

รายงานความก้าวหน้า 12 เดือน

โครงการวิจัยเรื่อง

อนุกรมวิธานของพืชวงศ์ปลับปลิง วงศ์โปรงฟ้า วงศ์ปอหมัน วงศ์พริกไทย วงศ์ผักไผ่น้ำ
ในประเทศไทย และวงศ์ชมพู๋ ในสาธารณรัฐประชาธิปไตยประชาชนลาว
(รหัสโครงการ R_149026)



โดย

ศาสตราจารย์ ดร. ประนอม จันทรโณทัย และคณะ

พ.ศ. 2550

ชื่อโครงการวิจัย อนุกรมวิธานของพืชวงศ์พลับพลึง วงศ์โปรงฟ้า วงศ์ปอหมัน วงศ์พริกไทย วงศ์ผักไผ่น้ำ
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วัตถุประสงค์

1. เพื่อศึกษาอนุกรมวิธานของพืชเผ่าย่อยสังกรณี และปึกไก่อดำ (วงศ์ด้อยดึง) พืชเผ่าหญ้าไซเหา (วงศ์หญ้า) พืชวงศ์พลับพลึง วงศ์โปรงฟ้า วงศ์ปอหมัน วงศ์พริกไทย และวงศ์ผักไผ่น้ำ สร้างรูปวิธานจำแนกสกุลและชนิดพืช การกระจายพันธุ์และการใช้ประโยชน์ในประเทศไทย
2. เพื่อสำรวจพืชเผ่าย่อยสังกรณี และปึกไก่อดำ (วงศ์ด้อยดึง) พืชเผ่าหญ้าไซเหา (วงศ์หญ้า) พืชวงศ์พลับพลึง วงศ์โปรงฟ้า วงศ์ปอหมัน วงศ์พริกไทย และวงศ์ผักไผ่น้ำ ที่พบทั้งหมดในประเทศไทย ทั้งตัวอย่างพรรณไม้แห้งที่เก็บรักษาไว้ในหอพรรณไม้ และจากการสำรวจตามภูมิภาคต่างๆ ในประเทศไทย
3. เพื่อศึกษาอนุกรมวิธานของพืชสกุลคราม (วงศ์ถั่ว) และพืชวงศ์ชมพูใน สปป.ลาว
4. เพื่อเป็นข้อมูลพื้นฐานการใช้ประโยชน์ทางด้านพฤกษศาสตร์ วิทยาศาสตร์ การเกษตร อุตสาหกรรม เภสัชกรรม และการแพทย์
5. เพื่อเป็นข้อมูลพื้นฐานในการอนุรักษ์ทรัพยากรพืชต่างๆ และพืชหายาก รวมถึงการใช้ประโยชน์พืชแบบยั่งยืนต่อไป
6. เพื่อเป็นการแลกเปลี่ยนความรู้ระหว่างนักศึกษาไทยและนักศึกษาของสปป.ลาว และเป็นการฝึกฝนนักวิจัยรุ่นใหม่ ให้มาทำวิจัยทางด้านนี้เพิ่มมากขึ้น
7. เพื่อเพิ่มข้อมูลและจัดพิมพ์ผลงานการวิจัยในวารสารระดับนานาชาติ และจะนำไปสู่การพิมพ์ในหนังสือพรรณพฤกษชาติแห่งประเทศไทยและได้ข้อมูลพื้นฐานของความหลากหลายของพรรณไม้ใน สปป.ลาว

วิธีการศึกษา

ออกสำรวจพรรณไม้ทั่วประเทศตั้งแต่เดือนกรกฎาคม 2549 - มิถุนายน 2550 โดยเก็บพืชทั้งต้น หรือบางส่วนที่มีใบดอกและ/หรือผล 1-5 ชิ้นต่อชนิด บันทึกลักษณะพืช ข้อมูลทางนิเวศวิทยา ถ่ายภาพ นำตัวอย่างที่ได้มาตรวจวิเคราะห์เพื่อให้ได้ชื่อวิทยาศาสตร์ที่ถูกต้องโดยใช้รูปวิธาน หรือเปรียบเทียบกับตัวอย่างพรรณไม้แห้ง นำข้อมูลที่ได้มาบรรยายลักษณะพืชตามหลักอนุกรมวิธานพืช ตัวอย่างพรรณไม้แห้ง และ/หรือดองเก็บไว้ในพิพิธภัณฑ์พืช มหาวิทยาลัยขอนแก่น (KKU) ภาควิชาชีววิทยา คณะวิทยาศาสตร์ มหาวิทยาลัยขอนแก่น

ผลการศึกษา

จากการศึกษาและสำรวจพรรณไม้ตั้งแต่เดือนกรกฎาคม - มิถุนายน 2550 พืชแต่ละกลุ่มมีความก้าวหน้า คิดเป็นร้อยละ (ตามเอกสารแนบท้าย ซึ่งรายงานตามรูปแบบเพื่อจะนำไปตีพิมพ์ในวารสาร) ดังนี้

วงศ์พลับพลึง (Amaryllidaceae)	3 สกุล 6 ชนิด	ร้อยละ 30	เอกสารแนบท้าย 1
วงศ์โปรงฟ้า (Asparagaceae)	1 สกุล 6 ชนิด	ร้อยละ 35	เอกสารแนบท้าย 2
วงศ์ปอหมัน (Boraginaceae)	10 สกุล 35 ชนิด	ร้อยละ 40	เอกสารแนบท้าย 3
วงศ์พริกไทย (Piperaceae)	3 สกุล 40 ชนิด	ร้อยละ 40	เอกสารแนบท้าย 4
วงศ์ผักไผ่น้ำ (Polygonaceae)	6 สกุล 27 ชนิด	ร้อยละ 40	เอกสารแนบท้าย 5
เผ่าหญ้าไซเหา (Eragrostideae)	9 สกุล 60 ชนิด	ร้อยละ 40	เอกสารแนบท้าย 6
พืชสกุลคราม (Indigofera L.)	18 ชนิด	ร้อยละ 50	เอกสารแนบท้าย 7
พืชวงศ์ชมพู (Myrtaceae)	5 สกุล 28 ชนิด	ร้อยละ 50	เอกสารแนบท้าย 8

A Preliminary Checklist of Thai Amaryllidaceae

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INTRODUCTION

The family is treated here in a narrow sense, comprising the genera with umbellate inflorescence or solitary flower, and with spathes.

TAXONOMIC TREATMENT

AMARYLLIDACEAE

J. St.-Hil., *Expos. Fam. Nat.* 1: 134. 1805. Type: *Amaryllis* L.

A cosmopolitan family of about 10 genera and 850 species, two genera and six species are indigenous to Thailand.

1. CRINUM

L., *Sp. Pl.*: 292. 1753. Type: *Crinum americanum* L.

About 100 species, distributed in tropical and subtropical regions, four indigenous species to Thailand.

1. *Crinum asiaticum* L., *Sp. Pl.*: 292. 1753. Type: India, Malabar Coast and Sri Langka (LINN).

Crinum amabile Donn, *Hort. Cantabr.* ed.6: 83. 1811. Type: Sumatra, *Hort. Kew*

Crinum northaianum Baker, *Gard. Cron.* 1: 671. 1882. Type: Borneo, Sarawak, *North* 424.

Thailand.— SOUTH-WESTERN: Prachuap Khiri Khan; CENTRAL: Saraburi; SOUTH-EASTERN: Chon Buri, Trat; PENINSULAR: Ranong, Phuket, Nakhon Si Thammarat, Satun, Narathiwat.

Distribution.— Mascarenes, tropical and subtropical Asia to south-western Pacific.

Ecology.— Lowland evergreen forest, along a stream, or near beach, alt. 0-100 m, commonly cultivated as ornamental plant throughout the country.

Vernacular.— Plab Plueg (พลับพลึง).

Specimens examined.— *A.F.G. Kerr* 4310 (K), 9223 (BK, P, K), 20496 (BK, K); *J.F. Maxwell* 74-508 (BK), s.n. (BK); *J.F. Maxwell*, *S. Suttajit*, *W. Pannavalee* & *P. Tantipathananandh* 73 (CMU); *C. Niyomdham* 736 (BKF); *C. Phengkklai* 156 (BKF); *C. Phengkklai et al.* 13097 (BKF); *Sanan* 231 (BKF); *T. Smitinand* 6153 (BKF, K); *C.F. van Beusekom* & *C. Phengkklai* 681 (E, K, P); *S.N.* 5798 (BK).

2. *Crinum defixum* Ker Gawl. *Quart. J. Sci. Arts* 3: 105. 1817.

Thailand.— SOUTH-WESTERN: Kanchanaburi, Prachuap Khiri Khan; SOUTH-EASTERN: Chon Buri.

Distribution.— India, Himalaya to Indo-China.

Ecology.— Scattered in light primary forest, in grassy and shrub wilderness, sandy soil, or on river bank.

Vernacular.—

Specimens examined.— *S. Bloembergen* 49 (K); *D.J. Collins* 484 (K); *A.F.G. Kerr* 10891 (K); *M.C. Lakshnakara* 824 (BK, K), 920 (BK, K); *A. Marcan* 2175 (K).

3. *Crinum latifolium* L., *Sp. Pl.*: 291. 1753. Type: ?

Thailand.— PENINSULAR: Chumphon, Satun.

Distribution.— India to southern China.

Ecology.— Scattered in paddy field.

Vernacular.— Rang Ko Dam (ฝรั่งค้อดำ).

Specimens examined.— *C. Phengkklai et al.* 13646 (BKF); *S.N.* 4359 (K).

4. *Crinum thaianum* J. Schulze, *Pl. Life* 27: 127. 1971. Type: *J. Schulze* 1007 (holotype US)

Thailand. — PENINSULAR: Ranong, Phangnga.

Distribution. — Endemic.

Ecology. — Submerge in stream in evergreen forest, alt. 10-100 m.

Vernacular.— Plab Plueg^{MA} Thian (พลับพลึงธาร).

Specimens examined.— *R. Geesink, P. Hiepko & C. Phengkklai* 7606 (BKF); *A.F.G. Kerr* 16838 (BK, K); *C. Niyomdham* 1256 (BKF, K); *R. Pooma, V. Chaemchumroon, N. Koonkhunthod & P. Chantaboon* 3721 (BKF); *T. Santisuk* 675 (BKF), 803 (BKF); *Th. Sørensen, K. Larsen & B. Hansen* 824 (BKF); *P. Suksathan* 2479 (QBG).

5. *Crinum wattii* Baker, *Handb. Amaryll.*: 76. 1888. Type: India, Manipur, Myang Khong Valley, alt. 4000 ft., in grassy places, *G. Watt* 7148 (holotype).

Thailand.— NORTHERN: Chiang Mai; NORTH-EASTERN: Loei, Khon Kaen.

Distribution.— Assam to Thailand.

Ecology.— In dipterocarp forest, bamboo forest to open area in evergreen forest, alt. 350-1025 m.

Vernacular.— Plab Plueg^{MA} Khao (พลับพลึงเขา).

Specimens examined.— *H.B.G. Garrett* 1246 (K); *A.F.G. Kerr* 1844 (E, K), 4190 (K); *J.F. Maxwell* 88-641 (BKF, CMU), 90-497 (CMU); *W. Nanakorn et al.* 3303 (QBG), 6525 (QBG); *W. Pongamornkul* 71 (QBG); *T. Smitinand & H. St. John* 6818 (BKF); *S. Wattana* 147 (QBG).

2. PROIPHYS

Herb., Appendix: 42. 1821. Type: *P. amboinensis* (L.) *Herb.*

Cearia-Dumort., *Comment. Bot.*: 65. 1822.

Eurycles Salisb. ex Schult. & Schult.f. in *J.J. Roemer & J.A. Schultes*, *Syst. Veg.* 7(2): 909. 1830.

Distributed from Thailand to northern and north-eastern Australia. One indigenous species to Thailand.

1. *Proiphys amboinensis* (L.) *Herb.*, Appendix: 42. 1821.

Pancratium amboinense L., *Sp. Pl.*: 291. 1753. Type: ?

Cearia amboinensis (L.) Dumort., *Comment. Bot.*: 65. 1822.

Eurycles sylvestris Salisb., *Trans. Hort. Soc. London* 1: 337. 1812. Type: ?

Eurycles amboinensis (L.) Lindl. ex Loudon, *Encycl. Pl.*: 242. 1829.

Thailand.— NORTHERN: Mae Hong Son, Lampang; NORTH-EASTERN: Nong Khai; CENTRAL: Uthai Thani, Krung Thep Maha Nakhon.

Distribution.— Thailand to northern Australia.

Ecology.— In mixed deciduous forest, commonly cultivated as ornamental plant.

Vernacular.— Wan Nok Kum (จานนอควัน).

Specimens examined.— *A. Chantanamuck* 491 (BK); *Kasem* 386 (BK); *A.F.G. Kerr* 1601 (BK), 5484 (BK); *J.F. Maxwell* 76-304 (BK), 90-610 (CMU), 96-619 (BKF).

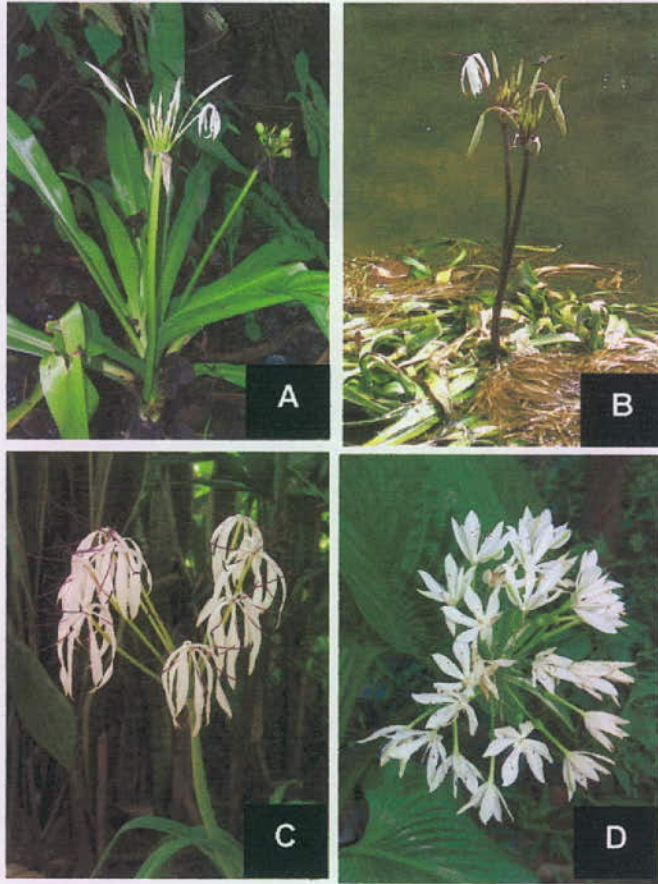


Figure 1: A) *Crinum asiaticum* L.
B) *C. thaianum* J. Schulze
C) *C. wattii* Baker
D) *Proiphys amboinensis* (L.) Herb.

A Preliminary Checklist of Asparagaceae in Thailand

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INTRODUCTION

The family Asparagaceae contains a single genus, *Asparagus* which has about 120 species, distributed through Africa, Asia and Europe. Five species are enumerated in Thailand, including three introduced species.

ASPARAGUS

L., Sp. Pl.: 313. 1753. Type: *A. officinalis* L. (lectotype).

1. *Asparagus filicinus* Buch.-Ham. ex D. Don, Prodr. Fl. Nep.: 49. 1825. Type: China, Hubei, Fanxian Shan, c. 900 m, Oct. 1906, *Silvestri* 190 (isotype FI).

Thailand.— NORTHERN: Chiang Mai, Chiang Rai, Lampang, Lamphun; NORTH-EASTERN: Loei; SOUTH-WESTERN: Kanchanaburi.

Distribution.—

Ecology.— In mixed pine-deciduous forest or dry evergreen forest.

Vernacular.— Ma Sam Ton (ม้าสามต้อน)

2. *Asparagus officinalis* L., Sp. Pl.: 313. 1753.

Thailand.— All provinces

Distribution.— Europe, northern Africa to western Asia.

Ecology.— Introduced from Europe and cultivated as vegetable.

Vernacular.— Nor Mai Farang (หน่อไม้ฝรั่ง).

3. *Asparagus plumosus* Baker, Journ. Linn. Soc. 14: 613. 1875.

Thailand.— All provinces.

Distribution.— Southern Africa

Ecology.— Introduced and cultivated as ornamentals.

Vernacular.— Prong Fa (ปรงฟ้า), Son Rachini (สนราชินี).

4. *Asparagus racemosus* Willd., Sp. Pl. 2: 152. 1799.

Asparagus acerosus Roxb., [Hort. Beng.: 24. 1814.] Fl. Ind. 2: 150. 1832.

Thailand.— NORTHERN: Chiang Mai, Kamphaeng Phet; NORTH-EASTERN: Phetchabun, Loei, Sakon Nakhon, Maha Sarakham, Khon Kaen; EASTERN: Chaiyaphum, Nakhon Ratchasima, Buri Ram, Roi Et, Ubon Ratchathani; SOUTH-WESTERN: Kanchanaburi, Ratchaburi, Phetchaburi, Prachuap Kiri Khan; CENTRAL: Saraburi; SOUTH-EASTERN: Chon Buri; PENINSULAR: Surat Thani, Phangnga.

Distribution.— Widespread in Africa, Guinea, Madagasca, through China and southern Asia.

Ecology.— In dry dipterocarp forest, salty sandy soil, open scrub, secondary seasonal forest, limestone hill, seaside or evergreen forest.

Vernacular.— Chan Din (จันทิน), Chuang Krua (จวงเครือ), Phak She Chang (ผักชีข้าง), Sam Sib (สามสิบ).

5. *Asparagus sprengeri* Regel., Act. Hort. Petrop. 11: 302. 1890.

Thailand.— All provinces.

Distribution.—

Ecology.— Introduced and cultivated as ornamentals.

Vernacular.— Prik (ปริก).

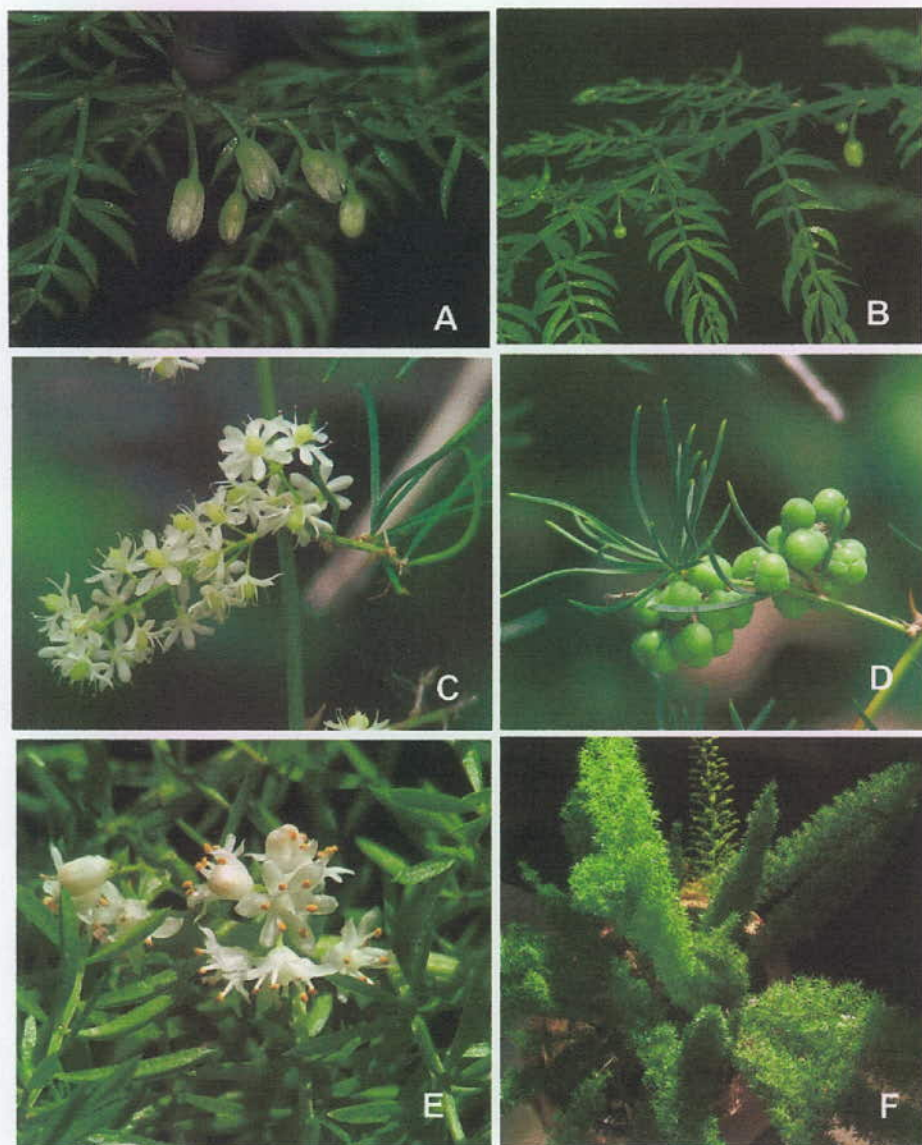


Figure 2: A, B) *Asparagus filicinus*
C, D) *A. racemosus*
E, F) *A. sprengeri*

BORAGINACEAE

A family of 156 genera and about 2,500 species, widely distributed in temperate and tropical regions, centered in the Mediterranean region. Ten genera and 35 species are enumerated in Thailand.

