mm long. *Fruit* with one or two pyrenes, when with two pyrenes obovoid, slightly bilobed, 8–10 × 6–8 mm; fruiting pedicel 8–10 mm long. Fig. 1.

Thailand.— SOUTH-WESTERN: Prachuap Khiri Khan [Sam Roy Yot NP, 6 May 1974, *Larsen & Larsen 33678* (**L**), *ibid.*, 7 May 1974, *Larsen & Larsen 33720* (**BKF, L**), *ibid.*, 17 Aug. 2002, *Middleton et al. 1144* (**BKF**), Nam Tok Huay Yang,

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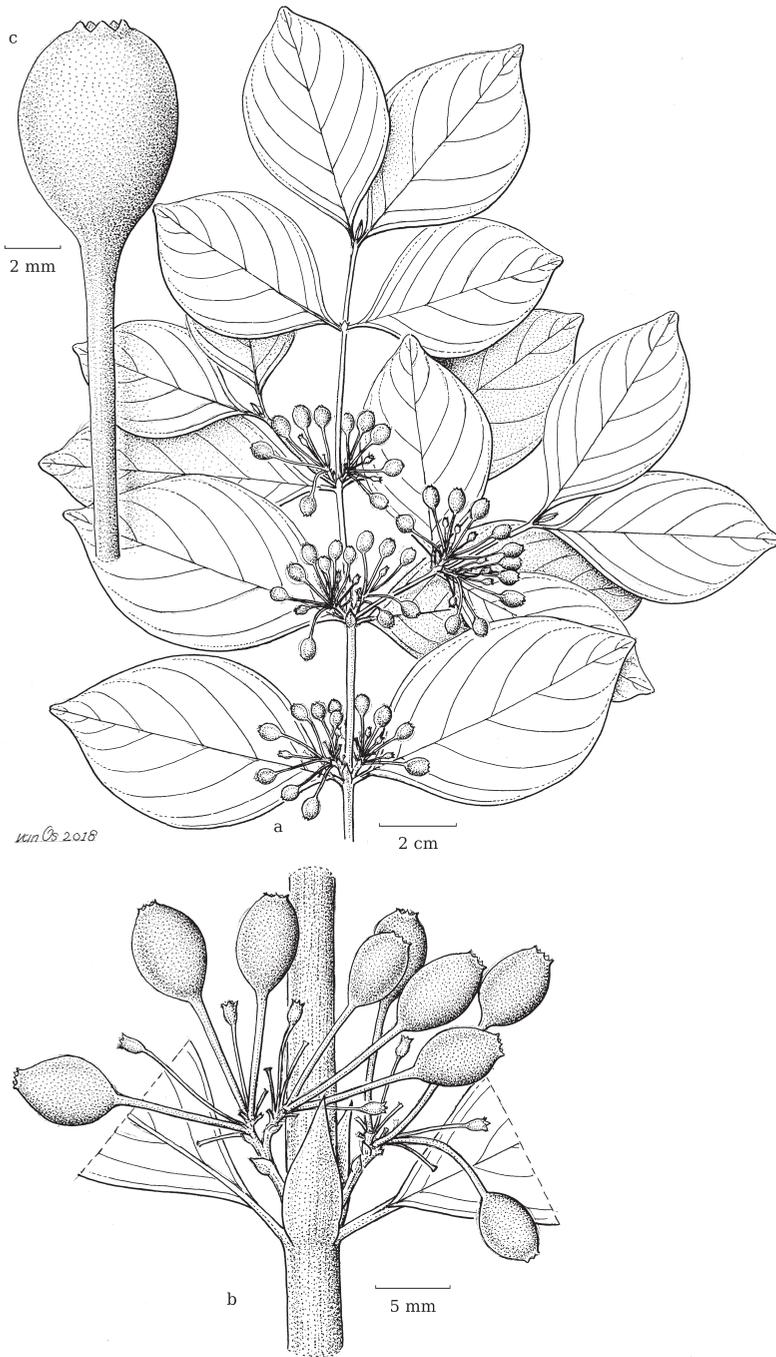


Figure 1. *Psyrax abbreviatus* (Craib) W.J.de Wilde & Duyfjes. A. Part of fruiting twig; B. detail of infructescence; C. fruit (from Shimizu et al. T-7745 [L]). Drawn by Jan van Os.