1. CARMONA 36.

Cav., Icon. 5: 22. 1799; Backer & Bakh.f, Fl. Java 2: 459.1965; Ng, Tree Fl. Mal. 4: 59. 1989; Zhu, Riedl & Kamelin, Fl. China 16: 337.1995; Riedl, Fl. Malesiana 13: 65. 1997.

Ehretia P. Browne, Civ. Nat. Hist. Jamaica: 168.1756.

Shrub, *Leaves* alternate, small, fascicled on dwarf shoots; lamina obovate to spatulate. *Inflorescence* axillary. *Flowers* 2–6-fascicled, bractless. *Calyx* green, deeply 5-lobed, persistent. *Corolla* white, campanulate, 5-lobed, tube shorter than lobes. *Stamens* 4, separate, exserted; filaments inserted near base of corolla tube; anthers oblong, introrse, laterally dehiscent, glabrous. *Ovary* glabrous; style terminal; stigmas capitate. Drupes, red or yellow, 1-seeded.

A monotypic genus of South-east Asia, widely distributed through northwards to southern China, westwards to India, eastwards to New Guinea and the Solomon Islands.

1. *Carmona retusa* (Vahl) Masam., Trans. Nat. Hist. Soc. Taiwan 30: 61. 1940; Backer & Bakh.f, Fl. Java 2: 459.1965; Ng, Tree Fl. Mal. 4: 59. 1989; Riedl, Fl. Malesiana 13: 65. 1997.

Cordia retusa Vahl, Symb. Bot. 2: 42. 1792.

Ehretia microphylla Lam., Tabl. Encycl. 1: 425. 1792. Type: India, *Anon* s.n.

Carmona microphylla (Lam.) G. Don, Gen. Hist. 4: 391. 1838.

Shrub 1–2 (–4) m high; branchlets terete, bark brown, hispid, brownish tomentose, short shoots producing cluster of leaves and inflorescence. *Leaves* with petiole 0.2–0.8 cm long; lamina coriaceous, obovate to spatulate, 0.9–4.6 by 1.1–2.4 cm; apex toothed or crenate; base cuneate; margin recurved; upper surface dark green, scabrous; lower surface light green, subglabrous; midrib impressed on upper surface; lateral veins 3–4 on each side of margin, impressed on upper surface, conspicuous on lower surface. *Inflorescence* 1.5–3 cm long, axillary, cymose, with 2–6 flowers. Peduncle 1.5–2 cm long, tomentose. *Flowers* with pedicels 1–6 mm long, dark green, tomentose. *Calyx* tube ca. 1 mm long; lobes linear or linear-spathulate, 3.5–4.2 mm long, sparsely hispidulous outside, densely hairy inside, persistent at fruiting. *Corolla* tube 1.7–2 mm long, lobes spreadings, oblong, 2.1–3.5 mm long, glabrous. *Stamens* 4.5–5 mm long; filaments 3–4 mm long, glabrous, inserted near base of corolla tube; anthers oblong, 1–1.2 mm long. *Ovary* 4-locular, each locule with 1 ovule, ovate; style 2, 4.5–5 mm long, glabrous; stigmas 2, capitate. Drupes, red or yellow, globose, 3–4 mm long.

Thailand.— All provinces.

Distribution.— India, Sri Lanka, Myanmar, Laos, Cambodia, Vietnam, China (Hainan, Kwangtung), Taiwan, Japan (Ryuku Island), Malesia.

Ecology.— Cultivated as ornamentals.

Vernacular.— Khoi chin (ช้อยจีน), Cha yuan (ชาญวน) (Krung Thep Maha Nakhon); Cha (ชา) (Chiang Mai); Cha yipun (ชาญี่ปุ่น), Cha hokkian (ชาฮกเกี้ยน) (Central).

Specimens examined.— *A.F.G. Kerr* 6917 (BK, E, K).

2. COLDENIA

L., Sp. Pl.: 125. 1753; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 144. 1885; Gagnep. & Cour. in Lecomte, Fl. Indo-Chine f. 3: 213. 1915; Ridl., Fl. Malay Penins. 2: 442. 1923; I.M. Johnst., J. Arnold Arbor. 32: 13. 1951; Backer & Bakh.f, Fl. Java 2: 460. 1965; Zhu, Riedl & Kamelin, Fl. China 16: 338.1995; Riedl, Fl. Malesiana 13: 67. 1997.

Lobophyllum F. Muell., Hooker's J. Bot. Kew Gard. Misc. 9: 21. 1857.

Annual herb. *Leaves* alternate, small; lamina crenate-dentate to lobulate, oblong or obovate, margin lobed, lateral veins ending in sinuses. *Flowers* solitary, in leaf axils. *Calyx* green, deeply 4-lobed, persistent. *Corolla* white, campanulate, 5-lobed, tube shorter than lobes. *Stamens* 4, separate; filaments attached at middle of corolla tube; anthers rounded, introrse, laterally dehiscent, glabrous. *Ovary* glabrous; style short; stigmas capitate. Nutlets, 4-seeded.

A monotypic genus of South-east Asia.

1. *Coldenia procumbens* L., Sp. Pl.: 125. 1753; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 144. 1885; Gagnep. & Cour. in Lecomte, Fl. Indo-Chine f. 3: 213. 1915; Ridl., Fl. Malay Penins. 2: 442. 1923; I.M. Johnst., J. Arnold Arbor. 32: 13. 1951; Backer & Bakh.f, Fl. Java 2: 460.1965; Zhu, Riedl & Kamelin, Fl. China 16: 338. 1995; Riedl, Fl. Malesiana 13: 67. 1997. Type: Ceylon, Hermann Herbarium 1: 73, no. 69 (lectotype BM).

Annual prostrate herb; stems branched from base, greyish hairy. *Leaves* with petiole 0.2–1.5 cm long; lamina slightly thickened, crenate-dentate or lobulate, somewhat oblong or obovate, markedly asymmetric, 1–2 by 0.3–0.6 cm; apex rounded; base obliquely cuneate; upper surface dark green, coarsely strigose between veins, hairs often with bulbous base, spreading on lower surface; midrib impressed on upper surface; lateral veins 4–6 on each side of margin, impressed on upper surface, conspicuous on lower surface. *Flowers* minute, subsessile. *Calyx* tube ca. 0.5 mm long, lobes lanceolate or ovate-lanceolate; 1.5–2 by 3–5 mm, strigose outside, glabrous inside, persistent at fruiting. *Corolla* tube ca. 1 mm long, lobes suborbicular or ovate, 2–5 mm long, glabrous. *Stamens* 5–7 mm long; filaments ca. 5 mm long, glabrous, inserted at middle of corolla tube; anthers rounded, ca. 2 mm long. *Ovary* 4-locular, each locule with 1 ovule, pyramidal; style 2, ca. 1 mm long; stigmas 2, capitate. *Fruits* pyramidal, 2–3 mm long, 4-lobes, nutlets breaking, corky mesocarp, glandular-pubescent. *Seeds* ellipsoid or ovate, 1–1.5 by 0.8–1 mm.

Thailand.— NORTHERN: Chiang Mai (Bang Nong Jet Noi), Uttaradit, Tak (Ban Na); NORTH-EASTERN: Loei (Phu Kradung), Sakon Nakhon (Phu Pa Yol), Khon Kaen; EASTERN: Surin, Si Sa Ket (Kantarak); CENTRAL: Nakhon Nayok (Khao Yai); SOUTH-EASTERN: Chon Buri (Siracha), Trat (Ko Chang); PENINSULAR: Satun (Tarutao).

Distribution. — India, Sri Lanka, Myanmar, Laos, Cambodia, Vietnam, China (Hainan), Taiwan, Malesia.

Ecology.— Scattered along the edge of rice field or sandy places, beaches, mixed evergreen forest, alt. 0–1,100 m.

Vernacular. — Ya tin tukkae (หญ้าตีนตุ๊กแก); Ya tin tukto (หญ้าตีนตุ๊กโต), Ya tupto (หญ้าตุบโต) (Chiang Mai).

Specimens examined.— *D.J. Collins* 2074 (BK, K); *H. Jawaii* 1443 (CMU-B); *A.F.G. Kerr* 1885 (K), 13943 (BK, K), s.n. (BK); *J.F. Maxwell* 87-369 (BKF), 93-251 (CMU-B), 04-260 (CMU-B); *Y. Paisooksantivatana* & *S. Sutheesorn* y920-82 (BK); *P. Sangkhachaul* 197 (BK); *S. Sasirat* 102 (QBG); *T. Smitinand* 12405 (BKF); *T. Smitinand* 4437 (BKF, K); *Sprousen* 252 (BKF); *M.N. Tamura* T-60449 (BKF); *S.N.* 21 (BK); *S.N.* 314 (BK).

3. CORDIA

L., Sp. Pl.: 190. 1753; Gen. Pl.: 87. 1754.

A genus of 250–300 species, widely distributed in the tropics and subtropics, eight species are indigenous to Thailand and two introduced species from tropical America.

1. *Cordia cochinchinensis* Gagnep., Fl. Indo-Chine 4: 203. 1914; Gagnep. & Cour. in Lecomte, Fl. Indo-Chine 3: 203. 1915; I.M. Johnst., J. Arnold Arbor. 32: 11. 1951; Zhu, Riedl & Kamelin, Fl. China 16: 332. 1995; Riedl, Fl. Malesiana 13: 74. 1997. Type: Vietnam, Bavia, Cochinchina, *Pierre* 413 (lectotype P).

Thailand.— EASTERN: Chaiyaphum (Kaeng Khro); SOUTH-WESTERN: Kanchanaburi, Prachuap Khiri Khan (Sam Roi Yod, Pak Tawan); CENTRAL: Saraburi (Sahm Lahn); SOUTH-EASTERN: Chon Buri (Ko Khram, Ko Sichang); PENINSULAR: Surat Thani (Kao Nam Pu Ron, Chaiya), Krabi (Ko Pipi), Songkhla (Ban Klang, Hat Yai).

Distribution.— Cambodia, Vietnam, Malesia.

Ecology.— In dry evergreen forest, alt. 25-150 m.

Vernacular.— Man (มัน).

Specimens examined.—

2. *Cordia dentata* Poir., *Encycl.* 7: 48. 1806. Type: Curacao, *Von Rohr* 1799 (P-JU, microfiche, MO).

Varronia alba Jacq., *Enum. Syst. Pl.* 14. 1760.

Cordia alba (Jacq.) Roem. & Schult., *Syst. Veg.* 4: 466. 1819.

Thailand.— NORTHERN: Chiang Mai; NORTH-EASTERN: Nakhon Phanom; CENTRAL: Krung Thep Maha Nakhon, Nakhon Nayok.

Distribution.—

Ecology.— Cultivated as ornamentals.

Vernacular.— Suwanna phruet (สุวรรณพฤกษ์).

Specimens examined.— *A.F.G. Kerr* 2735 (K); *T. Kokkamhaeng* s.n. (BKF); *S. Limsong* 1 (BCU); *J.F. Maxwell* s.n. (BK), s.n. (CMU-B); *C. Niyomdham & W. Ueachirakan* 595 (BKF); *C. Phengklai* 11905 (BKF); *T. Santisuk et al.* s.n. (BKF); *K. Suwat* 966 (BK); *Umpai* 92 (BK).

3. *Cordia dichotoma* G. Forst., *Fl. Ins. Austr.* 18. 1786; I.M. Johnst., *J. Arnold Arbor.* 32: 8. 1951; Backer & Bakf., *Fl. Java* 2: 459. 1965; Ng, *Tree Fl. Mal.* 4: 60. 1989; Zhu, Riedl & Kamelin, *Fl. China* 16: 333. 1995; Dayang Awa, *Tree Fl. Sabah & Sarawak* 2: 98. 1996; Riedl, *Fl. Malesiana* 13: 75. 1997. Type: New Caledonia, *Forster* s.n.

Varronia sinensis Lour., *Fl. Cochinch.* 1: 138. 1790.

Cordia griffithii C.B. Clarke, *Fl. Brit. Ind.* 4: 139. 1885. Type: Malaysia, Malacca, *Griffith* s.n.

Gerascanthus griffithii (C.B. Clarke) Borhidi, *Acta Bot. Hung.* 34: 405. 1988.

Thailand.— NORTHERN: Chiang Mai (Ban Chan, Mae Jam), Lampang (Jae Sawn, Mueang Pan, Ngao), Nakhon Sawan (Mae Wong); SOUTH-WESTERN: Kanchanaburi (Sai Yok); CENTRAL: Saraburi (Phu Khae), Krung Thep Maha Nakhon; SOUTH-EASTERN: Trat (Laem Ngop); PENINSULAR: Satun (Prang Ku).

Distribution.— India, Malesia, New Caledonia.

Ecology.— In deciduous forest or primary evergreen hardwood forest, alt. 260-1,050 m.

Vernacular.— Man dong (มันตง).

Specimens examined.—

4. *Cordia fragrantissima* Kurz, *Forest Fl. Burma* 2: 207. 1877; C.B. Clarke in Hook.f., *Fl. Brit. Ind.* 4: 139. 1885.

Gerascanthus fragrantissimus (Kurz) Borhidi, *Acta Bot. Hung.* 34: 404. 1988.

Thailand.— NORTHERN: Phrae; SOUTH-EASTERN: Chon Buri (Ko Khram, Sattahip).

Distribution.— Myanmar.

Ecology.— Scattered near beach, alt. 0-20 m.

Specimens examined.—

5. *Cordia grandis* Roxb., *Linnaea* 4: 473. 1829; C.B. Clarke in Hook.f., *Fl. Brit. Ind.* 4: 137. 1885; Gagnep. & Cour. in Lecomte, *Fl. Indo-Chine* 3: 202. 1915; Kurz, *Forest Fl. Burma* 2: 208. 1974. Type: Brazil, *Sello* 398 (B).

Gerascanthus grandis (Roxb.) Borhidi, *Acta Bot. Hung.* 34: 405. 1988.

Cordia furcans I.M. Johnston, *J. Arnold Arbor.* 32: 5. 1915.

Thailand.— NORTHERN: Chiang Mai, Chiang Rai; NORTH-EASTERN: Loei; EASTERN: Nakhon Ratchasima; SOUTH-WESTERN: Kanchanaburi; PENINSULAR: Chumphon, Surat Thani.

Distribution.— India, Myanmar, Vietnam, China.

Ecology.— In evergreen forest, alt. 100-700 m.

Vernacular.— Man bok (หมั่นบอก).

Specimens examined.—

6. *Cordia globifera* W.W. Sm., Rec. Bot. Surv. India 6: 102. 1914. Type: Myanmar, Henzada, village Myanaung, March 1903, *Shaik Mokim* 1675 (CAL).

Thailand.— NORTHERN: Mae Hong Son (Mae La Noi), Chiang Mai (Mae On), Chiang Rai (Khukorn waterfall), Lampang (Ngao), Phrae, Tak; NORTH-EASTERN: Loei (Phu Kradueng); SOUTH-WESTERN: Kanchanaburi (Sai Yok); CENTRAL: Saraburi (Sahm Lahn).

Distribution.— India.

Ecology.— In mixed deciduous forest, alt. 350-990 m.

Vernacular.— Sak hin (สักหิน) (Loei); Mak nam nong (หมักน้ำนอง) (Mae Hong Son); Mu man (มุหมั่น)

(Lampang).

Specimens examined.—

7. *Cordia mhaya* Kerr, Bull. Misc. Inform., Kew 1940: 184. 1940. Type: Myanmar, Pegu, *Kurz* 2345 (holotype K).

Gerascanthus mhaya (Kerr) Borhidi, Acta Bot. Hung. 34: 405. 1988.

Thailand.— NORTHERN: Chiang Mai (Doi Chiang Dao, Doi Sahng Liang, Mae Dtang, Mae Aie, Mae Rim), Chiang Rai (Tod Thong Falls, Mae Jun), Nan, Lampang (Jae Saw, Mae Jam); NORTH-EASTERN: Phetchabun (Pag Tog); SOUTH-WESTERN: Kanchanaburi (Wangka).

Distribution.— Myanmar.

Ecology.— In deciduous or dry evergreen forest, alt. 500-1,600 m.

Vernacular.— Po man (ปอหมั่น).

Specimens examined.—

8. *Cordia myxa* L., Sp. Pl.: 190. 1753; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 136. 1885; Gagnep. & Cour. in Lecomte, Fl. Indo-Chine 3: 201. 1915; *Kurz*, Forest Fl. Burma 2: 208. 1974. Type: Middle East, *Hasselquist* s.n. (lectotype S-LINN 94.5, microfiche).

Cordia obliqua Willd., Sp. Pl.: 1753.

Thailand.— NORTHERN: Chiang Mai (Khun Khawng), Phrae; NORTH-EASTERN: Khon Kaen (Phu Wiang); SOUTH-WESTERN: Kanchanaburi, Ratchaburi; CENTRAL: Krung Thep Maha Nakhon; SOUTH-EASTERN: Chon Buri (Siracha); PENINSULAR: Surat Thani.

Distribution.— Laos, Cambodia.

Ecology.— In deciduous forest, alt. 100-800 m.

Specimens examined.—

9. *Cordia sebestina* L.

Thailand.— All provinces.

Distribution.—

Ecology.— Cultivated as ornamentals.

Vernacular.— Kho dia (คอหมีด).

Specimens examined.—

10. *Cordia subcordata* Lam., Tabl. Encycl. 1: 421. 1792; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 140. 1885; Gagnep. & Cour. in Lecomte, Fl. Indo-Chine 3: 204. 1915; I.M. Johnst., J. Arnold Arbor. 32: 2. 1951; Backer & Bakh.f, Fl. Java 2: 459. 1965; Kurz, Forest Fl. Burma 2: 209. 1974; Ng, Tree Fl. Mal. 4: 62. 1989; Zhu, Riedl & Kamelin, Fl. China 16: 332. 1995; Dayang Awa, Tree Fl. Sabah & Sarawak 2: 100. 1996; Riedl, Fl. Malesiana 13: 78. 1997. Type: ex insulis Praliniis., *Commerson* 6479 (paratype JU).

Cordia rumphii Blume, Bijdr. Fl. Ned. Ind. 14: 843. 1826.

Thailand.— SOUTH-WESTERN: Prachuap Khiri Khan (Khao Ta Mong Lai); CENTRAL: Saraburi; SOUTH-EASTERN: Chon Buri (Koh Karm, Sattahip, Siracha); PENINSULAR: Surat Thani (Ko Tao, Ko Taeh), Phangnga (Ko Surin Nua), Krabi (Ko Pipidon, Ko Similan).

Distribution.— India, Cambodia, Vietnam, Malesia.

Ecology.— Common along beaches or beach forest.

Vernacular.— Man thale (มันทะเล).

Specimens examined.— *C. Chermisrivathana* & *T. Smitinand* 2113 (BKF); *C. Chermisrivathana* 1221 (BK); *D.J. Collins* 88 (K), 418 (K), 1000 (K); *R. Geesink*, *P. Hiepko* & *C. Phengkklai* 7803 (BKF, K); *B. Hansen* & *T. Smitinand* 12286 (BKF, K), 12562 (K); *A.F.G. Kerr* 11216 (BK, K); *A. Marcan* 2317 (K); *J.F. Maxwell* (BK); *Put* 244 (BK, K); *T. Santisuk* 8 (BKF); *J.E. Vidal*, *Y. Vidal* & *C. Niyomdham* 6351 (BKF, K); *S.N.* 2131 (K).

4. CYNOGLOSSUM

L., Sp. Pl.: 134. 1753.

Paracynoglossum Popov, Fl. Urss 19: 717. 1953.

A genus of 50-60 species, widely distributed in tropics and temperate regions, three species are indigenous to Thailand.

1. *Cynoglossum amabile* Stapf & J.R. Drumm., Bull. Misc. Inform., Kew 1906: 202. 1906; Backer & Bakh.f, Fl. Java 2: 463. 1965; Zhu, Riedl & Kamelin, Fl. China 16: 422. 1995; Riedl, Fl. Malesiana 13: 82. 1997. Type: China, Yunnan, Mengzi, *Hancock* 133 (holotype K).

Thailand.— NORTHERN: Chiang Mai (Doi Chiang Dao, Doi Inthanon).

Distribution.— Native of southern China; now widely cultivated, Malesia.

Ecology.— Along the driveway, alt. 1,800-2,520 m.

Specimens examined.— *F. Konta*, *C. Phengkklai* & *S. Khao-lam* 4877 (BKF); *G. Murata*, *K. Iwatsuki* & *C. Phengkklai* T-15272 (BKF); *C. Niyomdham* 5264 (BKF); *T. Shimizu*, *H. Koyama* & *A. Nalampoon* 10053 (BKF); *S. Tsugaru* T-61870 (BKF).

2. *Cynoglossum lanceolatum* Forssk., Fl. Aegypt.-Arab.: 41. 1775; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 156. 1885; Zhu, Riedl & Kamelin, Fl. China 16: 423. 1995; Riedl, Fl. Malesiana 13: 87. 1997. Type: Yemen, Hadie, *Forsskal* s.n. (C).

Cynoglossum micranthum Desf., Tabl. Ec. Bot.: 220. 1804. Type: Hb. *Forsskal* 312 (C).

Thailand.— NORTHERN: Chiang Mai (Doi Chiang Dao, Doi Inthanon, Doi Angkang Fang, Doi Sutep, Doi Chang), Chiang Rai (Khunkorn waterfall), Nan (Doi Phu Kha, Phu Wae); EASTERN: Loei (Phu Ruea); SOUTH-WESTERN: Uthai Thani (Ban Dong, Ban Rai).

Distribution.— Africa, Arabia, Afghanistan, Pakistan, Himalayas, India, Myanmar, Laos, Cambodia, Vietnam, China, Taiwan, Japan, Malesia.

Ecology.— In hill evergreen or mixed deciduous forest, alt. 500-2,550 m.

Specimens examined.— *C. Charloeophol* 42 (BKF), 43 (BKF);

L. Chanpach-chod 123 (CMU-B); *N. Drechsler* & *C. Scholz* 60 (QBG); *A.F.G. Kerr* 239 (K), 5542 (BK, K), 6558 (BK, K, E); *F. Konta* & *S. Khao-iem* 11398 (BKF); *H. Koyama*, *H. Nagamasu* & *W. Nanakorn* T-39741 (BKF); *H. Koyama*, *H. Terao* & *T. Wongprasert* T-32302 (BKF), T-32724 (BKF), T-33626 (BKF); *K. Larsen* 2939 (BKF); *J.F. Maxwell* 91-604 (E), 99-66 (BKF, CMU-B); *W. Nanakorn* 551 (BKF); *B. Nasongkhla et al.* 464 (BCU); *Y. Paisooksantivatana* Y1632A-85 (BK), Y259-80 (BK), Y259-80

(CMU-B), Y613-81 (BK), Y625-81 (BK); *C. Phengkklai et al.* 6652 (BKF), 7442 (BKF), 7472 (BKF), 7485 (BKF); *R. Pooma* 1069 (CMU-B); *T. Santisuk* 1030 (BKF); *T. Shimizu, H. Toyokuni, H. Koyama, T. Yahara & T. Santsuk* T-20349 (BKF), T-20496 (BKF); *T. Smitinand* 1732 (BKF), 8726 (BKF), 8993 (BKF); *J. Sadakorn* 206 (BK); *P. Srisanga, S. Watthana & W. La-orngsri* 864 (QBG); *S. Sutheesorn* 2422 (BK), 3137 (BK), 3353 (BK), 4068 (BK), 4288 (BK), 4301 (BK); *S. Tsugaru* 6170 (BKF); *A. Ubolcholkate* (BCU); *Umpai* 504 (BK).

3. *Cynoglossum furcatum* Wall., Fl. Ind., ed. Carey & Wall. 2: 6-7. 1824; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 155. 1885; Lecomte, Fl. Indo-Chine 2: 331. 1914; Zhu, Riedl & Kamelin, Fl. China 16: 422.1995; Riedl, Fl. Malesiana 13: 83. 1997. Type: China; Hubei, Qiayuangu Shan, near Xiang-yang, July 1904, *Silvestri* 1907 (holotype FI).

Cynoglossum zeylanicum Brand, Neue Schriften Naturf. Ges. Halle 3(2): 20. 1817.

Thailand.—NORTHERN: Chiang Mai (Doi Inthanon), Nan (Doi Phu Kha, Phu Wae).

Distribution.—Afghanistan, Pakistan, Himalayas, India, China, Japan, Malesia.

Ecology.—In evergreen forest or along the way between the hill, alt. 1,600-2,500 m.

Specimens examined.—*BGO Staff* 6594 (QBG), s.n. (QBG); *G. Murata, K. Iwatsuki, C. Phengkklai & C. Charoenphol* s.n. (BKF); *G. Murata* s.n. (BKF); *T. Shimizu, K. Iwatsuki, N. Fukuoka, M. Hutoh, D. Chaiglom & A. Nalampoon* s.n. (BKF). *P. Srisanga, C. Puff & W. Pongamornkul* 43 (QBG); *P. Srisanga, S. Watthana & W. La-orngsri* 882 (QBG); *P. Suksathan* 1790 (QBG).

5. EHRETIA

P. Browne, Civ. Nat. Hist. Jamaica: 168. 1756.

A genus of 250-300 species, widely distributed in the tropics and subtropics of Africa, Asia and Australia, five species are indigenous to Thailand.

1. *Ehretia acuminata* R. Br., Prodr. 1: 497. 1810; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 141. 1885; Lecomte, Fl. Indo-Chine 2: 330. 1914; Gagnep. & Cour. in Lecomte, Fl. Indo-Chine 3: 209. 1915; Backer & Bakh.f., Fl. Java 2: 459.1965; Zhu, Riedl & Kamelin, Fl. China 16: 334.1995; Riedl, Fl. Malesiana 13: 92. 1997. Type: China, Hubei, Mabanshan, 1,000 m, May 1907, *Silvestri* 1919 (holotype FI).

Cordia thyrsoflora Siebold & Zucc., Fl. Jap. 2: 26. 1842.

Ehretia acuminata var. *grandifolia* Pamp., Nuovo Giorn. Bot. Ital., n.s., 17: 699. 1910.

Ehretia argyi H. Lév., Repert. Spec. Nov. Regni Veg. 11(274-278): 67. 1912.

Ehretia taiwaniana Nakai J. Arnold Arbor. 5(1): 38-39. 1924.

Ehretia acuminata var. *obovata* (Lindl.) I.M. Johnst., Arnold Arbor. 32: 21. 1951.

Thailand.—NORTHERN: Chiang Mai (Doi Suthep Pui), Chiang Rai (Mae Chan, Doi Luang); SOUTH-WESTERN: Phetchaburi (Pa La U, Kaeng Krachan).

Distribution.—China, Malesia, Australia.

Ecology.—In mixed evergreen forest, alt. 300-1,400 m.

Vernacular.—Kai kom (ไคคอม).

Specimens examined.—

2. *Ehretia javanica* Blume, Bijdr.: 842. 1826; Backer & Bakh.f., Fl. Java 2: 460.1965; Riedl, Fl. Malesiana 13: 95. 1997. Type: Indonesia, Java, *Blume* s.n. (holotype L).

Thailand.—PENINSULAR: Pattani (Ko Kala Laisi).

Distribution.—Malesia.

Ecology.—In evergreen forest, alt. ca. 1,500 m.

Specimens examined.—

3. *Ehretia laevis* (Rottler ex G. Don) Roxb., Pl. Coromandel 1: 42. 1796; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 141. 1885; Lecomte, Fl. Indo-Chine 2: 330. 1914; Gagnep. & Cour. in Lecomte, Fl. Indo-Chine 3: 208. 1915; I.M. Johnst., J. Arnold Arbor. 32: 107. 1951; Kurz, Forest Fl. Burma 2: 210. 1974; Zhu, Riedl &

Kamelin, Fl. China 16: 336. 1995; Riedl, Fl. Malesiana 13: 96. 1997. Type: China, Hainan, Baoting Xian, upper Chang Jiang, forest slopes.

Bourreria dichotoma Rottler ex G. Don, Gen. Hist. Dich. Pl. 4: 390. 1838.

Ehretia laevis var. *platyphylla* Merr., Lingnan Sci. J. 14(1): 55. 1935. Type: China, Hainan, Lau 323.

Thailand.— NORTHERN: Chiang Mai, Lamphun (Mae Tha), Lampang, Phrae (Mae Yom, Song), Tak (Khao Padang), Phitsanulok (Thung Salang Luang), Nakhon Sawan (Takhil); NORTH-EASTERN: Loei (Ban Hung Quag); EASTERN: Nakhon Ratchasima; SOUTH-WESTERN: Kanchanaburi (Kow Sahn Chan, Sa Yok), Phetchaburi (Khao Tam Kan Chon, Cha-am), Prachuap Khiri Kha (Hua Hin, Pranburi); CENTRAL: Saraburi (Sahm Lahn); SOUTH-EASTERN: Chon Buri (Siracha); PENINSULAR: Surat Thani, Phatthalung, Songkhla (Hat Yai).

Distribution.— India, Myanmar, Vietnam, China (Hainan), Malesia.

Ecology.— Open, dry deciduous or evergreen forest, alt. 50-1,100 m.

Vernacular.— Kom (โคม)

Specimens examined.—

4. *Ehretia timorensis* Decne., Nouv. Ann. Mus. Par. 3: 395. 1834; Ridl., Fl. Malay Penins. 2: 442. 1923; Ng, Tree Fl. Mal. 4: 63. 1989; Dayang Awa, Tree Fl. Sabah & Sarawak 2: 101. 1996; Riedl, Fl. Malesiana 13: 98. 1997. Type: Timor, *Anonymous* s.n. (holotype P).

Thailand.— NORTHERN: Sukhothai (Ko Harsib Kisisatnibon); EASTERN: Nakhon Ratchasima (Tachang); SOUTH-WESTERN: Kanchanaburi (Ban Keng); CENTRAL: Saraburi (Sahm Lahn); SOUTH-EASTERN: Chon Buri (Siracha, Sattahip); PENINSULAR: Chumphon, Surat Thani (Ko Tao), Trang (Khao Chong).

Distribution.— Malesia.

Ecology.— In evergreen forest, open, rocky area in hardwood forest, along roadsides, alt. 100-400 m.

Vernacular.— Kai kom (ไคโคม).

Specimens examined.—

5. *Ehretia winitii* Craib, Bull. Misc. Inform., Kew 1922: 172. 1922. Type: Thailand, Kanchanaburi, *Winit* 532 (holotype K).

Thailand.— NORTHERN: Nakhon Sawan (Doi Kun Ming, Takli); SOUTH-WESTERN: Kanchanaburi, Ratchaburi, Prachuap Khiri Khan (Khao Lommuak); CENTRAL: Pathum Thani (Samkhok); PENINSULAR: Songkhla.

Distribution.— Endemic.

Ecology.— Common by the rice field.

Vernacular.— Chan nam (ฉันทน์).

Specimens examined.—

6. HELIOTROPIUM

L., Sp. Pl.: 130. 1753.

A genus of about 250 species, widely distributed in tropics and temperate regions, six species are indigenous to Thailand.

1. *Heliotropium bracteatum* R. Br., Prodr.: 493. 1810; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 151. 1885.

Heliotropium marifolium Koen. ex Retz. var. *bracteatum* (R. Br.) M.R. Almeida, Fl. Maharashtra 3A: 287. 2001.

Thailand.— SOUTH-WESTERN: Kanchanaburi (Khao Tok, Khao Pu Maklai, Nong Hoy), Phetchaburi (Kaeng Krachan); CENTRAL: Lop Buri (Lam Nari), Phra Nakhon Si Ayutthaya, Saraburi (Phu Khae); SOUTH-EASTERN: Prachin Buri (Aranya Prathet).

Distribution.—

Ecology.— In open evergreen forest or deciduous forest, alt. 50-100 m.

Specimens examined.—

2. *Heliotropium brevifolium* Wall., Roxb. Fl. Ind.: 2. 1824; Riedl, Fl. Malesiana 13: 102. 1997. Type: Wallich Cat. no. 914 (holotype K).

Thailand.— EASTERN: Ubon Ratchathani.

Distribution.— India, Nepal, Malesia.

Ecology.— In open deciduous forest, alt. ca. 1,000 m.

Specimens examined.—

3. *Heliotropium indicum* L., Sp. Pl. 1: 130. 1753; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 152. 1885; Gagnep. & Cour. in Lecomte, Fl. Indo-Chine 3: 220. 1915; Ridl., Fl. Malay Penins. 2: 441. 1923; I.M. Johnston, J. Arnold Arbor. 32: 111. 1951; Backer & Bakh.f, Fl. Java 2: 462. 1965; Riedl, Fl. Malesiana 13: 105. 1997. Type: India, Herb. Hermann 1: 9, no.70, (lectotype BM).

Thailand.— All provinces.

Distribution.— Native of tropical America, now widespread in the tropics.

Ecology.— Common in sandy soil near stream or open areas, rice field, roadsides, alt. 50-1,000 m.

Vernacular.— Ya nguang chang (หญ้าวงช้าง).

Specimens examined.—

4. *Heliotropium paniculatum* R. Br., Prodr.: 494. 1810; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 151. 1885; Backer & Bakh.f, Fl. Java 2: 462. 1965; Riedl, Fl. Malesiana 13: 107. 1997. Type: Tropical Australia, R. Brown s.n. (holotype K).

Heliotropium linifolium Lehm. Pl. Asperif. Nucif.: 35. 1818.

Thailand.— SOUTH-WESTERN: Prachuap Khiri Khan (Hau Hin).

Distribution.— Malesia, New Guinea.

Ecology.—

Specimens examined.—

5. *Heliotropium scabrum* Retz., Observ. 2: 8. 1781; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 152. 1885; Riedl, Fl. Malesiana 13: 108. 1997.

Thailand.— CENTRAL: Sing Buri, Lop Buri (Lam Nari).

Distribution.— Pakistan, India, Sri Lanka, Cambodia, China (Hainan), Malesia.

Ecology.—

Specimens examined.—

6. *Heliotropium strigosum* Willd., Sp. Pl. 1(2): 743. 1798; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 151. 1885; Lecomte, Fl. Indo-Chine 2: 330. 1914; Gagnep. & Cour. in Lecomte, Fl. Indo-Chine 3: 221. 1915; I.M. Johnston, J. Arnold Arbor. 32: 112. 1951; Zhu, Riedl & Kamelin, Fl. China 16: 339. 1995. Type: Ghana (Guinea), *Isert* (holotype B-W 219/3253, microfiche).

Heliotropium constrictum Kaplan, Sp. Pl.: 130. 1753.

Lithospermum chinense Hook. & Arn., Bot. Beechey Voy.: 202. 1837.

Euploca strigosa (Willd.) Diane & Hilger, Bot. Jahrb. Syst. 125(1): 49. 2003.

Thailand.— NORTHERN: Chiang Mai; EASTERN: Nakhon Ratchasima (Bua Yai, Phimai), Surin (Chumphon Buri), Roi Et (Kaset Wisai), Ubon Ratchathani (Phu Chong Na Yoi); SOUTH-WESTERN: Kanchanaburi (Sisawat, Thong Pha Phum), Prachuap Khiri Khan (Ko To, Hua Hin); CENTRAL: Chai Nat (Utapa), Lop Buri (Lam Narai), Saraburi; SOUTH-EASTERN: Sa Kaeo (Aranyaprathet), Prachin Buri (Watananakorn), Chon Buri (Siracha); PENINSULAR: Surat Thani (Bang Son), Songkhla (Padang Besar).

Distribution.— Afghanistan, Pakistan, Bhutan, India, Kashmir, Nepal, Myanmar, Laos, Cambodia, Vietnam.

Ecology.— In dry dipterocarp forest, dry deciduous forest or roadsides, alt. 50-150 m.
Specimens examined.—

7. PTELEOCARPA

Oliv., Trans. Linn. Soc. London 28: 515. 1873.

A monotypic genus.

1. *Pteleocarpa lamponga* (Miq.) Bakh. ex K. Heyne, Nutt. Pl. Ned. Ind. 2: 1309. 1927; Ng, Tree Fl. Mal. 4: 64. 1989; Dayang Awa, Tree Fl. Sabah & Sarawak 2: 103. 1996; Riedl, Fl. Malesiana 13: 142. 1997.
Dodonaea lamponga Miq., Fl. Ind. Bat. Suppl. 1: 511. 1855. Type: Sumatra, Lampong Prov.,
Teijsmann s.n. (holotype L)
Pteleocarpa malaccensis Oliv., Trans. Linn. Soc. 28: 515. 1873.

Thailand.— PENINSULAR: Trang (Khao Pab Paa), Songkhla (Ko Hong Hill).

Distribution.— Malesia.

Ecology.— In evergreen forest or open margins of the secondary forest along roadsides, alt. ca. 375 m.

Specimens examined.— *J.F. Maxwell* 85-752 (BKF); *Kiah* 24207 (BK); *T. Santisuk* s.n. (BKF).

8. ROTULA

Lour., Fl. Cochinch. 1: 121. 1790.

A genus of about three species, widely distributed in South-east Asia, Africa and Brazil, one species is indigenous to Thailand.

1. *Rotula aquatica* Lour., Fl. Cochinch. 1: 121. 1790; I.M. Johnst., J. Arnold Arbor. 32: 15. 1951; Zhu, Riedl & Kamelin, Fl. China 16: 336. 1995; Riedl, Fl. Malesiana 13: 115. 1997.
Ehretia aquatica (Lour.) Gottschling & Hilger, Bot. Jahrb. Syst. 123(2): 263. 2001.

Thailand.— NORTHERN: Lampang (Ban Wang Hin, Thoen), Tak SOUTH-WESTERN: Kanchanaburi (Kwae Noi River, Sangkhla Buri, Sisawat, Takanun); CENTRAL: Nakhon Nayok, Krung Thep Maha Nakhon; PENINSULAR: Chumphon (Ban Kraye, Lang Suan, Leao Lom Falls), Ranong (Khlung Naka, Kapoe), Surat Thani.

Distribution.— Tropical Africa, India, Sri Lanka, Myanmar, Laos, Vietnam, southern China, Malesia.

Ecology.— In evergreen forest along sandstone river; alt. 50-400 m.

Vernacular.— Khrai hang nak (ไคร้หางนาค).

Specimens examined.— *A. Bolchalaket* s.n. (K); *Bunnak* 567 (BK); *C. Chesmsirivathana* 695 (BK); *Damrongsak* 152 (BKF); *R. Geesink & T. Santisuk* 4910 (BKF, K); *R. Geesink, P. Hiepko & C. Phengklai* 7580 (BKF, K); *A.F.G. Kerr* 11975 (BK), 19272 (BK); *A. Kostermans* 531 (BK, K); *J.F. Maxwell* 73-57 (BK), 94-18 (CMU-B); *W. Nanakorn et al.* 8895 (QBG); *B. Nimanong* 64 (BKF); *R. Pooma, V. Chaemchumroon, N. Koonkhunthod & P. Chantaboon* 3728 (BKF); *Prayad* 782 (BK); *B. Sangkhachand* 1157 (BKF); *T. Santisuk* 589 (BKF); *T. Sørensen, K. Larsen & B. Hansen* 2092 (BKF); *T. Smitinand* 4163 (BKF); *S. Sutheesorn* 2484 (BK); *K. Suwatabundhu* 500 (BK); *C.F. van Beusekom* 3458 (K); *C.G.G. van Steenis* 19578 (K); *Winit* 1625 (BK).

9. TOURNEFORTIA

L., Sp. Pl.: 140. 1753.

Argusia Boehm., Def. Gen. Pl., ed. 3: 507. 1760.

Messerschmidia L. ex Hebenstr., Novi Comment. Acad. Sci. Imp. Petrop. 8: 315. 1763

Arguzia Raf., Sylva Tellur.: 167. 1838.

A genus of about 150 species, widely distributed in the tropics and the subtropics, four species are indigenous to Thailand.

1. *Tournefortia argentea* L.f., Suppl. Pl.: 133. 1781; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 145. 1885; Gagnep. & Cour. in Lecomte, Fl. Indo-Chine 3: 215. 1915; Zhu, Riedl & Kamelin, Fl. China 16: 341. 1995; Riedl, Fl. Malesiana 13: 117. 1997. Type: Sri Lanka, *Konig*, s.n. (LINN).

Tournefortia arborea Blanco, Fl. Filip.: 129. 1837.

Messerschmidia argentea (L.f.) I.M. Johnst., J. Arnold Arbor. 16(2): 164. 1935.

Argusia argentea (L.f.) Heine, Fl. Nouvelle Calédonie & Depend. 7: 109, pl. 24. 1976.

Thailand.— PENINSULAR: Surat Thani (Ban Bua Put, Ko Samui), Phangnga (Similan, Khura Buri), Krabi (Ko Lanta Yai), Satun (Adang, La-ngu).