19 Aug. 1967, *Shimizu et al. T-7745* (L), Kow Dow, 1 Aug. 1976, *Maxwell 76-471* (BK, L); SOUTH-EASTERN: Chonburi [Sriracha, 4 June 1920, *Kerr 4259* (BM, TCD), type]; PENINSULAR: Satun [Ra-ngu, koh Rinde, 8 Apr. 2003, *Phengkklai et al. 13915* (BKF)].

Distribution.— Endemic to Thailand.

Ecology.— On rocky places and rocky cliffs in light shade, in evergreen scrub forest and along beach forest; on granite bedrock, also on limestone; from sea level to 200 m altitude. Flowering in May, fruiting in August.

Notes.— Mahyuni *et al.* (2018) presented a description of *Psydrax dicoccos* Gaertn., in which the branches of the inflorescence are reported as 6–9.5 mm long and the distribution is given as “restricted to Sri Lanka and southern India”. Craib (1932a) in his description of *Canthium dicocum* var. *abbreviatum* referred to the “shortening of the branches of the inflorescence” (here given as 0–1 mm long), and mentioned Prachinburi (Sriracha, a present district in Chonburi Province) and Rachaburi (Petchaburi [Phetchaburi for the present spelling]) as provenance. Due to these facts the variety *abbreviatum* is here treated as a distinct species, *Psydrax abbreviatus*.

### ***Psydrax celatus* W.J.de Wilde & Duyfjes, sp. nov.**

This species is distinct from the resembling species *Psydrax abbreviatus* (Craib) W.J.de Wilde & Duyfjes in several characters including, for example, its narrowly elliptic leaves, and the length of its primary peduncle, 4–5 mm long (leaves broadly elliptic, primary peduncle 2 mm long in *P. abbreviatus*).— *Canthium dicocum* auct. non (Gaertn.) Merr.: Craib, Fl. Siam. 2: 138. 1932; Sangratt., Stud. Canthium: 12. 2013. Type: Thailand, Nakhon Si Thammarat, Khao Luang NP, Gahrome Falls, 6 July 1985, *J.F. Maxwell 85-676* (holotype L [L.2961743]; isotypes BKF [SN050577] photo seen, PSU n.v.).

Trees 5–6 m tall; twigs ca 2 mm diam. *Stipules* ca 8.5 mm long, including a ca 6 mm long cusp. *Leaves*: blade without domatia, concolorous, drying cinnamon, or brownish green, glossy above, dull beneath, glabrous, subcoriaceous, elliptic, 7–12 × 3.5–5(–6) cm, base cuneate, apex acuminate; midrib

and lateral veins flat above, raised beneath; lateral veins 3–5 on each side; tertiary venation rather inconspicuous; petiole 0.5–0.7 cm long. *Inflorescences* unknown. *Infructescences* glabrous, primary peduncle 4–5 mm long, at apex with a collar-like bract ca 1 mm high, secondary peduncle 2–4 mm long. *Fruit* ± globose, slightly bilobed, 0.6–0.9 × 0.6–0.9 cm, pyrenes conspicuously rugulose; fruiting pedicel 8–13 mm long. Fig. 2 of galled flowers.

Thailand.— PENINSULAR: Phangnga [Khonburi, 4 Apr. 2004, *Phengkklai et al. 14280* (BK)], Krabi [Krabi, 8 May 1973, *Geesink & Santisuk 5243* (L, BKF), Nakhon Si Thammarat [Khao Luang NP, Gahrome Falls, 6 July 1985, *Maxwell 85-676*, type (BKF!, L!, PSU photo seen), *ibid.*, 13 Dec. 1985, *Maxwell 85-1,108* (L, PSU), see note], Songkhla, [Suan Dtoon Falls, 21 June 1985, *Maxwell 85-619* (L, PSU), Klong Hoy Kong, 4 Nov. 1986, *Maxwell 86-856* (L)].

Distribution.— Endemic to Thailand.

Ecology.— Open thickets in primary evergreen forest along rivers and open rocky areas in secondary forest; on granite bedrock and sandy potsoil, 100–250 m altitude. All collections are in fruit.

Etymology.— Latin, *celatus* means hidden, referring to the unnoticed species.

Provisional conservation assessment.— Data Deficient (DD). *Psydrax celatus* is endemic to Thailand and known from few collections from protected and unprotected areas.

Notes.— 1. The collections *Maxwell 85-676* (type) and *Maxwell 85-1108* were collected from the same tree.

2. Abnormal galled flowers were collected by *Geesink & Santisuk 5243* (Fig. 2).

### ***Psydrax maxwellii* W.J.de Wilde & Duyfjes, sp. nov.**

This species differs from the resembling species *Psydrax approximatus* (Korth.) Mahyuni & K.M. Wong in its petiole 0.5–0.6 cm long, and leaves glossy above (petiole 0.8–1 cm long, leaves dull above in *P. approximatus*). Type: Thailand, Kanchanaburi, Toong Yai [Thung Yai] Naresuan WR, 13 Apr. 1994, *J.F. Maxwell 94-506* (holotype L! [L.2901195]).

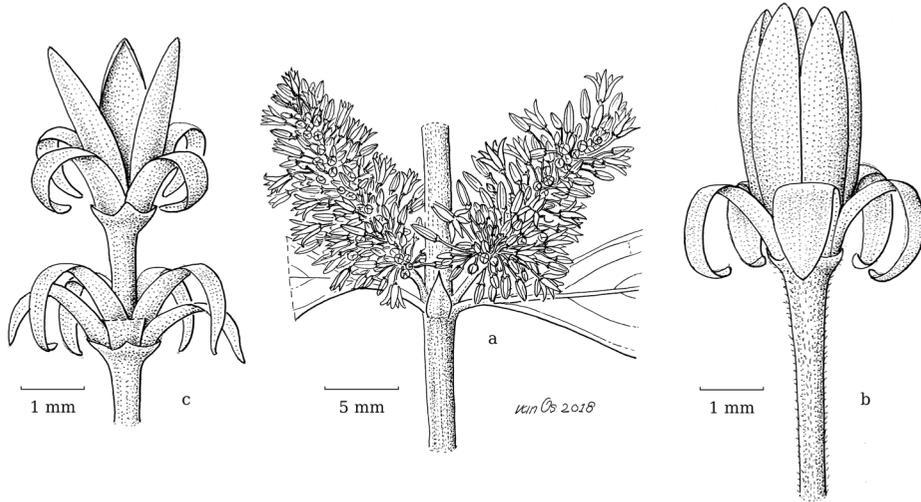


Figure 2. *Psydrax celatus* W.J.de Wilde & Duyfjes. A. inflorescence consisting of galled flowers; B. galled flower; C. two galled flowers (from Geesink & Santisuk 5243 [L]). Drawn by Jan van Os.

Trees 13 m tall; twigs ca 3 mm diam. *Stipules* ca 8 mm long including a ca 6 mm long cusp. *Leaves*: blade with domatia, drying dark brown and glossy above, slightly lighter and dull beneath, not shagreen, chartaceous, elliptic, 10–12 × 4–5 cm, base cuneate, somewhat asymmetrical, apex 1 cm acuminate; midrib and lateral veins flat above, somewhat raised beneath; lateral veins 5 on each side; tertiary venation conspicuous; petiole 0.5–0.6 cm long. *Inflorescences* short-hairy, a compound cyme composed of about 30 flowers, primary peduncle 5–6 × 1 mm, at apex with an inconspicuous collar-like bract ca 1 mm high, secondary peduncle ca 2 mm long. *Flowers*: bud 5 mm long; pedicel densely short-hairy, 4–7 mm long; calyx limb ca 0.5 mm long, lobes ca 0.5 mm long, margin short-hairy, corolla tube 2.5–3 mm long, inside densely hairy, at the throat densely hairy, lobes 2.5–3 mm long. *Stamen*: filaments ca 0.5 mm long, anthers ca 1.8 mm long; *Ovary* densely short-hairy ca 1 mm long, style ca 5 mm long, stigma ca 1 × 0.5 mm. *Fruit* unknown. Fig. 3.

*Distribution*.— Endemic to Thailand, only known from the type.