Distribution.— Vietnam, China (Hainan), Taiwan, Japan (Ryukyu), Malesia.

Ecology.— Beach forest.

Vernacular.— Nguang chang thale (งวงช้างทะเล).

Specimens examined.—

2. *Tournefortia intonsa* Kerr, Bull. Misc. Inform. Kew 1940: 185. 1940. Type: Thailand, Doi Sutep, ca. 900 m, evergreen forest, *Kerr* 2285 (holotype K).

Thailand.— NORTHERN: Chiang Mai (Doi Chiang Dao, Mae Dtang), Chiang Rai (Khunkorn Waterfall, Mae Chun), Phayao (Doi Luang National Park), Lamphun (Doi Kuhn Dahn National Park), Lampang (Jae Sawn National Park), Phrae (Mae Yom National Park), Tak (Mae Sot); NORTH-EASTERN: Phetchabun (Chon Daen), Khon Kaen (Pha Bhroung Cave, Chum Phae); SOUTH-WESTERN: Uthai Thani (Ban Rai), Kanchanaburi (Sai Yok).

Distribution.— Endemic.

Ecology.— In evergreen or mixed deciduous forest, alt. 950-1,500 m.

Vernacular.— Ya nguang chang luang (หญ้างวงช้างหลวง).

Specimens examined.—

3. *Tournefortia ovata* Wall. ex G. Don, Gen. Hist. 4: 369. 1837; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 147. 1885.

Thailand.— NORTHERN: Chiang Mai (Doi Chiang Dao); EASTERN: Nakhon Ratchasima (Ban Rai); SOUTH-EASTERN: Kanchanaburi (Si Sawat); SOUTH-WESTERN: Prachuap Khiri Khan (Pran Buri).

Distribution.— Myanmar.

Ecology.—

Vernacular.— Liang (เหลียง).

Specimens examined.—

4. *Tournefortia wallichii* DC., Prodr. 9: 527. 1845; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 147. 1885. Type:

Thailand.— NORTHERN: Tak (Hui Sakulee, Doi Muser); SOUTH-EASTERN: Chon Buri; PENINSULAR: Surat Thani (Ko Pha-ngan), Trang (Sai Roong falls).

Distribution.— Malesia.

Ecology.— In evergreen forest.

Specimens examined.—

10. TRICHODESMA

R. Br., Prodr.: 496. 1810.

A genus of about 40 species, widely distributed in the tropics and the subtropics of Africa, Asia and Australia, four species are indigenous to Thailand.

1. *Trichodesma calcareum* Craib, Bull. Misc. Inform., Kew 1: 8. 1914. Type: Thailand, Doi Chiang Dao, crevices of limestone rock, 900 m, *A.F.G Kerr* 2856 (holotype K).

Thailand.—NORTHERN: Chiang Mai (Doi Pui, Doi Chiang Dao), Nan (Doi Phu Kha), Lamphun, Lampang; SOUTH-WESTERN: Kanchanaburi (Si Sawat).

Distribution.— Endemic.

Ecology.— Lower montane or hill evergreen forest, alt. 900-1,900 m.

Specimens examined.—

2. *Trichodesma calycosum* Collett & Hemsl, J. Linn. Soc., Bot.: 28: 92. 1890; Zhu, Riedl & Kamelin, Fl. China 16: 414. 1995. Type: Myanmar, Shan States, n. of 22°, 4,000 ft, *H. Collett* s.n. (holotype K).

Thailand.—NORTHERN: Nan (Doi Phu Kha).

Distribution.— India, Laos, Myanmar.

Ecology.— Lower montane or hill evergreen forest, alt. 900-1,900 m.

Specimens examined.—

3. *Trichodesma indicum* (L.) Sm. in Rees, Cyclop. 36(1) 1817; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 153. 1885; Lecomte, Fl. Indo-Chine 2: 331. 1914; Riedl, Fl. Malesiana 13: 124. 1997.

Borago indica L., Sp. Pl.: 137. 1753.

Thailand.—NORTHERN: Chiang Mai (Doi Chiang Dao, Doi Suthep Pui), Lamphun (Bah Sahng, Mae Lea, Lei Kaw), Lampang, Tak (Mae Lamung); SOUTH-WESTERN: Kanchanaburi (Si Sawat).

Distribution.— Afghanistan, Pakistan, India, Myanmar.

Ecology.— In grasslands, evergreen hardwood forest, alt. 350-1,850 m.

Vernacular.— Phak phaeo khao (ผักผะอ้อขาว).

Specimens examined.—

4. *Trichodesma zeylanicum* (Burm.f.) R. Br., Prodr.: 496. 1810; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 154. 1885; Backer & Bakh.f, Fl. Java 2: 462. 1965; Riedl, Fl. Malesiana 13: 125. 1997. Type:

Borago zeylanica Burm.f., Fl. Ind.: 41. 1768. Type: Sri Lanka, Garcin in Herb. Burm. (lectotype G).

Thailand.—SOUTH-WESTERN: Kanchanaburi (Si Sawat).

Distribution.— Madagascar, Mascarene Island, India, Sri Lanka, Malesia.

Ecology.— In dry dipterocarp forest.

Specimens examined.—

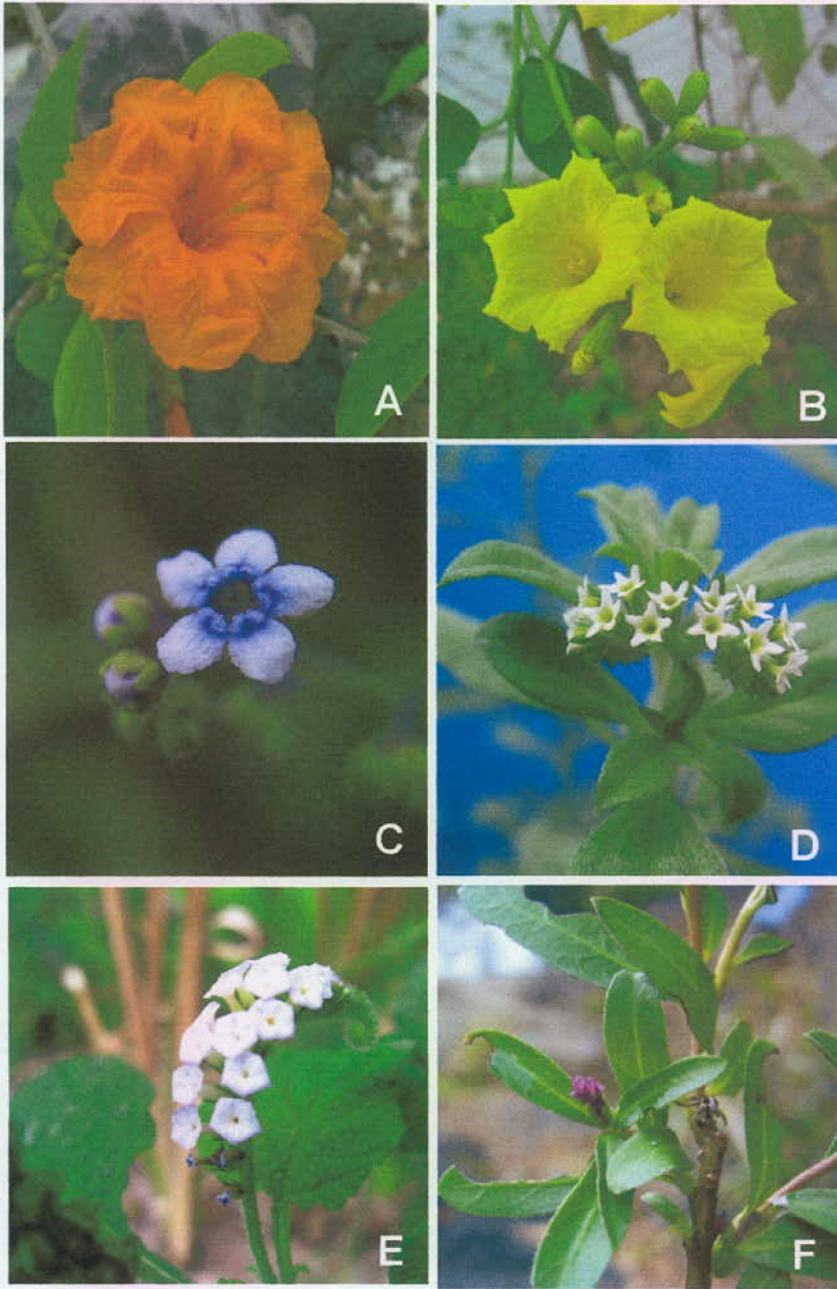


Figure 3: A) *Cordia subcordata*
B) *C. lutea*
C) *Cynoglossum lanceolatum*
D) *Heliotropium* sp.
E) *H. indicum*
F) *Rotula aquatica*

POLYGONACEAE

There are six genera and 27 species in Thailand.

KEY TO THE GENERA

- | | |
|--|-------------------------|
| 1. Tendrils present | 1. Antigonon |
| 1. Tendrils absent | |
| 2. Stem and young branchlets flat with a cross-line on nodes | 3. Muehlenbeckia |
| 2. Stem and young branchlets terete or angled | |
| 3. Tree | |
| 4. Plant dioecious. Leaf apex acute or acuminate | 6. Triplaris |
| 4. Plant monoecious. Leaf apex obtuse | 2. Coccoloba |
| 3. Herb or climbing herb | |
| 5. Perianth segments and nut winged | 5. Rumex |
| 5. Perianth segments and nut wingless | 4. Polygonum |

KEY TO SPECIES OF POLYGONUM

- | | |
|--|----------------------------|
| 1. Ocrea less than 3.5 mm long. Inflorescence fascicled and without inflorescence branches | 14. P. plebeium |
| 1. Ocrea more than 3.5 mm long. Inflorescence with distinct branches | |
| 2. Inflorescence single capitate or a capitate panicle | |
| 3. Leaf base attenuate or winged | |
| 4. Leaves runcinate or lyrate-pinnatifid | 16. P. runcinatum |
| 4. Leaves entire | 10. P. nepalense |
| 3. Leaf base cuneate and wingless | |
| 5. Ocrea glabrous, apex oblique. Fruit fleshy | 23. P. sp. 3 |
| 6. Leaves leathery, mature stem glaucous | 3. P. chinense |
| 6. Leaves coriaceous, mature stem glabrous or pubescent | |
| 5. Ocrea with glandular hairs, apex truncate. Fruit dry | |
| 7. Tepal less than 3 mm long. Cultivated | 2. P. capitatum |
| 7. Tepal more than 3 mm long | 20. P. walichii |
| 2. Inflorescence a spicate panicle or paniculate | |
| 8. Inflorescence racemose, spicate panicle | |
| 9. Stems and nodes with retrorse prickles | |
| 10. Petiole and leaf margin with prickles | |
| Apex of ocreae truncate with ciliate margin | 17. P. strigosum |
| 10. Petiole and leaf margin without prickles | |
| Apex of ocreae oblique without ciliate margin | 13. P. pedunculare |
| 9. Stems and nodes without retrorse prickles | |
| 11. Leaves ovate, elliptic or lanceolate. Nuts shorter than persistent perianth | |
| 12. Apex of ocrea winged. Petioles more than 5 cm long | 12. P. orientale |
| 12. Apex of ocrea without bristle. | |
| Petioles less than 5 cm long | |
| 13. Style 2-clefted. Nuts lenticular | |
| 14. Ocrea pubescent or glabrescent, with bristle at apex | |
| 15. Leaves punctuate | 22. P. sp. 2 |
| 15. Leaves not punctuate | |
| 16. Ocreae less than 2 cm long | 8. P. minus |
| 16. Ocreae more than 2 cm long | 18. P. tomentosum |
| 14. Ocrea glabrous, without bristle at apex | 7. P. lapathifolium |
| 13. Style 3-clefted. Nuts triangular | |

- 17. Inflorescence filiform, lax spicate racemose, distinct visible rachis
 - 18. Leaves glabrous. Inflorescence erect
 - 18. Leaves pubescent. Inflorescence pendulous
 - 17. Inflorescence cylindrical or pyramidal shaped, dense spicate racemose, invisible rachis
 - 19. Plant with glandular hairs throughout
 - 19. Plant without glandular hair
 - 20. Leaves punctate
 - 21. Ocrea pubescent. Flowers white
 - 21. Ocreae glabrous. Flowers red or pink
 - 20. Leaves not punctate
 - 11. Leaves triangular. Nuts longer than persistent perianth
 - 8. Inflorescence paniculate
- 11. *P. odoratum*
 - 15. *P. pubescens*
 - 19. *P. viscosum*
 - 21. *P. sp. 1*
 - 5. *P. glabrum*
 - 1. *P. barbatum*
 - 4. *P. dibotrys*
 - 9. *P. molle*

POLYGONUM L.

There are 22 species in Thailand.

1. *Polygonum barbatum* L., Sp. Pl. 1: 362. 1753.

Erect or procumbent perennial herb, 60–100 cm tall, stem and branches terete, pubescent or glabrescent. *Leaves* with petioles 4–8 (–10) mm, pubescent; lamina (9.5–) 10.5–14 (–16) by (1–) 1.5–2.1 (–3) cm, elliptic or elliptic-ovate, pubescent or glabrescent on both surfaces, base cuneate, apex acute or acuminate, margin entire with hispid hairs, 0.5–1 mm long, secondary veins (13–) 14–19 (–22) -paired, pubescent. *Ocreae* cylindrical, 2–2.5 (–3) cm long, scarious, pubescent without conspicuous venation, margin truncate, with (12–) 14–20 (–22) bristles, (10–) 10.5–13 (–16) mm long. *Inflorescences* spicate paniculate, cylindrical or pyramidal, racemose, (9–) 10–22 (–30) cm long, erect, terminal and axillary, (28–) 32–44 (–46) ocreolae per spike, inflorescence branches pubescent or glabrescent; spike (3.5–) 5–8 (–9.5) cm long; leafy bract absent or present, 4–7 (–10) by 0.4–0.6 (–1) cm; elliptic, apex acute, margin with hispid hairs. *Flowers* fascicled ocreolae completely enclosed rachis, (2–) 2.5–3 (–3.5) mm long, glabrous. *Tepals* 5, white or pink. *Stamens* 8, filaments white or pinkish. *Style* 1, deeply 3-clefted. *Nuts* triangular, 1.4–1.9 (–2.1) by 1.21–1.4 mm, shiny black.

Thailand. – NORTHERN: Mae Hong Son, Chiang Mai, Nan, Lamphun, Lampang, Phrae, Phitsanulok, Nakhon Sawan; NORTH-EASTERN: Phetchabun, Sakon Nakhon, Khon Kaen; EASTERN: Nakhon Ratchasima, Surin; SOUTH-EASTERN: Chanthaburi; CENTRAL: Saraburi, Krung Thep Maha Nakhon; SOUTH-WESTERN: Uthai Thani, Kanchanaburi; PENINSULAR: Ranong.

Distribution. – Sri Lanka, India, Nepal, Bhutan, Burma, China, Taiwan, Vietnam, Peninsular Malaysia, Indonesia, Philippines, New Guinea.

Ecology. – In marshy areas and streamsides; alt. 200–1,100 m.

Vernacular. – Phak paew nam (ผักพวงน้ำ) (Sakon Nakhon), Kra serm (กระเซิม) (Chanthaburi).

2. *Polygonum capitatum* Buch.-Ham. ex D. Don, Prodr. Fl. Nep.: 73. 1825.

Thailand. – CENTRAL: Krung Thep Maha Nakhon.

Distribution. – India, China, Vietnam.

Ecology. – Cultivated.

Vernacular. –

3. *Polygonum chinense* L., Sp. Pl. 1: 363. 1753.

Small shrub, 1–2 m tall, stem and branches terete, glabrous. *Leaves* with petioles (1–) 1.5–2.2 (–2.5) cm long, glabrous, auricles usually present; lamina (10–) 11–14.5 (–15.5) by (6–) 6.8–10.5 (–11.6) cm, ovate or elliptic, glabrous on both surfaces, base cuneate, cuneate-attenuate or cordate, apex cuspidate,

margin entire or undulate with minute hispid hairs, primary vein glabrous on both surfaces, secondary veins 7–11 -paired, with 1–2 intramarginal veins. *Ocreae* cylindrical, scarious, glabrous with conspicuous venation, margin oblique, without ciliate hair. *Inflorescences* capitate paniculate, globular, racemose, 6.8–15 (–19.5) cm long, erect, terminal, (8–) 10–17 (–20) ocreolae per globular head, inflorescence branches with densely glandular hairs, 0.2–0.5 mm long; globular head (7–) 8–11 mm long; leafy bract present, 1.5–2.5 (–4) by (0.5–) 1–2 cm, ovate, apex acute, margin entire; leafy bracteoles subtended globular head branches, ovate, base truncate-amplexus or cordate-amplexus. *Flowers* fascicled, ocreolae 3.5–5 (–6) mm long, glabrous. *Tepals* 5, pink. *Stamens* 8, filaments pinkish. *Style* 1, deeply 3-clefted. *Nuts* triangular, 3.4–4 by 2.5–3 mm, shiny black.

Thailand. – NORTHERN: Mae Hong Son, Chiang Mai, Nan, Lamphun, Lampang, Phrae, Phitsanulok; NORTH-EASTERN: Phetchabun, Loei, Sakon Nakhon, Khon Kaen; EASTERN: Nakhon Ratchasima, Surin; SOUTH-EASTERN: Chanthaburi; SOUTH-WESTERN: Kanchanaburi; PENINSULAR: Narathiwat.

Distribution. – Sri Lanka, India, Nepal, Bhutan, Burma, China, Peninsular Malaysia.

Ecology. – In high mountain; alt. 1,000–2,050 m.

Vernacular. – Phaya dong (พญาตง), Ueang phet ma (เอื้องเพ็ดม้า) (Central); Phak phai nam (ผักไผ่น้ำ), Phak bang bai (ผักบังใบ) (Northern).

4. *Polygonum dibotrys* D. Don, Prodr. Fl. Nep.: 73. 1825.

Thailand. – NORTHERN: Chiang Mai, Tak.

Distribution. – Pakistan, India, Nepal, Sikkim, Burma, China, Vietnam, Laos.

Ecology. – Along streamsides, paddy fields, rocks on limestone mountain; alt. 1,000–2,100 m.

Vernacular. – Phak bung som (ผักbungส้ม) (Chiang Mai); Khao-sam-liam (เขาสามเลียม) (Chiang Khong).

5. *Polygonum glabrum* Willd., Sp. Pl. ed. 4, 2(1): 447. 1799.

Perennial herb, 100–150 cm tall, stem and branches terete, glabrous. *Leaves* with petioles 1–1.5 (–2) cm; lamina (13.5–) 14.5–18.5 (–21) by (1.7–) 2–2.6 (–3) cm, ovate or elliptic-ovate, glabrous on both surfaces, punctuate, base attenuate, apex acuminate or caudate, margins entire, secondary veins 20–24 (–26) -paired. *Ocreae* cylindrical, (2.2–) 2.6–3.5 cm long, scarious, glabrous with conspicuous venation, margin truncate or slightly oblique, bristle absent. *Inflorescences* spicate paniculate, cylindrical, racemose, (16–) 21.5–30 (–34.8) cm long, erect or slightly pandulous, terminal and axillary, (29–) 32–40 (–42) ocreolae per spike, inflorescence branches glabrous; spike (4.5–) 6–9 (–10) cm long; leafy bract absent or present, 8–12 (–15) by 0.5–1.5 (–1.8) cm. *Flowers* fascicled, ocreolae 2.5–3 (–4) mm long, glabrous. *Tepals* 5, pink. *Stamens* (7–) 8, filaments pinkish or white. *Style* 1, deeply 2-clefted. *Nuts* triangular, (2.3–) 2.4–2.6 by 1.8–2.2 mm, shiny black.

Thailand. – NORTHERN: Chiang Mai, Phitsanulok; NORTH-EASTERN: Sakon Nakhon, Khon Kaen; EASTERN: Chaiyaphum; SOUTH-WESTERN: Phetchaburi.

Distribution. – Sri Lanka, India, Bhutan, Bangladesh, China, Taiwan, Burma, Vietnam, Australia.

Ecology. – Open marshy areas; alt. 0–1,300 m.

Vernacular. – Ueang (เอื้อง). Pak Pawt (ผักปอด) Chaiyaphum, Pung Pode (พุงพอด) Phuiwieng.

6. *Polygonum lapathifolium* L., Sp. Pl. 1: 360. 1753.