*Ecology*.— Mixed evergreen forest on rugged limestone terrain, at 225 m altitude

*Etymology*.— In honour of James Franklin Maxwell 1945–2015, renowned collector and botanist.

Provisional conservation assessment.— Data Deficient (DD). *Psydrax maxwellii* is endemic to Thailand and known from one collection in a protected area in Thung Yai Naresuan Wildlife Reserve in Kanchanaburi (South-Western).

***Psydrax minoriflorus* W.J.de Wilde & Duyfjes, sp. nov.**

This species is characterised by compound small inflorescences with hairy peduncle, hairy secondary peduncles and glabrous pedicels, it differs from the resembling species *Psydrax approximatus* in, e.g., its elliptic leaves 6–8 cm long with petioles 0.4–0.5 cm long (leaves broadly elliptic, 8.5–9 cm long, petioles 0.7–1 cm long in *P. approximatus*). Type: Thailand, Phangnga, Phangnga Bay, 3 Sept. 1984, N. Fukuoka T-35827 (holotype BKF [SN092507] photo seen; isotype L! [L.2902254]).

Trees 10 m tall; twigs glabrous, 1.5–2 mm diam., quadrangular when young. *Stipules* ca 3.5 mm long, including a ca 2 mm long cusp with a rounded tip. *Leaves* glabrous; blade without domatia, chartaceous, concolorous, drying bright cinnamon, dull above and beneath, elliptic, 6–8 × 2.2–3 cm, base cuneate, apex acuminate with rounded tip; midrib and lateral veins flat above, little raised beneath; lateral veins 3–4 on each side; tertiary venation inconspicuous; petiole 0.4–0.5 cm long. *Inflorescences*

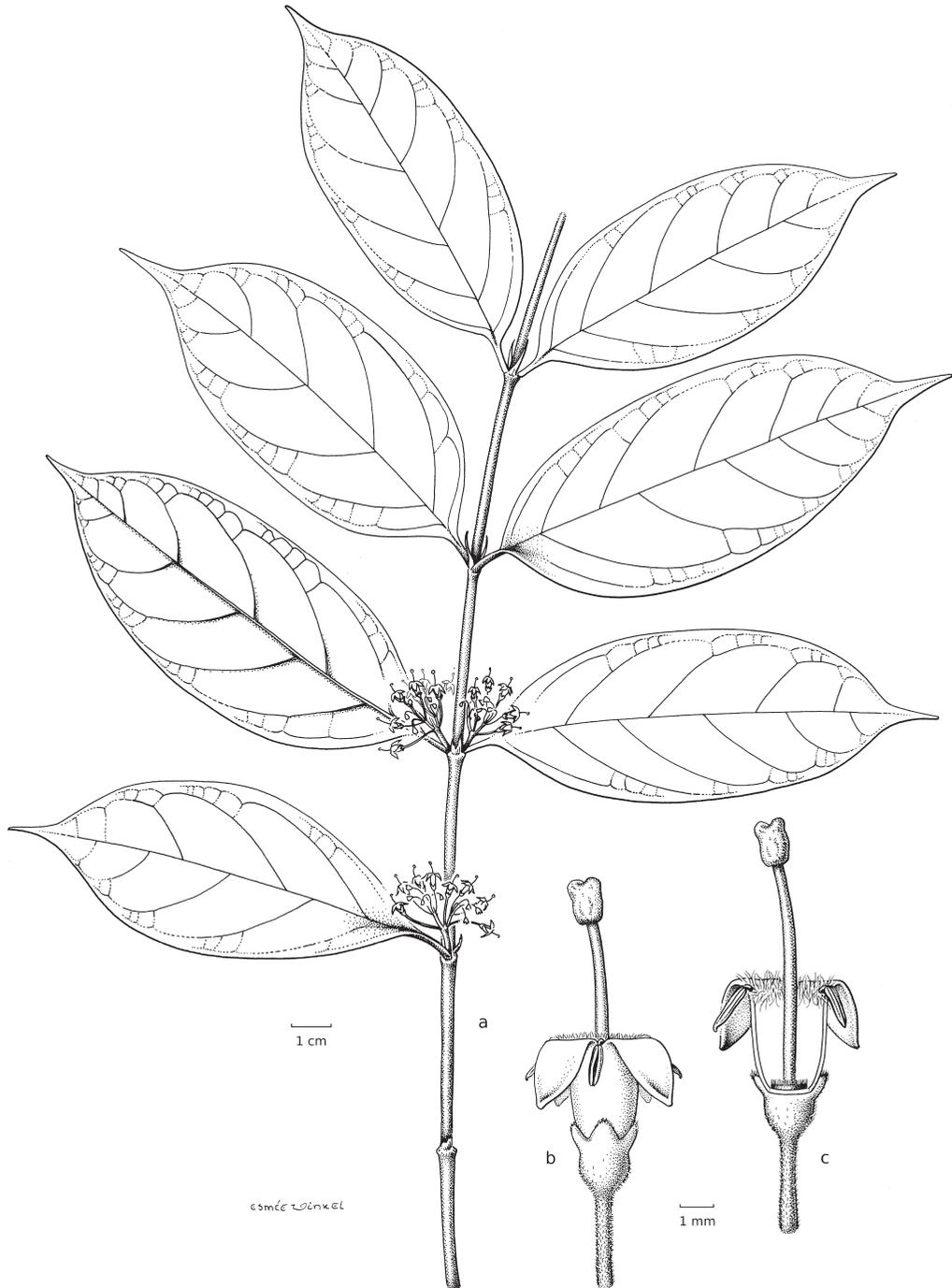


Figure 3. *Psydrax maxwellii* W.J.de Wilde & Duyfjes. A. part of flowering twig; B. flower; C. opened flower, note disk hairy (from Maxwell 94-506 [L]). Drawn by Esmée Winkel.

a compound cyme of up to 25 flowers; primary peduncle densely short-hairy (hairs ca 0.1 mm long) 1.5–3 mm long, at apex with a densely short-hairy inconspicuous collar-like bract ca 1 mm high, secondary peduncles densely short-hairy 3–5 mm long, tertiary peduncles densely short-hairy, ca 1 mm long. *Flowers*: bud not seen; pedicel glabrous, ca 4 mm long; calyx limb ca 0.5 mm long, lobes ca 0.5 mm long with hairy margin, corolla tube ca 1.2 mm long, inside hairy, hairs at throat not seen, lobes ca 2 mm long. *Stamens*: filaments ca 0.4 mm long, anthers ca 1.2 mm long. *Ovary* glabrous, ca 1 mm long, style ca 4 mm long, stigma ca 1 mm long. *Fruit* ca 5 × 4 mm; fruiting pedicel ca 6 mm long. Fig. 4.

*Distribution*.— Endemic to Thailand, only known from the type.

*Ecology*.— In mangrove area, on limestone, at sea level.

*Etymology*.— Latin, *minor* means small, *florus* means flower, referring to the small flowers.

*Provisional conservation assessment*.— Data Deficient (DD). *Psydrax minoriflorus* is endemic to Thailand and known from one collection in an unprotected area in Peninsular Thailand.

***Psydrax pilosus* W.J.de Wilde & Duyfjes, sp. nov.**

This species is distinct from the most similar species *Psydrax sumatranus* (Miq.) Mahyuni in several characters including, for example, inflorescences conspicuously densely soft hairy, peduncle 5 mm long, leaves glossy and smooth above (inflorescences inconspicuously hairy, peduncle 0–3 mm long, leaves dull and shagreen above in *P. sumatranus*). Type: Thailand, Trat, Koh Chang, Tham Mayon Waterfall, 12 Mar. 1970, C.F. van Beusekom & T. Santisuk 3190 (holotype L! [L.2902256]; isotypes BKF [SN124427] photo seen, L! [L.2902255]).