Perennial herb, 30–80 cm tall, stem and branches terete, glabrous. *Leaves* with petioles 2–5 (–7) mm; lamina (4.2–) 5.8–13 (–17) by (1.7–) 2–2.6 (–3) cm, ovate and elliptic-ovate, lanate or glabrous and punctuate, base cuneate and attenuate, apex acuminate or caudate, margins entire with hispid hairs, ca. 0.5 mm long, secondary veins (9–) 18–28 (–34) -paired. *Ocreae* cylindrical, 1.7–3 (–3.5) cm long, scarious, glabrous with conspicuous venation, margin truncate and slightly oblique, bristle absent. *Inflorescences* spicate paniculate, cylindrical or pyramidal, racemose, (11.5–) 13–22.5 (–30) cm long, erect or sometimes

pandulous, terminal, (39-) 42-58 (-60) ocreolae per spike, inflorescence branches with globular glands; spike (1.5-) 2.8-6 (-7.8) cm long; leafy bract usually present, (2-) 4-6 (-7.5) by (0.2-) 0.3-0.6 (-0.8) cm; ovate and elliptic, apex acute, margins entire with hispid hairs. *Flowers* fascicled, ocreolae 1.5-2.5 (-3) mm long, glabrous. *Tepals* 4, white. *Stamens* 6, filaments white. *Style* 1, deeply 2-clefted. *Nuts* lenticular, (1.7-) 2-2.3 by (1.4-) 1.6-1.9 (-2) mm, shiny brown.

Thailand. - NORTHERN: Tak, Phitsanulok; NORTH-EASTERN: Nong Khai, Nakhon Phanom, Khon Kaen; SOUTH-EASTERN: Rayong.

Distribution. - Europe, Africa, Pakistan, India, Nepal, Bangladesh, Burma, China, Taiwan, Vietnam, Indonesia, New Guinea, Australia.

Ecology. - River banks, roadsides; alt. 250-500 m.

Vernacular. - Phong phot (พวงพุด) (Khon Kaen).

7. *Polygonum minus* Huds., Fl. Angl. ed. 1: 148. 1762.

Decumbent or erect perennial herb, stem and branches terete, glabrous or glabrescent. *Leaves* with petioles 1-2.3 (-3) cm; lamina (2.3-) 2.8-6 (-7) by (0.3-) 0.5-1 (-1.2) cm, punctuate, elliptic, pubescent, glabrescent or sometimes glabrous on both surfaces, base cuneate and slightly caudate, apex acute and acuminate, margin entire with hispid hairs, secondary veins 10-13 (-14) -paired, midrib with hispid hairs on both sides. *Ocreae* tubular, 0.7-1 (-1.2) cm long, scarious, pubescent without conspicuous venation, margin truncate, with 12-16 bristles, (2-) 2.2-3.8 (-4.5) mm long. *Inflorescences* spicate paniculate, cylindrical, racemose, 4-10 (-15) cm long, erect, terminal and axillary, (20-) 22-30 (-34) ocreolae per spike, inflorescence branches glabrous; spike (1-) 1.5-2.8 (-3) cm long; leafy bract present, 2-3 (-3.8) by 0.2-0.3 (-0.5) cm long; elliptic, apex acute, margin entire with hispid hairs. *Flowers* fascicled, ocreolae (1.2-) 1.5-2 (-2.2) mm long, glabrous. *Tepals* 5, pink or white. *Stamens* 5, filaments white. *Style* 1, deeply 2-clefted. *Nuts* lenticular, 1.1-1.5 by 0.9-1.2 mm, shiny brown.

Thailand. - NORTHERN: Mae Hong Son, Chiang Mai, Phitsanulok; NORTH-EASTERN: Sakon Nakhon, Loei; EASTERN: Nakhon Ratchasima; SOUTH-EASTERN: Chon Buri, Chanthaburi.

Distribution. - England, India, Nepal, Bangladesh, Sri Lanka, China, Taiwan, Vietnam, Peninsular Malaysia, Indonesia, Philippines, New Guinea.

Ecology. - Paddy fields, marshy areas, streamsides; alt. 0-1,700 m.

Vernacular. - Phakpot (ผักพุด) (Nakhon Ratchasima), Phak phai nam (ผักไผ่ดำ) (Northern).

8. *Polygonum molle* D. Don, Prodr. Fl. Nep.: 72. 1825.

Shrub, 1-2.5 m tall, stem and branches terete, pubescent with ascending hairs. *Leaves* with petioles (1-) 1.2-1.6 (-1.8) cm, pubescent; lamina (10.5-) 11.5-15 by (4-) 4.5-5.8 cm, elliptic, with hairs on both surfaces, base cuneate, apex acuminate and cuspidate, margin entire with hairs, secondary veins 19-22 (-24) -paired. *Ocreae* cylindrical, 7-12 (-40) mm long, scarious, pubescent with conspicuous venation, margin truncate and slightly oblique, bristles absent. *Inflorescences* paniculate, well-branched terminal paniculate, racemose, 7-18 (-25) cm long, erect, terminal and rarely axillary, (5-) 8-12 ocreolae per loose spike-like raceme, inflorescence branches usually pinkish-purple, pubescent with ascending hairs, without glandular dots; spike-like raceme (1-) 1.2-3 (-4) cm long; leafy bract absent or present, 40-50 (-60) by (2-) 4-10 mm; ovate, apex acute and acuminate. *Flowers* fascicled, ocreolae (2-) 2.5-3 mm long, hyaline, without glandular dots. *Tepals* 5, creamy white. *Stamens* 8, filaments white. *Style* 1, deeply 3-clefted. *Nuts* triangular, 3-3.5 by 2-2.5 mm, black.

Thailand. - NORTHERN: Chiang Mai.

Distribution. - Nepal, Bhutan, Sikkim, China, Sumatra.

Ecology. - Grassy or boggy places in moist evergreen forest; alt. 1,300-2,565 m.

Vernacular. - Phak phai (ผักไผ่).

9. *Polygonum nepalense* Meisn., Monog. Polyg.: 84, t. 7, f. 2. 1826.

Straggling herb, stem and branches terete, glabrous or glabrescent, nodes with ciliate hairs, 1-1.5 mm long. *Leaves* sessile and petiolate, ca. 1 mm long; lamina (2-) 2.5-4.8 (-5.5) by (1-) 1.2-2.3 (-2.5) cm, ovate, glabrescent or pubescent on upper surface, with distinct gland dots, base attenuate, apex acute and acuminate, margin entire with scaly hairs, secondary veins 4-8 (-10) -paired. *Ocreae* slightly lacerate, (4-) 5-8.5 (-10) mm long, hyaline, pubescent or glabrescent or glabrous without conspicuous venation, margin oblique without hispid hairs. *Inflorescences* capitate paniculate, globular, raceme, 2-5.5 (-8) cm long, erect, terminal and axillary, inflorescence branches glabrous, with glandular hairs beneath head, 0.5-1 mm long; globular head 5-6 (-8) mm long; leafy bract present, subtended globular head branches, (4-) 8-12 (-20) by (2-) 4-6 (-10) mm, ovate and lanceolate, apex acute, margin entire, base cordate or truncate. *Flowers* fascicled, ocreolae 2.5-3.8 (-4.5) mm long, glabrous, with glandular dots. *Tepals* 4, pink or purple or white, *Stamens* 6, filaments white. *Style* 1, deeply 2-clefted. *Nuts* lenticular, 1.4-1.7 (-1.9) by 1.4-1.7 mm, black.

Thailand. - NORTHERN: Mae Hong Son, Chiang Mai, Chiang Rai, Nan, Uttaradit, Phitsanulok.

Distribution. - Tropical Africa, Afghanistan, Pakistan, India, Nepal, China, Korea, Japan, Peninsular Malaysia, Indonesia, Philippines, New Guinea.

Ecology. - Moist areas in open grassy pine, dipterocarp-oak or hill evergreen forest; alt. 900-2,560 m.

Vernacular. -

10. *Polygonum odoratum* Lour., Fl. Cochinch. 1: 299. 1790.

Perennial herb, 15-30 cm tall, stem and branches terete, glabrous. *Leaves* with petioles 2-4 (-5) mm, glabrous; lamina 3-8 (-10) by (0.8-) 1-2.1 cm, with gland dots, elliptic and ovate, glabrous on both surfaces, base cuneate, apex acute and acuminate, margin entire with hispid hairs, secondary veins (6-) 7-13 (-16) -paired, primary veins glabrous on both surfaces. *Ocreae* cylindrical, 7-9 (-10) mm long, scarious, glabrous with gland dots, conspicuous venation, margin truncate, with (9-) 10-15 bristles, 2-4 mm long. *Inflorescences* spicate paniculate, filiform, raceme, 4.5-12 (-15) cm long, erect, terminal and axillary, 7-16 (-22) ocreolae per spike, inflorescence branches glabrous with glandular dots; spike 2.5-6 (-8.5) cm long; leafy bract present, 15-30 (-55) by 4-10 mm; ovate, apex acute, margin with hispid hairs. *Flowers* fascicled, ocreolae 3.5-5 (-6) mm long, with glandular dots. *Tepals* 5, white or pink. *Stamens* 8, filaments white. *Style* 1, deeply 3-clefted. *Nuts* triangular, shiny black.

Thailand. - Throughout the country.

Distribution. - Vietnam, Cambodia, Peninsular Malaysia.

Ecology. - Villages, plantation; alt. 200-1,500 m.

Vernacular. - Phak phai (ผักไผ่) (Northern); Chan chom (จันทน์หอม) (Nakhon Ratchasima); Phrik ma (พริกมัน), Phak paew (ผักเปาว) (North-eastern); Hom chan (หอมจันทน์) (Ayutthaya), Phak Kra Som (ผักกระเสริม) (Chantaburi).

11. *Polygonum orientale* L., Sp. Pl. 1: 362. 1753.

Erect perennial herb, stem and branches terete, pubescent. *Leaves* with petioles (4.5-) 5.2-7.8 (-8.8) cm; lamina (14-) 17-26 (-29) by (6.4-) 7.5-9.5 (-10.5) cm, ovate, pilose on both surfaces, base cordate-attenuate, apex cuspidate or cuspidate-mucronate, margin entire with pilose hairs throughout, secondary veins 16-19 (-21) -paired, midrib and secondary with densely pilose hairs on both surfaces. *Ocreae* tubular with foliaceous limb, (1.5-) 1.8-2.2 (-2.5) cm long, scarious, pubescent without conspicuous venation, margin truncate or sometimes with pilose foliaceous, 4-7 (-10) mm long. *Inflorescences* spicate paniculate, cylindrical, racemose, (12-) 18.2-32 (-39.5) cm long, pandulous, terminal and axillary, (22-) 25-38 (-44) ocreolae per spike, inflorescence branches pilose; spike (3.5-) 6-11.2 (-13.2) cm long; leafy bract absent or present, (1.5-) 2-8 (-14) by (0.4-) 1-2 (-4) cm long; ovate, apex cuspidate-mucronate, margin entire with pilose hairs. *Flowers* fascicled, ocreolae (3-) 3.5-4 mm long, pubescent. *Tepals* 5, pinkish or white. *Stamens* 7, filaments white. *Style* 1, deeply 2-clefted. *Nuts* lenticular, 2.2-2.7 (-2.9) by (2.4-) 2.6-3 mm, shiny black.

Thailand. – NORTHERN: Chiang Mai, Chiang Rai, Phayao; NORTH-EASTERN: Nong Khai; CENTRAL: Ang Thong; PENINSULAR: Phatthalung.

Distribution. – Sri Lanka, India, Bhutan, Bangladesh, Burma, China, Taiwan, Vietnam, Cambodia, Indonesia, Philippines, Lesser Sunda island, Australia, New Zealand.

Ecology. – River banks, roadsides, grassy fields; alt. 0–500 m.

Vernacular. – Phak phai nam (ผักไผ่ดำ) (Northern); Phak ueang (ผักเอียง) (Central).

12. *Polygonum pedunculare* Wall. [Cat.no. 1718, nom.nud. 1829] ex Meisn. in Wall., Pl. Asiat. Rar. 3: 58. 1832.

Ascending perennial herb, up to 40 cm tall, stem and branches terete, retroused prickles on nodes sometimes with sparse, prickles (1–) 1.5–2.5 mm long. *Leaves* with petioles 3–10 (–25) mm long, glabrous or sometimes with sparsely hispid hairs; lamina (4.5–) 5.5–8.5 (–10.5) by 1–2.2 (–2.7) cm, elliptic or ovate, entire on both surfaces, base cuneate or hastate, apex acute, margin entire with minute hispid hairs, primary vein glabrous on both surfaces, secondary veins 9–14 -paired. *Ocreae* cylindrical, (1.5–) 1.8–2.5 (–2.8) cm long, scarious, glabrous with conspicuous venation, margin oblique, without ciliate hair. *Inflorescences* spicate paniculate, racemose, 7–13 (–19) cm long, erect, terminal and axillary, (5–) 7–12 ocreolae per spike, inflorescence branches near spike with glandular hairs; spike (5–) 8–12 (–15) mm long; leafy bract absent or present 3.5–4.5 (–5.5) by (0.3–) 0.5–1 cm, elliptic or ovate, apex acute, margin entire. *Flowers* fascicled, ocreolae 2–2.5 (–3) mm long, glabrous. *Tepals* 5, white or pink. *Stamens* 5, filaments white. *Style* 1, deeply 2-clefted. *Nuts* lenticular, 2–2.5 by (1.8–) 2–2.2 mm, shiny brown.

Thailand. – NORTHERN: Chiang Mai, Chiang Rai; NORTH-EASTERN: Sakon Nakhon, Chaiyaphum.

Distribution. – India, China, Laos.

Ecology. – Swampy areas, marshy places, rice fields; alt. 200–1,200 m.

Vernacular. –

13. *Polygonum plebeium* R.Br., Prodr. 1: 420. 1810.

Annual herb, 10–20 cm tall, procumbent, stem and branchlets terete with longitudinal ridges. *Leaves* sessile or subsessile; lamina 10–24 (–33) by (1.5–) 1.8–3.4 (–4) mm, narrowly elliptic or oblong, often spatulate, with white scales, base attenuate, apex acute, margin entire, secondary veins inconspicuous. *Ocreae* lacerate, 2–3.2 (–3.5) mm long, hyaline, venation inconspicuous, sometimes with 2–4 conspicuous venation, glabrous, incised margins with 16–20 (–23) incision, 0.5–2.5 mm long. *Inflorescences* single fascicled, (2–) 2.5–3.5 mm long, erect, axillary. *Flowers* fascicled, with (3–) 4–5 flowers; pedicels (1–) 1.5–2 mm long, glabrous; bracteoles 1.2–1.5 mm long, glabrous; ocreolae absent. *Tepals* 5, pink. *Stamens* 5, filaments pinkish or white. *Style* 1, deeply 3-clefted. *Nuts* triangular, 1.3–1.6 by 0.8–1.2 mm, shiny black.

Thailand. – NORTHERN: Mae Hong Son, Chiang Mai, Phayao, Lamphun, Lampang, Phrae, Sukhothai; NORTH-EASTERN: Nong Khai, Sakon Nakhon; CENTRAL: Chai Nat.

Distribution. – Europe, Africa, India, Nepal, China, Indonesia, Philippines, Australia.

Ecology. – Paddy fields, river banks, along streamsides; alt. 200–1,600 m.

Vernacular. – Phak sai rin (ผักไผ่หิน).

14. *Polygonum pubescens* Blume, Bijdr.: 532. 1826.

Erect perennial herb, 50–80 cm tall, stem and branches terete, glabrous or pilose. *Leaves* with petioles 5–8 (–10) mm, pubescent; lamina 6–10.5 by 1.8–2.5 cm, punctate, elliptic or ovate, pilose on lower surface or both surfaces, base attenuate and cuneate, apex caudate and acuminate, margin entire with ciliate hairs, secondary veins 11–15 -paired. *Ocreae* cylindrical, 1.4–2.1 (–2.5) cm long, scarious, pubescent with conspicuous venation, margin truncate, with 12–15 bristles, 3–8 mm long. *Inflorescences* spicate paniculate, filiform, racemose, 24–37 (–42) cm long, pendulous, terminal and axillary, (12–) 14–20 (–26) ocreolae per spike, inflorescence branches with glandular dots; spike (3–) 7–15 (–19) cm long; leafy bract absent or

present, 18–35 (–50) by (1–) 3–9 (–14) mm; elliptic, apex acuminate. *Flowers* fascicled, ocreolae 2.5–3.5 (–4) mm long, with glandular dots. *Tepals* 5, pink or red. *Stamens* 8, filaments white or pinkish. *Style* 1, deeply 3-clefted. *Nuts* triangular, (2.2–) 2.5–2.8 (–3) by 1.6–1.8 mm, shiny black.

Thailand. – NORTHERN: Chiang Mai, Chiang Rai, Phrae, Tak, Sukhothai, Phitsanulok, Nakhon Sawan; NORTH-EASTERN: Loei, Nakhon Phanom; CENTRAL: Chai Nat, Krung Thep Maha Nakhon; SOUTH-EASTERN: Prachin Buri, Chanthaburi; PENINSULAR: Nakhon Si Thammarat, Patthani, Yala.

Distribution. – China, Vietnam, Java, Sumatra.

Ecology. – Paddy fields, marshy areas, streamsides; alt. 20–1,500 m.

Vernacular. – Pak Pai Paa (ผักไผ่ป่า) (Chiang Rai), Dok khao phot (ดอกข้าวโพด).

15. *Polygonum runcinatum* D. Don, Prodr. Fl. Nep.: 73. 1825.

Stoloniferous herb, stem and branches terete, glabrous and nodes pubescent. *Leaves* with petioles 4–5 (–5.5) cm, pubescent; lamina (2–) 2.5–3 by (1.8–) 1.5–2 (–2.5) cm, lyrate-pinnatifid, pubescent on upper surfaces, glabrous on lower surface, base runcinate, apex acuminate and acute, margin entire with hairs, secondary veins (6–) 8–10 (–12) -paired, primary vein and secondary veins with hairs on lower surface. *Ocreae* cylindrical, (6–) 8–10 mm long, scarious, pubescent with conspicuous venation, margin truncate and slightly oblique with sparsely hairs 0.5–1 mm long; auricles with hairs. *Inflorescences* capitate paniculate, globular, raceme, (4.5–) 5–7.5 cm long, erect, terminal and axillary, inflorescence branches with glandular hairs; globular head (4–) 6–8 (–9) mm long; leafy bract present, (7–) 15–20 by (4–) 6–9 mm; glabrescent on both surfaces, ovate and amplexus, apex acute, margin with hairs. *Flowers* fascicled, ocreolae 4–5 (–5.5) mm long, glabrous. *Tepals* 5, white. *Stamens* 8, filaments white. *Style* 1, deeply 3-clefted. *Nuts* triangular, 1.6–2 by 1.4–1.6 mm, shiny black.

Thailand. – NORTHERN: Chiang Mai (Doi Inthanon).

Distribution. – India, Nepal, Sikkim, Bhutan, China, Sumatra, Philippines.

Ecology. – On steep rocks; alt. 2,100–2,200 m.

Vernacular. –

16. *Polygonum strigosum* R. Br., Prodr. Fl. Nov. Holl. 1: 420. 1810.

Scandent perennial herb, 1–2 m tall, stem and branches angled, retrused prickles on nodes and angles, prickles 1–2 mm long. *Leaves* subsessile or petioled, 2–5 (–7) mm long, retrused prickles and hispid hairs near leaf base; lamina (5–) 5.9–10 (–14.2) by 1–2.4 (–5) cm, elliptic or lanceolate, scabrous or entire on both surfaces, base cuneate or obtuse, apex acuminate or caudate, margin entire with prickles, primary vein on lower surface with hispid hairs and retrused prickles, secondary veins 14–20 -paired. *Ocreae* cylindrical, 1.5–2.2 (–2.5) cm long, scarious, with glabrous conspicuous venation, margin truncate, with 9–15 bristles, (2.5–) 3–4.5 mm long. *Inflorescences* spicate paniculate, racemose, 12–22 (–30) cm long, erect, terminal, (12–) 14–20 ocreolae per spike, inflorescence branch with hispid and glandular hairs; spike 0.5–1.2 (–1.7) cm long; leafy bract absent or present, (2.3–) 4–7 by (0.3–) 0.8–1.3 (–1.6) cm, ovate or lanceolate, apex acuminate, margin entire with prickles. *Flowers* fascicled, ocreolae 2–3 (–4) mm long, with hispid hairs or sometimes with sparsely glandular hairs. *Tepals* 5, white or pink. *Stamens* 8, filaments white. *Style* 1, deeply 3-clefted. *Nuts* triangular, (2.2–) 2.7–3.3 by (2–) 2.2–2.5 mm, shiny black.

Thailand. – NORTHERN: Chiang Rai, Phitsanulok; NORTH-EASTERN; Loei, Chaiyaphum; CENTRAL: Krung Thep Maha Nakhon; SOUTH-EASTERN: Prachin Buri; PENINSULAR: Phatthalung, Narathiwat.

Distribution. – India, Nepal, Bhutan, Bangladesh, China, Vietnam, Peninsular Malaysia, Indonesia, New Guinea, Australia.

Ecology. – Along streamsides, marshy areas, wet places in evergreen forest; 550–1,350 m.

Vernacular. – Phak pode daeng (ผักโปกแดง) (Loei); Fuay Nam (เฟื้องขี้ม้า) (Wangsapung); Tu-bo-sa-ru-wae (ตูปอสะรูเว) (Malay-Narathiwat).

17. *Polygonum tomentosum* Willd., Sp. Pl. ed. 4, 2 (1): 447. 1799.

Erect perennial herb to 60 cm tall, stem terete, ascending hairs throughout vegetative parts. *Leaves* with petioles 0.6–1.1 (–1.4) cm; lamina 14.6–19.6 (–21.9) by 2.1–3.2 (–3.7) cm, elliptic, densely woolly pubescent on both surfaces, base attenuate, apex caudate, margin ciliate, secondary veins 17–20 (–22) -paired. *Ocreae* cylindrical, 2.5–3 (–3.5) cm long, scarious, with densely woolly pubescent conspicuous venation, truncate, with ciliate hairs along margins, 4–10 mm long. *Inflorescences* spicate paniculate, cylindrical racemose, 15.8–25.2 (–28.6) cm, erect, terminal or in the axils of upper leaves, (18–) 21–32 (–38) ocreolae per spike, inflorescence branch with ascending hairs; spike (3.8–) 4.5–8.5 (–9.6) cm long, leafy bracts usually present, 0.4–1.0 (–1.2) by (0.1–) 0.5–1 (–1.2) cm, ovate, apex caudate, margin ciliate. *Flowers* fascicled, ocreolae (2.5–) 3–5.5 (–6) mm long, with hairs. *Tepals* 5, white. *Stamens* 6–7, filaments white. *Style* 1, deeply 2-clefted. *Nuts* lenticular, broadly rounded in outline, (2.4–) 2.6–3 by 2.5–3 mm, shiny black.

Thailand. – NORTHERN: Chiang Mai, Phayao, Phitsanulok; CENTRAL: Chai Nat, Ang Thong, Krung Thep Maha Nakhon; NORTH-EASTERN: Khon Kaen; EASTERN: Nakhon Ratchasima; SOUTH-EASTERN: Chon Buri, Chanthaburi; PENINSULAR: Songkhla, Phatthalung, Narathiwat.

Ecology. – River banks, roadsides, swampy areas; alt. 0–1,000 m.

Distribution. – India, Philippines, New Guinea.

Vernacular. – Phak phai nam (ผักไผ่ดำ) (Northern); Pong Poad (พองโพด) (Nakhon Ratchasima); Uang Phet Mah (เอื้องเพ็ดดำ) (Ang Thong, Krung Thep Maha Nakhon).

18. *Polygonum viscosum* Buch.-Ham. ex D.Don, Prodr. Fl. Nep.: 71. 1825.

Erect perennial herb, 1–1.5 (–3) m tall, viscid, stem and branches terete, pilose with glandular hairs. *Leaves* with petioles 4–7 mm; lamina 9.9–15.5 (–17.5) by 2.4–3.8 (–4.5) cm, ovate and lanceolate, pilose and glandular hairs on both surfaces, base attenuate, apex acute, acuminate and caudate, margin entire with pilose and glandular hairs, secondary veins 19–23 (–25) -paired. *Ocreae* cylindrical, 1.5–2 cm long, scarious, 4–6 mm long. *Inflorescences* spicate paniculate, cylindrical racemose, 18–30.5 (–35) cm long, erect sometimes pendulous, terminal and axillary, (18–) 24–32 (–36) ocreolae per spike, inflorescence branch pilose and glandular hairs; spike (1.8–) 2.8–5 (–6) cm, margin pilose. *Flowers* fascicled, ocreolae 2.5–3.8 (–4.5) mm long, with pilose and glandular hairs. *Tepals* 5, pinkish red. *Stamens* 8, filaments white. *Style* 1, deeply 3-clefted. *Nuts* triangular, 2–2.5 by 1.8–2 mm, shiny black.

Thailand. – NORTH-EASTERN: Loei, Khon Kaen; EASTERN: Roi Et.

Distribution. – India, Nepal, China, Japan, Lao, Vietnam.

Ecology. – Along roadsides in paddy fields; alt. 135–300 m.

Vernacular. –

19. *Polygonum wallichii* Meisn., Monogr. Polyg. Pl. 7, f. 1: 83. 1826.

Stragglng herb, stem and branches terete, glabrous. *Leaves* with petioles 0.6–1 (–1.2) cm; lamina 3.6–8.5 (–9.2) by (1.8–) 2–3.2 (–3.6) cm, deltoid or rarely elliptic, hispid on upper surface, base attenuate, apex acuminate, margin entire with hispid hairs, secondary veins (5–) 6–8 -paired. *Ocreae* cylindrical, (0.7–) 1–1.6 (–1.8) cm long, scarious, hairy without conspicuous venation, margin truncate or slightly oblique with hispid hairs ca. 1 mm long. *Inflorescences* capitate paniculate, globular, raceme, 4–6 (–8) cm long, erect or sometimes pendulous, axillary, (9–) 10–15 (–18) ocreolae per globular head, inflorescence branches glabrous, hispid beneath head; globular head (3.5–) 5–10 mm long; leafy bract usually present, 4–8 (–10) by 3–10 (–12) mm; orbicular, apex rounded, margin hispid. *Flowers* fascicled, ocreolae (1.5–) 1.8–2.5 mm long, glabrous. *Tepals* 5, pink. *Stamens* 8, filaments white. *Style* 1, deeply 3-clefted. *Nuts* triangular, 1.5–2 by 1–1.2 mm, brownish.

Thailand. – NORTHERN: Chiang Mai.

Distribution. – India, China.

Ecology. – In moist and shady places of hill evergreen forest; alt. 1,450–2,560 m.

Vernacular. –

20. *Polygonum* sp. 1

Thailand. – EASTERN: Yasothon.

Distribution. –

Ecology. – Along roadsides; alt. 100–150 m.

Vernacular. –

21. *Polygonum* sp. 2

Thailand. – NORTHERN: Chiang Mai, Chiang Rai; NORTH-EASTERN: Nongkhai, Nakhon Phanom.

Distribution. –

Ecology. – Along river banks; alt. 0–300 m.

Vernacular. –

22. *Polygonum* sp. 3

Small shrub, 1-2 m tall, stem and branches terete, glabrous. *Leaves* with petioles (2–) 2.8–6 (–7) mm long, glabrous, auricles usually present; lamina (9.5–) 10–17 (–18.2) by 2–4 (–4.5) cm, ovate and elliptic, glabrous on both surfaces, dry specimens usually with brown dots, base cuneate, apex acute and acuminate, margin entire, primary vein glabrous on both surfaces, secondary veins (10–) 12–18 (–19) -paired, with 2 (–3) intra marginal veins. *Ocreae* cylindrical, (3.5–) 3.8–5.2 (–6) cm long, scarious, glabrous with conspicuous venation, margin oblique, without hispid hairs. *Inflorescences* capitate paniculate, globular, racemose, (4.5–) 4.8–7 (–8) cm long, erect, terminal, inflorescence branches with ciliate hairs, 0.1–0.3 mm long; globular head (7–) 7.8–10 mm long; leafy bract usually absent; leafy bracteoles subtended globular head branches, 3–5 by 2–3 mm, ovate and lanceolate, apex acute, margin entire, base cordate. *Flowers* fascicled, ocreolae (3–) 3.6–5.8 (–6.5) mm long, usually pinkish red, glabrous. *Tepals* 5, pink. *Stamens* 7 (–8), filaments white or pinkish. *Style* 1, deeply 3-clefted. *Nuts* triangular, 3.58–4 by 2.3–2.6 mm, shiny black.

Thailand. – NORTHERN: Chinag Mai.

Distribution. –

Ecology. – On limestones and open field in evergreen forest; alt. 1,200–2,300 m.

Vernacular. – Phai doi (ฝ้าย).

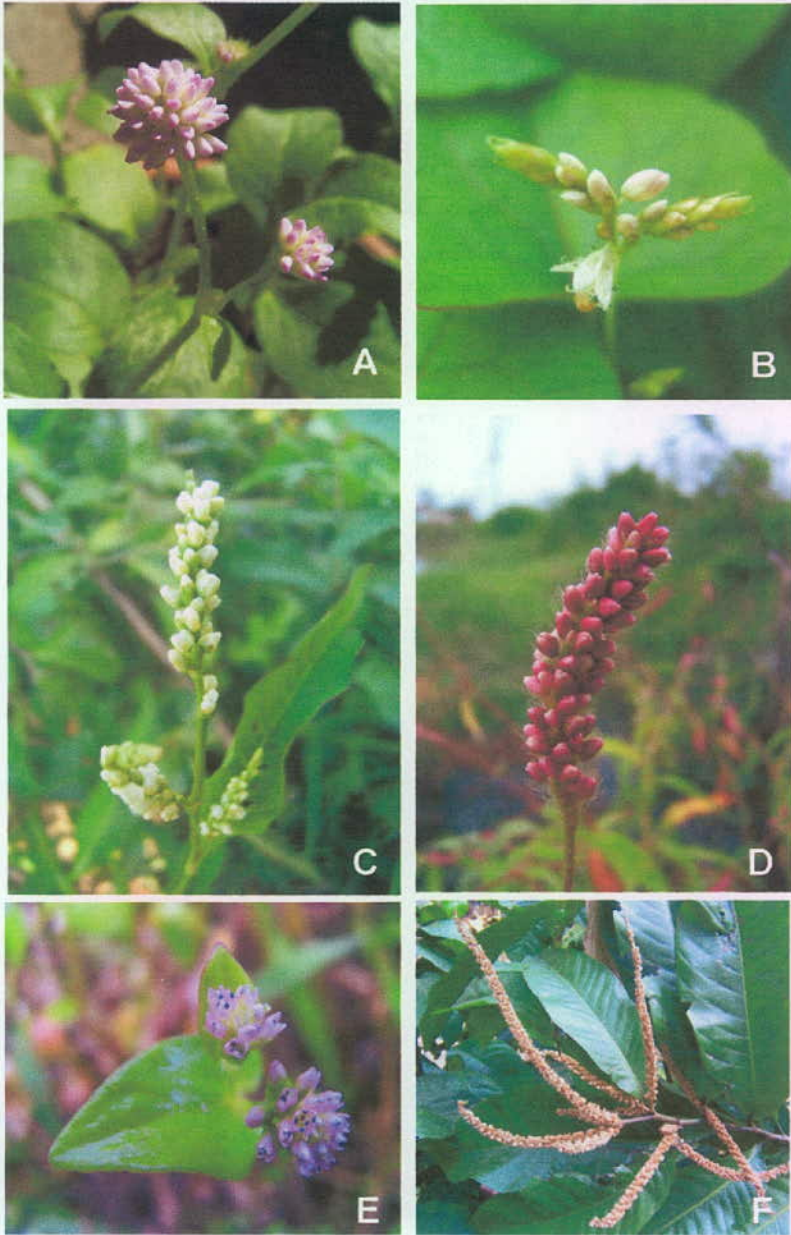


Figure 4: A) *Polygonum capitatum*
 B) *P. dibotrys*
 C) *P. lapathifolium*
 D) *P. viscosum*
 E) *P. glabrum*
 F) *Triplaris cumingiana*

PIPERACEAE

1. Piper L.

1. Piper betle L., Sp. Pl. 1: 28. 1753; Hook., Fl. Br. Ind. 5: 85. 1887; C.DC. in Lecomte, Fl. Gén. I.-C. 1: 74. 1910; C.DC., Candollea 1: 189. 1923; Ridl., Fl. Mal. Pen. 3: 40. 1924; Backer & Bakh.f., Fl. Java 1: 173. 1963; Huber in Dassanayake, M.D., Fl. Ceyl. 6: 287. 1987; Yongqian, Nianhe & Gilbert, Fl. China 4: 11. 1999.

Thailand.- PENINSULAR: Chumphon, Ranong, Phangnga, Nakhon Si Thammarat, Trang.

Distribution.- India, China, Sri Lanka, Myanmar, Laos, Vietnam, Cambodia, Malaysia, Indonesia, Philippines.

Ecology.- In evergreen forest near stream, fruit plantation, disturbed area, female plant cultivated; flowering March-June, fruiting May-July.

Vernacular.- Plu (พลู) (General), Plu theun (พลูเดือน) (Peninsular).

2a. Piper boehmeriifolium (Miq.) C.DC. in A. de Candolle, Prodr. 16: 348. 1869; Yongqian, Nianhe & Gilbert, Fl. China 4: 14. 1999; Gilbert & Nianhe, Novon 9: 191. 1999.

Chavica boehmeriifolia Miq., Syst. Piperac. 1: 265. 1843.

P. boehmeriaefolium var. *tonkiensis* C.DC. in Lecomte, Fl. Gén. I.-C. 5: 81. 1910.

P. spirei C.DC. in Lecomte, Fl. Gén. I.-C. 5: 87. 1910.

P. spirei var. *pilosius* C.DC. in Lecomte, Fl. Gén. I.-C. 5: 88. 1910.

P. boehmeriaefolium Wall. ex Hook., Fl. Br. Ind. 5: 85. 1887; Ridl., Fl. Mal. Pen. 3: 41. 1924.

P. terminaliflorum Y.C. Tseng, Acta Phytotax. Sin. 17: 30. 1979. Type: Bangladesh, Sylhet, *Wallich* 6654a (holotype K; isotype K-W).

Thailand.- NORTHERN: Chiang Mai, Chiang Rai, Nan, Uttaradit, Tak, Sukhothai; NORTH-EASTERN: Loei; SOUTH-WESTERN: Uthai Thani, Kanchanaburi; PENINSULAR: Chumphon, Ranong, Phangnga, Trang.

Distribution.- India, China, Sri Lanka, Bangladesh, Myanmar, Laos, Vietnam, Cambodia, Malaysia, Indonesia, Philippines.

Ecology.- In evergreen or hill evergreen forest, near stream; flowering January-March, fruiting October.

Vernacular.- Prik Kang (พริกนาง) (Karen Chiangdao, Chiang Mai).

2b. Piper boehmeriifolium (Miq.) C.DC. var. **glabricaulle** (C.DC.) M.G. Gilbert & N.H. Xia, Novon 9: 191. 1999; Yongqian, Nianhe & Gilbert, Fl. China 4: 14. 1999.

P. glabricaulle C.DC., Notizbl. Bot. Gart. Berlin-Dahlem 6: 477. 1917. Type: China, Yunnan, Mengzi Xian, Mengzi, *A. Henry* 9482a (holotype B; isotypes A, K).

Thailand.- NORTHERN: Mae Hongson, Chiang Mai, Chiang Rai, Nan, Lampang, Uttaradit, Tak, Sukhothai; NORTH-EASTERN: Loei; SOUTH-WESTERN: Uthai Thani, Kanchanaburi; PENINSULAR: Ranong, Phangnga, Trang.

Distribution.- India, China, Sri Lanka, Myanmar, Laos, Vietnam, Cambodia, Malaysia, Indonesia, Philippines.

Ecology.- In evergreen or hill evergreen forest or open area near stream; flowering February-March, fruiting April.

Vernacular.- Plu Pum Muang Kan (พลูพุ่มเมืองกาญจน) (Researcher).

3. Piper caninum Blume, Verh. Batav. Gen. 11: 214. 1826; C.DC. in A. de Candolle, Prodr. 16: 341. 1869; Hook., Fl. Br. Ind. 5: 82. 1887; Ridl., Fl. Mal. Pen. 3: 38. 1924; Henderson, Mal. Wild Flow. Dicot. 6(3): 422. 1951; Backer & Bakh.f., Fl. Java 1: 171. 1963.

Thailand.- PENINSULAR: Chumphon, Ranong, Surat Thani, Phangnga, Nakhon Si Thammarat, Trang, Songkhla, Narathiwat.

Distribution.- India, Malaysia, Singapore, Indonesia, Philippines.

Ecology.- In evergreen or hill evergreen forest, by stream or waterfall; flowering and fruiting all year round.

Vernacular.- Prik Nok (พริกนรก) (Trang).

4. **Piper chandocanum** C.DC., *Annuaire Conserv. Jard. Bot. Gen.* 2: 274. 1898; Yongqian, Nianhe & Gilbert, *Fl. China* 4: 8. 1999.

Thailand.- NORTHERN: Nakhon Sawan; EASTERN: Nakhon Ratchasima; SOUTH-WESTERN: Kanchanaburi; CENTRAL: Saraburi, Nakhon Nayok; SOUTH-EASTERN: Chanthaburi, Chonburi.

Distribution.- China.

Ecology.- In evergreen or hill evergreen forest, by stream or waterfall; flowering February, fruiting March-May.

Vernacular.- Sa Karn (สะกำ) (Saraburi).

5. **Piper colubrinum** Link, *Jahrb.* 1(3): 61. 1820.

Thailand.- Introduced.

Distribution.- South America.

Ecology.- Cultivated; flowering and fruiting all year round.

Vernacular.- Prik Thai Colu (พริกไทยโลง) (Krabi).

6. **Piper crocatum** Ruiz & Pav., *Fl. Per.* 1: 35. 1955.

Thailand.- Introduced.

Distribution.- Peru.

Ecology.- Cultivated in shaded and high humidity; flowering and fruiting all year round.

Vernacular.- Plu Long Ya (พลูสงยา) (General).

7. **Piper flavimarginatum** C.DC., *Rec. Bot. Surv. Ind.* 6(1): 26. 1912; Ridl., *Fl. Mal. Pen.* 3: 39. 1924. Type: Malaysia, Chan Chu Kan, *H.N.Ridley* 3772 (not located).

Thailand.-PENINSULAR: Chumphon, Ranong, Phangnga, Trang; SOUTH-EASTERN: Trat.

Distribution.- Malaysia, Singapore, Indonesia.

Ecology.- In evergreen forest, near stream or waterfall; flowering and fruiting January.

Vernacular.- Yan Prik Nok (ย่านพริกนรก) (Trang).

8. **Piper kraense** Ridl. [*kraensis*], *J. Fed. Mal. States Mus.* 10: 112. 1919. Type: Thailand, Kra Isthmus Peninsular Siam, *C.B. Kloss* 7045 (K!, SING!).

Thailand.- PENINSULAR: Chumphon, Ranong, Phangnga.

Distribution.- Myanmar, Malaysia.

Ecology.- In evergreen forest by stream or waterfall; flowering August –September.

Vernacular.- Teu (เตอ) (Phangnga).

9. **Piper kurzii** Ridl., *J. Strait. Branch. Roy. As. Soc.* 82: 188. 1920; Ridl., *Fl. Mal. Pen.* 3: 43. 1924.

Thailand.- NORTHERN: Chiang Mai, Chiang Rai, Nan, Lampang, Uttaradit, Tak, Sukhothai, Phitsanulok; NORTH-EASTERN: Phetchabun, Loei, Sakon Nakhon; EASTERN: Nakhon Ratchasima, Ubon Ratchathani; SOUTH-WESTERN: Kanchanaburi, Phetchaburi, Prachuap Khiri Khan; CENTRAL: Saraburi, Nakhon Nayok; SOUTH-EASTERN: Sa Kaeo, Prachin Buri, Chanthaburi; PENINSULAR: Chumphon, Ranong, Surat Thani, Phangnga, Nakhon Si Thammarat, Trang, Songkhla.

Distribution.- India, Malaysia.

Ecology.- In shaded area by stream or waterfall; flowering March-May, fruiting July-October.

Vernacular.- Prik Nok (พริกนรก) (Peninsular).

10. Piper longum L., Sp. Pl. 1: 28. 1753; Hook., Fl. Br. Ind. 5: 83. 1887; C.DC. in Lecomte, Fl. Gén. I.-C. 1: 71. 1910; Long in Griseb. & Long, Fl. Bhutan. 1(2): 348. 1984; Huber in Dassanayake, M.D., Fl. Ceyl. 6: 287. 1987; Yongqian, Nianhe & Gilbert, Fl. China 4: 10. 1999.

Thailand.-NORTHERN: Lamphun, Tak; SOUTH-WESTERN: Kanchanaburi, Phetchaburi, Prachuap Khiri Khan; PENINSULAR: Chumphon, Ranong, Surat Thani, Phangnga.

Distribution.- India, China, Sri Lanka, Bhutan, Laos, Vietnam, Cambodia, Malaysia, Indonesia, Philippines.

Ecology.- In evergreen forest or disturbed area; flowering July-August, fruiting August-September.

Vernacular.- Prik hang (พริกหาง) (Central).

11. Piper macropiper Pennant, Outl. Globe. 4: 242. 1800; Merrill, J. Arn. Arbor. 29: 191. 1948.

P. arborescens Roxb., [Hort. Beng: 80. 1814] Fl. Ind. 1: 161, ed 2, 1: 159. 1832; Merrill, Interpret. Herb. Amb.: 180. 1917.