Treelets or trees 5–14 m tall, bark vertically cracked; twigs angled, glabrous, 1–2.5 mm diam. *Stipules* long-triangular, ca 7 mm long including a ca 5 mm long leaf-like cusp. *Leaves* glabrous; blade with or without domatia, coriaceous, mostly drying dark brown and somewhat glossy above, paler and dull beneath, ovate or elliptic, 9–19 × 4–8 cm, base cuneate, apex acute or acute-acuminate; midrib and lateral veins flat above, raised beneath; lateral veins 4–6 on each side, tertiary venation inconspicuous;

petiole 0.5–1 cm long. *Inflorescences* (and infructescences) densely cream hairy, hairs 0.1–0.2 mm long, mostly a tightly contracted, densely flowered compound cyme composed of (6–)20–40 flowers; primary peduncle finely short-hairy, glabrescent, (2–)3–5(–8) × 1–1.5(–2) mm, at apex with one spathe-like bract 2–4 mm long, split into 2(–4) parts, secondary peduncles 1–2 mm long. *Flowers* pale light green; bud 5–6 mm long; pedicel densely soft cream hairy, slender, 5–10 mm long; calyx limb ca 0.3 mm long, lobes triangular, ca 0.4 mm long, with hairy margin; corolla tube 2.8–3 mm long, inside densely hairy and at the throat of the open corolla densely hairy, lobes 2.8–3.5 mm long. *Stamen*: filaments ca 1 mm long, anthers ca 1.5 mm long. *Ovary* densely finely hairy, campanulate, ca 1 mm long, style 5.5–6.5(–9) mm long, stigma ca 1 mm long. *Fruit* with few hairs, (globose-)ellipsoid, 7–8 × 6–7 mm; pyrenes mostly two, grown together or free; fruiting pedicel 10–17 mm long. Fig. 5.

Thailand.— NORTHERN: Chiang Mai [near Chiang Mai, Mar. 1910, *Kerr 1079* (L), Doi Sutep, 11 Apr. 1958, *Sørensen et al. 2626* (L), *ibid.*, 30 Apr. 1988, *Maxwell 88-554* (L), *ibid.*, 11 July 1987, *Maxwell 87-652* (BKF, L), Mae Soi, 19 July 1991, *Maxwell 91-663* (L), Doi Sutep-Pui NP, 15 May 1992, *Maxwell 92-217* (L), Queen Sirikit Botanic Garden, 10 June 1996, *Maxwell 96-805* (L), Kongkoi, 29 June 1978, *Phengkklai et al. 4208* (BKF, L), Lamphun [Doi Kuhn Dahn NP, 1 June 1994, *Maxwell 94-667* (L), Huay Bohng Village, 25 Mar. 2000, *Maxwell 00-155* (L), 83 km S of Lamphun, 5 June 1963, *King 5452* (L)]; NORTH-EASTERN: Loei [Wang Saphung, 2 May 1966, *Phengnaren 317* (L)], Nong Khai [Jet Si Waterfalls, 20 Mai 2004, *Pooma et al. 4123* (L)]; SOUTH-WESTERN: Kanchanaburi [Kwae Noi Basin, 7 May 1946, *Kasin 190* (L)]; SOUTH-EASTERN: Trat [Koh Chang, 2 April 1959, *Sørensen et al. 7111* (L), Tham Mayon Waterfall, 12 Mar. 1970, *van Beusekom & Santisuk 3190* (L!, BKF, photo seen) type, Khlong Kut, 5 May 1974, *Geesink et al. 6557* (L)]; PENINSULAR: Ranong [Hadsin Dam, 24 June 1974, *Geesink et al. 7454* (L), Hard Hin Dam, 25 Apr. 1974, *Larsen & Larsen 33387* (L), Ban Lam Liang, 24 June 2006, *Williams et al. 2134* (L)]; Phangnga [Khao Lak NP, 12 April 2003, *Middleton et al. 2151* (L), Phuket [Phuket, Mar. 1929, *Kerr 17344* (L)].

*Distribution*.— Endemic to Thailand.

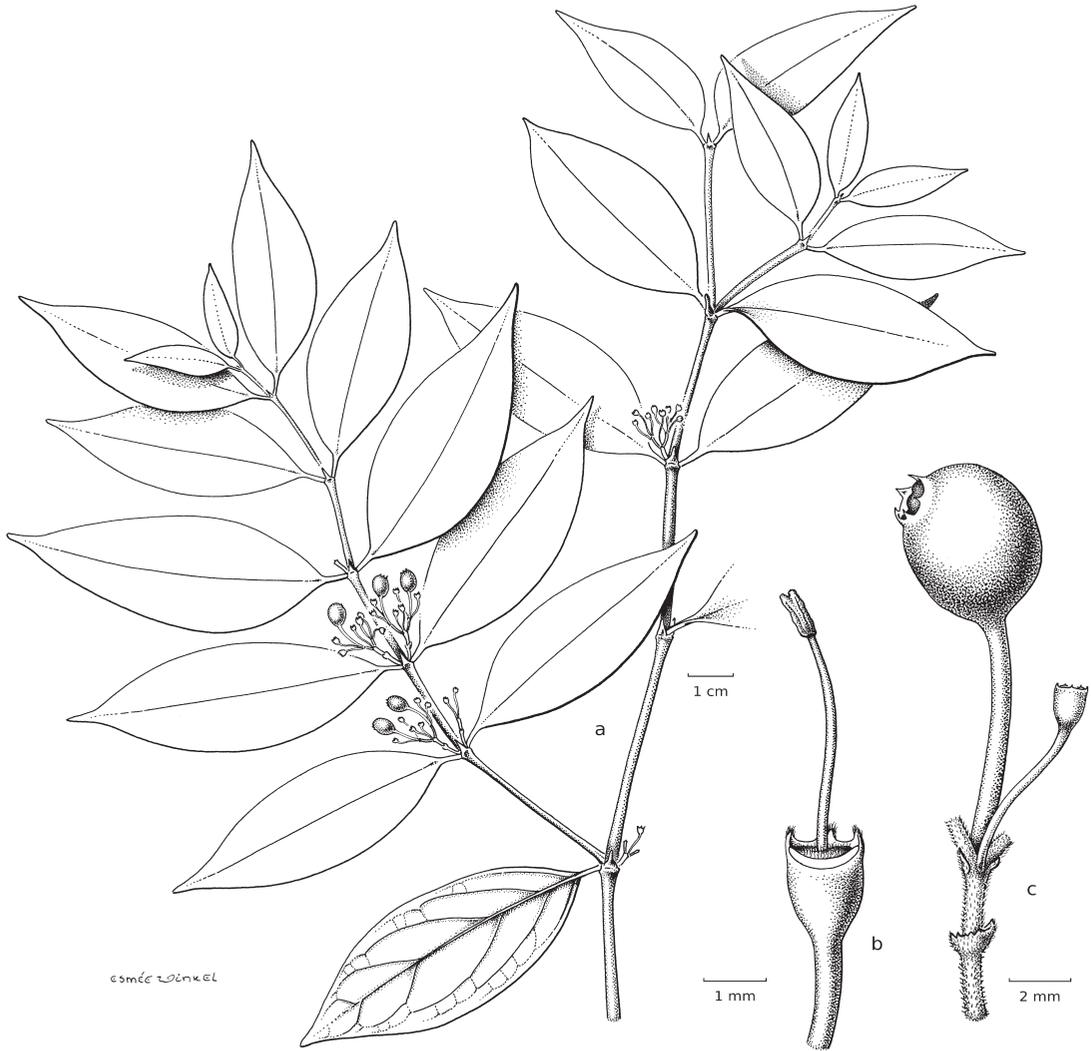


Figure 4. *Psydrax minoriflorus* W.J.de Wilde & Duyfjes. A. part of fruiting twig; B. detail of flower showing style and stigma; C. part of infructescence, note pedicels glabrous, peduncle densely short-hairy (from *Fukuoka T-35827* [L]). Drawn by Esmée Winkel.

**Ecology.**— In mixed evergreen forest, often along streams; on sandstone and granite bedrock, also on limestone; from sea level to 900 m altitude. Flowering in March and April; fruiting from March to July.

**Vernacular.**— Say dah kee (Karen).

**Etymology.**— Latin, *pilosus* means hairy, referring to the hairy inflorescences.

**Provisional conservation assessment.**— Least Concern (LC). *Psydrax pilosus* is known from

several collections from protected and unprotected localities throughout Thailand.

**Notes.**— 1. Occasionally young twigs and the base of young leaves, including the petiole, are slightly short hairy.

2. The flowers are reported as fragrant.

3. The collection *Murata et al. T-43077*, in fruit, from Loei (Phu Kradueng) deviates by concolorous leaves, dull on both surfaces, and by a more loose infructescence.