P. miniatum Blume in Verh. Batav. Gen. 11: 166. 1826; Ridl., Fl. Mal. Pen. 3: 39. 1924.

Thailand.- PENINSULAR: Narathiwat.

Distribution.- India, Malaysia, Indonesia, Philippines.

Ecology.- In peat swamp forest; flowering and fruiting April-September.

Vernacular.- Plu pa (พลูป่า) (Narathiwat).

12. Piper magnibaccum C.DC. in Rec. Bot. Surv. India 6: 301. 1912; Ridl., Fl. Mal. Pen. 3: 46. 1924. Type: *H.N. Ridley* 5480 (lectotype SING!).

Thailand.- PENINSULAR: Nakhon Si Thammarat, Yala.

Distribution.- India, Malaysia, Indonesia, Philippines.

Ecology.- In freshwater swamp by stream or waterfall; flowering and fruiting March-April.

Vernacular.- Plu Ched Peek (พลูแชดเป็ก) (Researcher).

13. Piper minutistigmum C.DC. in Rec. Bot. Surv. Ind. 6: 9. 1912; Ridl., Fl. Mal. Pen. 3: 39. 1924. Types: Malaysia, Perak, Larut, *Kunstler* 2388 (not located), *Scortechhini s.n.* (not located).

Thailand.- PENINSULAR: Yala, Narathiwat.

Distribution.- India, Malaysia, Indonesia, Philippines.

Ecology.- In peat swamp forest; flowering and fruiting April-September.

Vernacular.- Ta Khan nok (ตะขานนุค) (Narathiwat).

14. Piper cf. mullesua Buch-Ham. ex D. Don, Prodr. Fl. Nepal: 20. 1825; Yongqian, Nianhe & Gilbert, Fl. China 4: 6. 1999.

Thailand.- NORTHERN: Chiang Mai, Chiang Rai, Nan; EASTERN: Chaiyaphum.

Distribution.- India, China, Sri Lanka, Nepal.

Ecology.- In evergreen or hill evergreen forest by stream; flowering and fruiting February.

Vernacular.- Phak phet (ผักเฟ็ต) (Nan).

15. Piper muricatum Blume, Verh. Bat. Nat. Gen. 11: 219; Ridl., Fl. Mal. Pen. 3: 32. 1924; Backer & Bakh.f., Fl. Java. 1: 169. 1963.

Thailand.- PENINSULAR: Yala, Narathiwat.

Distribution.- India, Malaysia, Indonesia, Philippines.

Ecology.- In evergreen forest by stream; flowering and fruiting May.

Vernacular.-

16. Piper cf. nigrescens Blume in Verh. Batav. Gen. 11: 161. 1826.

Thailand.- PENINSULAR: Chumphon, Ranong.

Distribution.- India, Malaysia, Indonesia, Philippines.

Ecology.- In evergreen forest by stream or waterfall; flowering September, fruiting October-December.

Vernacular.- Prik Thai khon (พริกไทยขอน) (Researcher).

17. Piper nigrum L., Sp. Pl. 1: 308. 1753; Hook., Fl. Br. Ind. 5: 90. 1887; Huber in Dassanayake, M.D., Fl. Cey. 6: 283. 1987; C.DC. in Lecomte, Fl. Gén. I.-C. 5: 89. 1910; Backer & Bakh.f., Fl. Java 1: 170. 1963; Yongqian, Nianhe & Gilbert, Fl. China 4: 6. 1999.

Thailand.- Introduced.

Distribution.- India.

Ecology.- Cultivated; flowering and fruiting all year round.

Vernacular.- Prik thai (พริกไทย) (General).

18. Piper pedicellosum Wall. ex C.DC. in A. de Candolle, Prodr. 16: 343. 1869; Hook., Fl. Br. Ind. 5: 81. 1887; Ridl., Fl. Mal. Pen. 3: 34. 1924. Type: Singapore, *Wallich* no. 6646 A (K-W!), *Lamher s.n.* (K-DC.).

Thailand.- PENINSULAR: Surat Thani, Nakhon Si Thammarat.

Distribution.- India, Malaysia, Indonesia, Philippines.

Ecology.- Not found in nature; flowering April-May, fruiting May.

Vernacular.- Sa kaan (สะค้าน) (Surat Thani).

19. Piper penangense C.DC. in A. de Candolle, Prodr. 16: 353. 1869; Hook., Fl. Br. Ind. 5: 88. 1887; Ridl., Fl. Mal. Pen. 3: 42. 1924. Type: Malaysia, Penang, *Wallich* 6642b (her. Berol).

Thailand.- PENINSULAR: Yala, Narathiwat.

Distribution.- India, Malaysia, Indonesia.

Ecology.- In evergreen forest; flowering and fruiting May.

Vernacular.- Cha plu khon (ชะพลูขอน) (Researcher).

20. Piper polycarpa Ridl., J. Fed. Mal. State. Mus. 9: 112. 1919. Type: Thailand, Tasan, Kra Isthmus, Peninsular Siam. *H.N. Ridley* 6888 (not located).

Thailand.- NORTHERN: Nan; PENINSULAR: Ranong, Phangnga, Narathiwat.

Distribution.- Endemic.

Ecology.- In evergreen forest by stream or waterfall; flowering February-March, fruiting March-September.

Vernacular.- Plu Kae (พลูแก) (Ranong), Plu Nhang Khao (พลูหนังเขา) (Phangnga).

21. Piper ramipilum C.DC., Rec. Bot. Surv. Ind. 6(1): 3. 1912; Ridl., Fl. Mal. Pen. 3: 39. 1924. Type: Malaysia, Penang, Balik Palau, *C. Curtis* 792 (SING!).

Thailand.- PENINSULAR: Nakhon Si Thammarat, Trang, Songkhla.

Distribution.- India, Malaysia.

Ecology.- In evergreen forest or near disturbed area; flowering March, fruiting May.

Vernacular.- Prik khao (พริกเขา) (Nakhon Si Thammarat).

22. Piper retrofractum Vahl, Enum. Pl. 1: 314. 1804; C.DC. in Lecomte, Fl. Gén. I.-C. 1: 83. 1910; Backer & Bakh.f., Fl. Java 1: 717. 1963; Yongqian, Nianhe & Gilbert, Fl. China 4: 19. 1999.

P. chaba Hunt., Hook., Fl. Br. Ind. 5: 83. 1887; Ridl., Fl. Mal. Pen. 3: 40. 1924.

Thailand.- Introduced.

Distribution.-India.

Ecology.- Cultivated; flowering and fruiting all year around.

Vernacular.- Di pli (ดีปลี) (General), Di pli chueak (ดีปลีเชื้อดอง) (Peninsular).

23. Piper ribesioides C.DC. in A. de Candolle, Prodr. 16: 342. 1869; Wall., Pl. As. Rar. 1: 79. 1829; Ridl., Fl. Mal. Pen. 3: 34. 1924; Hook., Fl. Br. Ind. 5: 81. 1887; Henderson, Malay. Wild Flow. Dicot.: 436. 1959. Types: Myanmar, Chappedong, *Wallich* 6637(K-DC, K-W), *Wallich* 1676 (K-W); Tenassarim, Andaman Island, *Griffith* 4401(K).

Thailand.- NORTHERN: Chiang Mai, Chiang Rai, Nan, Lampang, Uttaradit, Tak, Sukhothai, Phitsanulok; NORTH-EASTERN: Loei, Sakon Nakhon; EASTERN: Nakhon Ratchasima, Ubon Ratchathani; SOUTH-WESTERN: Kanchanaburi, Phetchaburi, Prachuap Khiri Khan; CENTRAL: Saraburi, Nakhon Nayok; SOUTH-EASTERN: Sa Kaeo, Prachin Buri, Chanthaburi; PENINSULAR: Chumphon, Ranong, Surat Thani, Phangnga, Nakhon Si Thammarat, Trang, Songkhla.

Distribution.- India, Myanmar, Laos, Vietnam, Cambodia, Malaysia, Indonesia, Philippines.

Ecology.- In evergreen forest by stream or waterfall; flowering March, fruiting May.

Vernacular.- Ta kaan lek (ตะก้านเล็ก) (Trat), Ta kaan yuak (ตะก้านยาว) (Nakhon Si Thammarat).

24. Piper ridleyi C.DC., Rec. Bot. Surv. Ind. 10: 19. 1919; Ridl., Fl. Mal. Pen. 3: 33. 1924. Type: Malaysia, Selangor, Suiting peras, *H.N. Ridley* 7069 (SING!).

Thailand.- PENINSULAR: Pattani, Narathiwat.

Distribution.- India, Malaysia, Philippines.

Ecology.- In evergreen forest; flowering and fruiting May.

Vernacular.- Plu Ridley (พลูริดลีย์) (Researcher).

25. Piper sarmentosum Roxb., Fl. Ind. 1: 162. 1820; Ridl., Fl. Mal. Pen. 3: 40. 1924; Gilbert & Nianhe, Novon 9: 195. 1999; Yongqian, Nianhe & Gilbert, Fl. China. 4: 19. 1999.

Chavica sarmentosum (Roxb.) Miq., Syst. Piperac. 1: 242. 1843.

P. brevicaulis C.DC., Annuaire Conserv. Jard. Bot. Gêner. 2: 272. 1898.

P. lolot C. DC., Annuaire Conserv. Jard. Bot. Gêner. 2: 272. 1898.

P. albispicum C. DC., in Lecomte, Fl. Gêner. I.-C. 5: 85. 1910.

P. gymnostachyum C.DC. in Lecomte, Fl. Gêner. I.-C. 5: 72. 1910.

P. pierreii C.DC. in Lecomte, Fl. Gêner. I.-C. 5: 72. 1910.

P. saigonense C.DC. in Lecomte, Fl. Gêner. I.-C. 5: 72. 1910.

Thailand.- All provinces.

Distribution.- India, China, Sri Lanka, Myanmar, Laos, Vietnam, Cambodia, Malaysia, Indonesia, Philippines.

Ecology.- In disturbed area or cultivated as medicinal plant and vegetable, flowering and fruiting all year round.

Vernacular.- Cha plu (ชะพลู) (General).

26. Piper stylosum Miq., Ann. Bot. Mus. Lugd. Bat. 1: 139. 1863-1864; Ridl., Fl. Mal. Pen. 3: 42. 1924.

Thailand.- PENINSULAR: Yala, Narathiwat.

Distribution.- India, Malaysia, Indonesia, Philippines.

Ecology.- In evergreen or hill evergreen forest; flowering and fruiting March.

Vernacular.- Cha plu khon (ชะพลูขน) (Researcher).

27. Piper umbellatum L., Sp. Pl.: 30. 1753; C.DC. in Lecomte, Fl. Gêner. I.-C. 1: 67. 1910; Ridl., Fl. Mal. Pen. 2: 51. 1924; Yongqian, Nianhe & Gilbert, Fl. China 4: 20. 1999.

P. subpeltata Wall. ex Hook., Fl. Br. Ind. 5: 95. 1887.

Thailand.- NORTHERN: Chiang Rai, Nan, Lampang, Tak; SOUTH-WESTERN: Uthai Thani, Kanchanaburi; SOUTH-EASTERN: Prachin Buri, Chanthaburi; PENINSULAR: Phangnga, Nakhon Si Thammarat, Trang, Songkhla, Pattani.

Distribution.- India, China, Sri Lanka, Laos, Vietnam, Cambodia, Malaysia, Indonesia, Philippines.

Ecology.- In disturbed area; flowering March-April, fruiting April.

Vernacular.- Rok Chang (รอกช้าง) (Nakhon Si Thammarat).

28. Piper sp. 1

Thailand.- NORTHERN: Chiang Mai, Chiang Rai, Nan, Uttaradit.

Distribution.- Endemic.

Ecology.- In evergreen forest near mountain top; flowering December-January, fruiting January-March.

Vernacular.- Cha kaan (จะค้ำาน) (Northern), Cha kaan Naeu (จะค้ำานเหนือ) (Nan).

29. Piper sp. 2

Thailand.- NORTHERN: Chianmai, Chiang Rai, Lampang; NORTH-EASTERN: Loei; SOUTH-WESTERN: Kanchanaburi.

Distribution.- endemic

Ecology.- In evergreen forest by stream or waterfall; flowering December-January, fruiting January-March.

Vernacular.- Cha kaan (จะค้ำาน) (Northern), Cha kaan khao (จะค้ำานขาว) (Chiang Rai), Plu ling (พลูลิ่ง) (Chiang Mai).

30. Piper sp. 3

Thailand.- NORTHERN: Chiagmai, Lampang, Uttaradit, Sukhothai, Phitsanulok; NORTH-EASTERN: Phetchabun, Loei, Chaiyaphum; SOUTH-WESTERN: Kanchanaburi.

Distribution.- Endemic.

Ecology.- In evergreen forest by stream or waterfall and in freshwater swamp; flowering June-July, fruiting August-October.

Vernacular.- Prik thai pa (พริกไทยป่า) (Sukhothai).

31. Piper sp. 4

Thailand.- NORTHERN: Chiang Mai, Nan, Phitsanulok; NORTH-EASTERN: Loei.

Distribution.-

Ecology.- In evergreen forest by stream; flowering February-March, fruiting July.

Vernacular.- Plu Na Haew (พลูนาห้าว) (Researcher).

32. Piper sp. 5

Thailand.- EASTERN: Nakhon Ratchasima; CENTRAL: Nakhon Nayok; SOUTH-EASTERN: Prachin Buri.

Distribution.- Endemic.

Ecology.- In evergreen forest by stream or waterfall; flowering May-August, fruiting.- August-September.

Vernacular.- Ta kaan (ตะค้ำาน) (Nakhon Ratchasima).

33. Piper sp. 6

Thailand.- NORTHERN: Chiang Mai, Chiang Rai, Nan, Tak; NORTH-EASTERN: Loei; SOUTH-WESTERN: Kanchanaburi, Phetchaburi, Prachuap Khiri Khan; PENINSULAR: Chumphon.

Distribution.-

Ecology.- In evergreen forest by stream or waterfall; flowering March-April, fruiting March-May.

Vernacular.- Sa kaan dong (สะค้ำานดง) (Kanchanaburi).

34. Piper sp. 7

Thailand.- NORTHERN: Tak; SOUTH-WESTERN: Kanchanaburi, Phetchaburi, Prachuap Khiri Khan; PENINSULAR: Surat Thani.

Distribution.- Endemic.

Ecology.- In evergreen forest by stream; flowering January-April, fruiting March-May.

Vernacular.- Prik thai kaan yao (พริกไทยค้ำยานาย) (Researcher).

35. *Piper* sp. 8

Thailand.- SOUTH-WESTERN: Kanchanaburi, Prachuap Khiri Khan.

Distribution.- Endemic.

Ecology.- In evergreen forest by stream or waterfall; flowering November-April, fruiting December-April.

Vernacular.- Sa Kaan (สะค้ำาน) (Kanchanaburi).

2. *Peperomia* Ruiz & Pavon

1. *Peperomia tetraphylla* (G.Forst) Hook. & Arnott, Bot. Beechey Voy: 97. 1832.

Piper tetraphyllum G. Forst, Prodr. Fl. Ins. Austr. 5: 5. 1786.

Peperomia reflexa (L.f.) A. Dietrich (1831), not *P. reflexa* Kunth (1815).

Thailand.- NORTHERN: Sukhothai; NORTH-EASTERN: Loei.

Distribution.-

Ecology.- Epiphyte on tree in oak forest or lithophytes, flowering and fruiting February-January.

Vernacular.-

2. *Peperomia blanda* (Jacq.) Kunth. in HBK, Nov. Gen. Sp. 1: 67. 1816; Gilbert & Nianhe, Novon 9: 195. 1999; Yongqian, Nianhe & Gilbert, Fl. China. 4: 19. 1999.

Piper blandum Jacq., Collectanea 3: 211. 1789.

Peperomia arabica Decaisne ex Miquel, Syst. Piperac. 1: 121. 1843.

P. dindygulensis Miq., Syst. Piperac. 1: 122. 1843.

P. japonica Makino, Bot. Mag. (Tokyo) 15: 145. 1901.

P. esquirolii H. Leveill, Repert. Spec. Nov. Regniveg. 10: 149. 1912.

P. formosana C.DC., Annuaire Conserv. Jard. Bot. Geneve 21: 223. 1920.

P. laticaulis C.DC., Annuaire Conserv. Jard. Bot. Geneve 21: 223. 1920.

Thailand.- NORTH-EASTERN: Loei.

Distribution.- Cosmopolitan.

Ecology.- In pine forest; flowering and fruiting June.

Vernacular.-

3. *Peperomia pellucida* (L.) Kunth., in HBK, Nov. Gen. Sp. 1:64. 1815; C.DC. in DC., Prodr. 16(1): 402. 1869; C.DC., Candollea 1: 341.1923; Trelease & Yuncker, Piperac. N. South Amer. 2: 466. 1950. Yongqian, Nianhe & Gilbert, Fl. China. 4: 19. 1999.

Piper pellucidum L., Sp. Pl. 1: 64. 1816.

P. exiguum Blume, Verh. Batav. Genoot. Kunst. 11: 232. 1826.

Peperomia exigua C.DC. in A. de Candolle, Prodr. 16: 403. 1869. Types: Africa, Factory, *Lenorm s.n.*(K-DC), India, Montae Prome, *Wallich* 8662(K-DC, K-W), Indonesia, *Zollinger* 3745 (K-DC.), 2711 (Francovil), Philippines, Manila, *Meyen s.n.* (Berol),

Thailand.- All provinces.

Distribution.- Cosmopolitan.

Ecology.- General; flowering and fruiting all year round.

Vernacular.- Phak Kra Sung (ผักกระสัง) (general).

4. *Peperomia* sp. [Sangkhlaburi]

Thailand.- Kanchanaburi.

Distribution.-

Ecology.- In evergreen forest by stream or waterfall; flowering and fruiting February.

Vernacular.-

3. *Zippelia* Blume

1. *Zippelia begoniifolia* Blume ex Schultes & J.H. Schultes in Roemer & Schultes, Syst. Veg. 7: 1651. 1830; Yongqian, Nianhe & Gilbert, Fl. China. 4: 19. 1999.

Piper begoniifolia Blume, in Roem. et Schult. Syst. 7: 1614. 1651.

P. lappaceum C.DC. in Lecomte, Fl. Gén. I.-C. 1: 69. 1910.

P. zippelia C.DC. in A. de Candolle, Prodr. 16: 256. 1869. Type: Indonesia, Zollinger 2847 (K-DC).

Thailand.- PENNINSULAR: Nakhon Si Thammarat, Yala, Narathiwat.

Distribution.- India, China, Laos, Vietnam, Cambodia, Malaysia, Indonesia.

Ecology.- In evergreen forest; flowering and fruiting May-June.

Vernacular.- Plu Som Kung (พลูสมุ้ง) (Researcher).

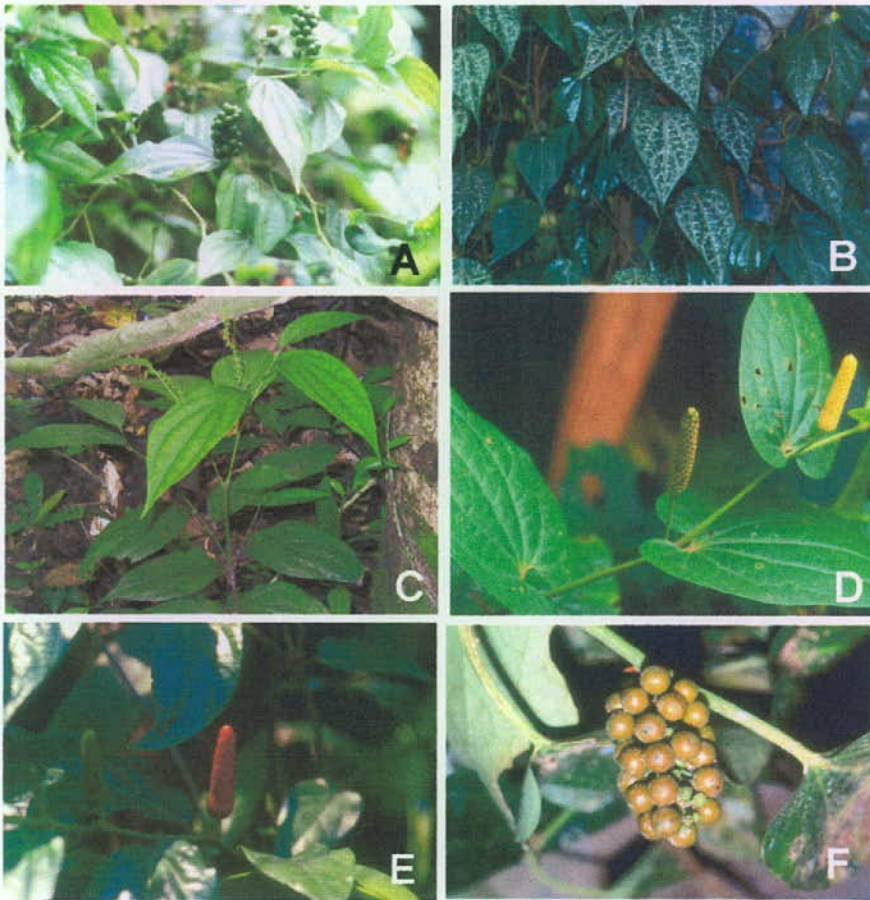


Figure 5: A) *Piper caninum*
B) *P. crocatum*
C) *P. kurzii*
D) *P. longum*
E) *P. retrofractum*
F) *P. ribesioides*

ERAGROSTIDEAE (POACEAE)

1. ACRACHNE

Wight & Arn. ex Chiov., *Annuario Reale Ist. Bot. Roma*. 8(3): 361. 1908. Bor, *Grasses of Burma, Ceylon, India and Pakistan*: 487. 1960; Chen & Phillips in Wu, Raven & Hong, *Fl. China* 22: 481. 2006.