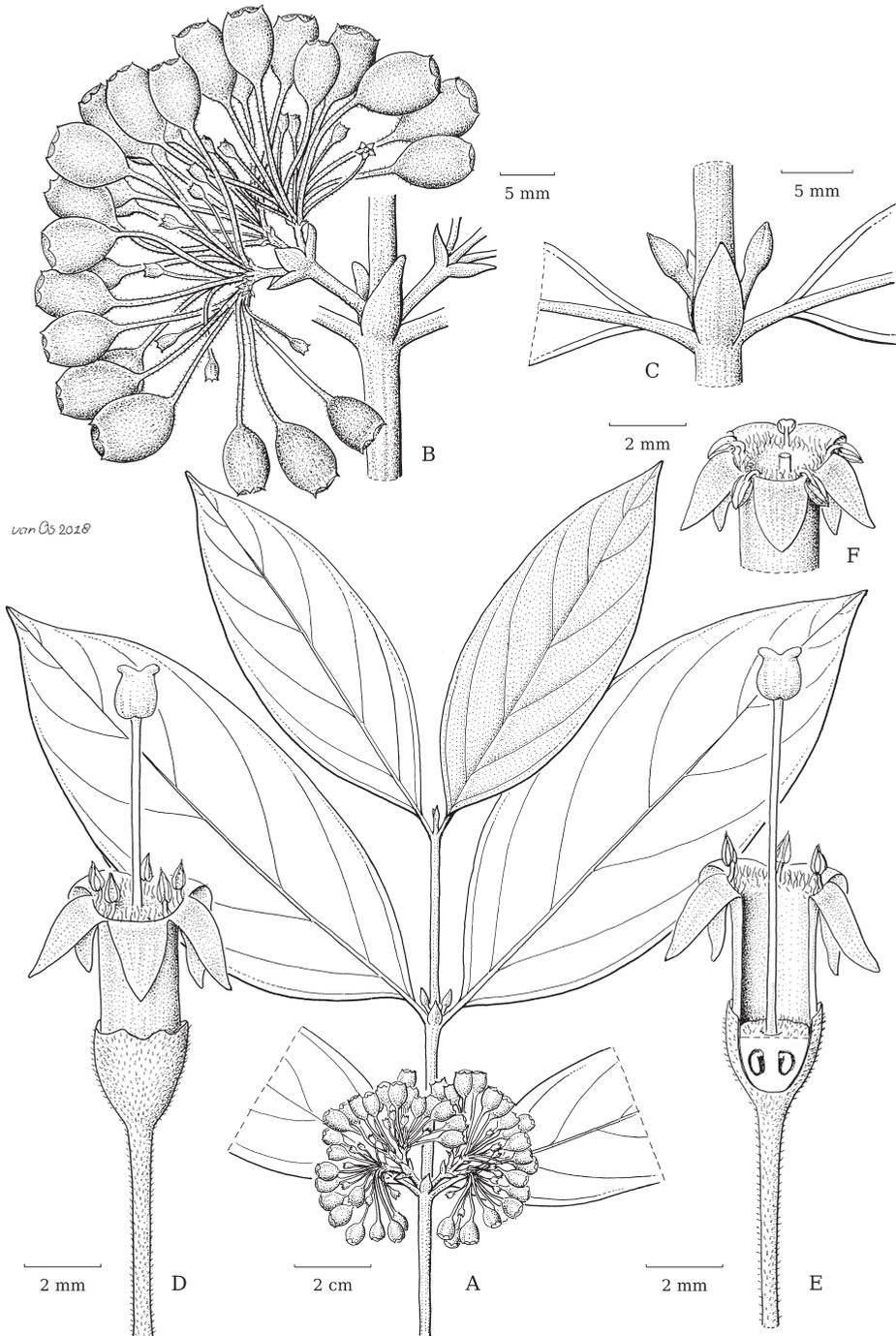


Figure 5. *Psydrax pilosus* W.J.de Wilde & Duyfjes. A. part of fruiting twig showing two opposite infructescences; B. infructescence, note spathe divided into 4 parts; C. detail of node showing two stipules and two inflorescences in bud; D. flower; E. ditto, opened, note hairy disk; F. detail of flower seen from above, style removed (A–C from *Kasin 190* [L], D–F from *van Beusekom & Santisuk 3190* [L]). Drawn by Jan van Os.

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