1. *Acrachne racemosa* (B. Heyne ex Roem. & Schult.) Ohwi, *Bull. Tokyo Sci. Mus.* 18: 1. 1947; Bor, *Grasses of Burma, Ceylon, India and Pakistan*: 487. 1960; Chen & Phillips in Wu, Raven & Hong, *Fl. China* 22: 481. 2006.

Eleusine racemosa B. Heyne ex Roem. & Schult., *Systema Vegetabilium* 2: 583. 1817.

Thailand.— -

Distribution.— Tropical Africa, South East Asia, Sri Lanka and Australia.

Ecology.— On sandy soil.

Vernacular.— Ya tin ka (หญ้าตีนกา), Ya yon hu (หญ้ายอนหู) (Bangkok); Ya tin mue tutta (หญ้าตีนมือตุต), Ya tin mue kak (หญ้าตีนมือคัก) (Surat Thani).

Specimens examined.— *K. Larsen* 8029 (K), 9075 (K).

2. DACTYLOCTENIUM

Willd., *Enum. Pl.* 2: 1029. 1809; Hook.f., *Fl. Brit. Ind.* 7: 295. 1897; Merr., *En. Philipp.*: 86. 1925; Ridl., *Fl. Mal. Pen.* 5: 250. 1925; Bor, *Grasses of Burma, Ceylon, India and Pakistan*: 488. 1960; Backer & Bakh.f, *Fl. Java* 3: 533. 1968; Lazarides in Dassanayake, *Fl. Ceylon*, 8: 146. 1994; Chen & Phillips in Wu, Raven & Hong, *Fl. China* 22: 480. 2006.

Annual or perennial, caespitose. *Culms* moderately robust, shortly stoloniferous, infrequently erect or mat forming, rooting at lower nodes, base compressed. *Leaf-sheaths* hirsute or sometimes with a few bulbous-base hairs on the keel, margins glabrous. *Blades* flat, margins tuberculate-ciliate on both surfaces often undulate margins, apex acute or acuminate. *Ligules* membranous with sparsely ciliate. *Collars* glabrous. *Auricles* a prominent tuft of hairs. *Inflorescences* a panicle, exserted, primary branches digitate, arranged at the end of the culms, composed of 3–5 racemes, narrowly oblong, often radiating horizontally; rachis deciduous from axis, flattened, terminating in a bare bristle-liked extension. *Spikelets* sessile, packing broadside to rachis, two alternate rows on the lower face of the flattened rachis, solitary, unilateral, comprising 2–3 fertile florets, one sterile floret present above fertile florets, with diminished floret at the apex, broadly ovate, strongly laterally compressed, breaking up at maturity, disarticulating above glumes, not between florets. *Glumes* persistent, dissimilar, shorter than spikelet, lower glume broadly lanceolate, 1-keeled, 1-veined, apex acute, keel thick, scabrous; upper glume elliptic to narrowly obovate, tinged with greenish dots, truncate except for the nerve, keel scabrous, apex obtuse and extended into a stout scabrid awn. *Lemmas* resembling the lower glume, fertile lemma gibbous, broadly ovate, membranous, 1-keeled and scabrous, often extended into a stout cuspidate, 1-veined, sterile lemma ovate to elliptic. *Palea* subequal to lemma, fertile palea, 2-veined and strongly 2-keeled, keels narrowly winged, wings scabrous, apex 2-teethed, margins enfolding fruit, sterile palea absent. *Stamens* 3; orangish yellow. *Ovary* lanceolate, orangish yellow; stigma feathery; lodicules 2, subtriangular; *Fruits* a caryopsis, terete, transversely rugose.

1. *Dactyloctenium aegyptium* (L.) P. Beauv., *Ess. Agrost. Expl. Pl.*: 15. 1825; Merr., *En. Philipp.*: 86. 1925; Ridl., *Fl. Mal. Pen.* 5: 250. 1925; Bor, *Grasses of Burma, Ceylon, India and Pakistan*: 489. 1960; Backer & Bakh.f, *Fl. Java* 3: 534. 1968; Lazarides in Dassanayake, *Fl. Ceylon*, 8: 147. 1994; Chen & Phillips in Wu, Raven & Hong, *Fl. China* 22: 481. 2006.

Cynosurus aegyptius L., *Sp. Pl.*: 72. 1753.

Annual or perennial, caespitose. *Culms* moderately robust, shortly stoloniferous, infrequently erect or mat forming, 10–40 cm long, rooting at lower nodes, base compressed. *Leaf-sheaths* hirsute or sometimes with a few bulbous-based hairs on the keel, margins glabrous. *Blades* flat, 2–5 mm by 3–20 cm, margins tuberculate-ciliate on both surfaces often undulate margins, apex acute or acuminate. *Ligules* membranous, sparsely ciliate. *Collars* glabrous. *Auricles* a prominent tuft of hairs. *Inflorescences* a panicle, exserted,

primary branches digitate, arranged at the end of the culms, composed of 3–5 racemes, narrowly oblong, often radiating horizontally, 3–5 mm by 1.5–2.5 cm; rachis deciduous from axis, flattened, terminating in a bare bristle-like extension. *Peduncles* 8–15 cm long. *Spikelets* sessile, packing broadside to rachis, two alternate rows on the lower face of the flattened rachis, solitary, unilateral, comprising 2–3 fertile florets, one sterile floret present above fertile florets, with diminished floret at the apex, broadly ovate, strongly laterally compressed, 3.5–5 mm long, breaking up at maturity, disarticulating above glumes, not between florets. *Glumes* persistent, dissimilar, shorter than spikelet, lower glume broadly lanceolate, 1.5–2 by 2–2.5 mm, 1-keeled, 1-veined, apex acute, keel thick, scabrous; upper glume elliptic to narrowly obovate, tinged with greenish dots, truncate except for the nerve, keel scabrous, apex obtuse and extended into a stout scabrid awn. *Lemmas* resembling the lower glume, fertile lemma gibbous, broadly ovate, 1.5–2 by 3–3.5 mm, membranous, 1-keeled and scabrous, often extended into a stout cuspidate, 1-veined, sterile lemma ovate to elliptic. *Palea* subequal to lemma, fertile palea, 0.8–1 by 2–2.8 mm, 2-veined and strongly 2-keeled, keels narrowly winged, wings scabrous, apex 2-teethed, margins enfolding fruit, sterile palea absent. *Stamens* 3; anther 0.5–1 mm long, orangish yellow. *Ovary* lanceolate, orangish yellow, 0.5–0.8 mm long; stigma feathery; lodicules 2, subtriangular; *Fruits* a caryopsis with free soft pericarp, obovoid or reniform, 2–3 mm long.

Thailand.— NORTHERN: Mae Hong Son (Pang Mu), Chiang Mai (Doi Inthanon National Park, Fang, Huay Kaew Botanical Garden, Mae Klang waterfall, San Sai), Phayao (Kwan Phayao), Lamphun (Paa Saang), Lampang (Jae Hom), Tak, Sukhothai, Phitsanulok (Thung Salang Luang National Park), Kamphaeng Phet; NORTH-EASTERN: Loei, Udon Thani, Maha Sarakham; EASTERN: Nakhon Ratchasima (Pakthongchai), Roi Et; SOUTH-WESTERN: Ratchaburi, Prachuap Khiri Khan (Sam Roi Yod National Park); CENTRAL: Sing Buri, Lop Buri, Saraburi, Krung Thep Maha Nakhon (Bang Khuntien); SOUTH-EASTERN: Chachoengsao, Chon Buri (Ban Soen), Rayong (Phae), Chanthaburi; PENINSULAR: Surat Thani, Pattani, Narathiwat (Tak Bai).

Distribution.— Tropical regions of the Old World, introduced into America.

Ecology.— Disturbed weedy places, especially on sandy soils.

Vernacular.— Ya pak kluai (หญ้าปากคอก) (Sing Buri); Ya pak khwai (หญ้าปากควาย) (Central).

Specimens examined.— *BGO Staff* 4374 (QBG), 7756 (QBG), s.n. (QBG); *F. Floto* 7608 (K); *N. Fukuoka* T-36290 (BKF); *W. Gayosanit* 6 (CMU-B); *C.W. Heckman* 106 (K); *K. Iwatsuki & N. Fukuoka* T-10381 (BKF); *N. Jamjanta* 15 (CMU-B); *A.F.G. Kerr* 859 (K), 3809 (K), 7840 (K), 11156 (BK, K), 11157 (BK, K); *K. Larsen, T. Smitinand & E. Warncke* 1282 (BKF); *A. Marcan* 2260 (K), 2260 (K); *J.F. Maxwell* 71-403 (BK); *G. Murata* T-17264 (BKF); *G. Murata, C. Phengklai, S. Mitsuta, T. Yahara, H. Nagamasu & N. Nantasan* T-38353 (BKF); *G. Murata, K. Iwatsuki & C. Phengklai* T-14807 (BKF); *G. Murata, N. Fukuoka & C. Phengklai* T-16824 (BKF), T-17815 (BKF); *G. Murata, S. Mitsuta, H. Nagamasu & C. Phengklai* T-37045 (BKF); *C. Niyomdham & D. Sriboonma* 1621 (BKF, K); *M. Norsangsri* s.n. (QBG); *Y. Paisooksantivatana & S. Sutheesorn* 1136-82 (BK); *Panatcool* 304 (CMU-B); *C. Panyarat* 185 (CMU-B); *Parikarn & Prayad* 54, 83 (BK); *D.E. Parry* 18 (K); *Pradit* 748 (BK); *Put* 2619 (BK, K); *T.B. Ryves* s.n. (K); *W. Sankamethawee* 451 (CMU-B); *T. Shimizu, H. Toyokuni, H. Koyama, T. Yahara & C. Niyomdham* T-26173 (BKF); *T. Shimizu, H. Toyokuni, H. Koyama, T. Yahara & D. Phanichaphol* T-23348 (BKF); *E. Smith* 785 (K); *T. Smitinand* 4277 (BKF, K), 4601 (BKF), 5970 (BKF); *Th. Sørensen, K. Larsen & B. Hansen* 1417 (K), 1993 (BKF), 2101 (BKF), 4438 (K), 4478 (K); *P. Suraphanphichit* 9 (BK); *S. Sutheesorn* 1859 (BK), 2692 (BK); *K. Suwunkitti* 381 (CMU-B); *M. Tagawa, K. Iwatsuki & N. Fukuoka* T-2204 (BKF); *M.N. Tamura* T-60398 (BKF); *K. Tipraht* 104 (CMU-B); *C.F. van Beusekom & C. Charoenpol* 1906 (BKF); *R. Wehmer* 39 (CMU-B).

3. DESMOSTACHYA

(Stapf) Stapf, Fl. Cap. 7: 316. 1898. Bor, Grasses of Burma, Ceylon, India and Pakistan: 491. 1960; Chen & Phillips in Wu, Raven & Hong, Fl. China 22: 480. 2006.

1. *Desmostachya bipinnata* (L.) Stapf in Dyer, Fl. Cap. 7: 632. 1900. Bor, Grasses of Burma, Ceylon, India and Pakistan: 491. 1960; Chen & Phillips, Fl. China 22: 480. 2006.

Briza bipinnata L., Fl. Palaestina.: 12. 1756.

Thailand.— NORTHERN: Nakhon Sawan.

Distribution.— -

Ecology.— Tufted grass, common in rice field.

Vernacular.— -

Specimens examined.— *PS*. 451-563 (BKF); *T. Smitinand* 5809 (BKF).

4. ELEUSINE

Gaertn., *Fruct. Sem. Pl.* 1: 7. 1788; Hook.f., *Fl. Brit. Ind.* 7: 293. 1897; Ridl., *Fl. Mal. Pen.* 5: 250. 1925; Bor, *Grasses of Burma, Ceylon, India and Pakistan*: 492. 1960; Backer & Bakh.f, *Fl. Java* 3: 533. 1968; Lazarides in Dassanayake, *Fl. Ceylon*, 8: 191. 1994; Chen & Phillips in Wu, Raven & Hong, *Fl. China* 22: 481. 2006.

Annual, caespitose, basal innovations flabellate. *Culms* ascending or decumbent at base, sometimes branched. *Leaf-sheaths* keeled, tuberculate-pilose or hairy. *Blades* linear, conduplicate glabrous or pilose. *Ligules* a ciliate to ciliolate membrane. *Collars* glabrous. *Auricles* with a tuft of hairs. *Inflorescences* a panicle, primary branches digitate, divaricate, arranged at the end of the culms, composed of 3–4 racemes, 1–2 racemes markedly set below the others, linear, unilateral, 3–5 mm by 5–10 cm long; rachis of racemes triangular, 1–1.5 mm wide, wingless, spikelets attached alternately on the other side, terminating in a spikelet, glabrous. *Peduncles* glabrous, 10–15 cm long. *Spikelets* glabrous, elliptic, laterally compressed, packing broadside to rachis, regular, 2-rowed, comprising 4–5 fertile florets, with diminished florets at the apex, 3.5–5 mm long, breaking up at maturity, disarticulating below each floret. *Glumes* persistent, similar, shorter than spikelet, lower glume lanceolate, 0.3–0.5 by 2–2.5 mm, membranous, 1-keeled, narrowly winged on keel, 1-veined, scabrid along keel, apex acute, straw-colour; upper glume ovate to broadly lanceolate, 0.5–1 by 2.8–3.5 mm, 1-keeled, 1-veined, scabrid along keeled, apex acute, greenish. *Lemmas* ovate or lanceolate, 0.8–1.5 by 3–4 mm, membranous, 1-keeled, scabrid along keel, 3-veined, lateral vein a thin green vein near each edge, apex acute, straw-colour, tinged with purple dots. *Paleas* 2-keeled, narrowly winged on keel, 2-veined, apex slightly bifid (2-teethed), margins enfolding fruit. *Lodicules* 2, minute. *Stamens* 3; anther yellow, ca. 0.5 mm long. *Ovary* triangular, orangish-yellow, ca. 0.5 mm long, with 2 diverging styles; stigma feathery. *Fruits* a caryopsis within soft pericarp. *Grains* narrowly elliptic to oblong, dark brown, usually concave, obliquely striate, 1.2–1.5 mm long.

KEY TO THE SPECIES

1. Primary branches appressed; spikelet 4-rowed; grain almost globose **1. *Eleusine coracana***
1. Primary branches divaricate; spikelet 2-rowed; grain narrowly elliptic to oblong **2. *Eleusine indica***

1. *Eleusine coracana* (L.) Gaertn., *Fruct. Sem. Pl.* 1: 11. 1788; Bor, *Grasses of Burma, Ceylon, India and Pakistan*: 492. 1960; Lazarides in Dassanayake, *Fl. Ceylon*, 8: 191. 1994; Chen & Phillips in Wu, Raven & Hong, *Fl. China* 22: 482. 2006.

Cynosurus coracanus L., *Syst. Nat.*, *Edi. Dec.* 2: 875. 1759.

Annual, caespitose, robust, basal innovation flabellate. *Culms* erect or ascending, sometimes branching at the lower nodes, 35–90 cm high, glabrous, slightly compressed with ridged striations, leaves mostly basal. *Leaves-sheath* keeled, loose, chartaceous, with scarious margins, strongly nerved. *Blades* linear, conduplicate, flattened, 5–7 mm by 30–50 cm, pilose. *Ligules* a ciliate membrane. *Collars* glabrous. *Inflorescences* a panicle, primary branches subdigitate, appressed, exserted, composed of 6–10 racemes, 1–2 raceme markedly set below the others, often incurved at maturity, hairy at base; *peduncle* glabrous or pilose near raceme base, erect; rachis flattened. *Spikelets* packing broadside to rachis, crowded, regular, 4-rowed, very closely imbricate, ovate, laterally compressed, 4–5 mm long, persistent; comprising 4–7 fertile florets, with diminished florets at the apex, not breaking up at maturity. *Glumes* shorter than spikelet; lower glume lanceolate to oblong, 0.5–0.8 by 2–3 mm, membranous, 1-keeled, scabrid along keel, 1-veined, apex acute; upper glume elliptic, 0.7–1.5 by 3–3.5 mm long, membranous, 1-keeled, scabrid along keel, 1-veined, apex acute. *Lemmas* ovate to triangular, apex acute or obtuse, 1-keeled, scabrid along keel, 3-veined, apex acute. *Paleas* ovate to broadly lanceolate, 2-keeled, narrowly winged, 2-veined; apical sterile florets resembling fertile though underdeveloped. *Lodicules* 2, cuneate, fleshy. *Stamens* 3; ca. 1 mm long. *Ovary* with 2 diverging styles; stigma feathery. *Fruits* a caryopsis with free soft pericarp, exposed between gaping lemma and palea at maturity, almost globose, yellowish brown, 0.8–1 mm long, rugose.

Thailand.— NORTHERN: Chiang Mai, Tak (Doi Mussor); NORTH-EASTERN: Phetchabun.

Distribution.— Africa, India, Laos, Cambodia, Vietnam, Australia.

Ecology.— Tufted grass, common in paddy field and in deciduous forest.

Vernacular.— -

Specimens examined.— *J.F. Maxwell* 00-435 (BKF); *T. Shimizu*, *K. Iwatsuki*, *N. Fukuoka*, *M. Hutch*, *D. Chaiglom* & *A. Nalampoon* T-11409 (BKF); *T. Smitinand* 7047 (BKF, K); *P. Suksathan* 1255 (BKF).

2. *Eleusine indica* (L.) Gaertn., *Fruct.* 1: 8. 1789; *Hook.f.*, *Fl. Brit. Ind.* 7: 293. 1897; *Ridl.*, *Fl. Mal. Pen.* 5: 250. 1925; *Bor*, *Grasses of Burma, Ceylon, India and Pakistan*: 493. 1960; *Backer & Bakh.f.*, *Fl. Java* 3: 533, 1968; *Lazarides* in *Dassanayake*, *Fl. Ceylon*, 8: 193. 1994; *Chen & Phillips* in *Wu, Raven & Hong*, *Fl. China* 22: 482. 2006.

Cyanosurus indicus L., *Sp. Pl. ed.*: 72. 1753.

Annual, caespitose, basal innovations flabellate. *Culms* loosely tufted, geniculately ascending or decumbent at base, often branched, 20–35 cm long or longer. *Leaf-sheaths* compressed, keeled, tuberculate-pilose or with scattered fine hairs, especially near the blade, outer margin hairy. *Blades* flattened, conduplicate broad when spread out, linear with a blunt tip, 3–5 mm by 3–15 cm, glabrous, adaxial surface pilose. *Ligules* membranous, ciliolate. *Collars* glabrous. *Auricles* tall with a prominent tuft of hairs. *Inflorescences* a panicle, primary branches digitate, divaricate, arranged at the end of the culms, composed of 3–4 racemes, 1–2 racemes markedly set below the others, linear, unilateral, 3–5 mm by 5–10 cm long; rachis of racemes triangular, 1–1.5 mm wide, wingless, spikelets attached alternately on the other side, terminating in a spikelet, glabrous. *Peduncles* glabrous, 10–15 cm long. *Spikelets* glabrous, elliptic, laterally compressed, packing broadside to rachis, regular, 2-rowed, comprising 4–5 fertile florets, with diminished florets at the apex, 3.5–5 mm long, breaking up at maturity, disarticulating below each floret. *Glumes* persistent, similar, shorter than spikelet, lower glume lanceolate, 0.3–0.5 by 2–2.5 mm, membranous, 1-keeled, narrowly winged on keel, 1-veined, scabrid along keel, apex acute, straw-colour; upper glume ovate to broadly lanceolate, 0.5–1 by 2.8–3.5 mm, 1-keeled, 1-veined, scabrid along keeled, apex acute, greenish. *Lemmas* ovate or lanceolate, 0.8–1.5 by 3–4 mm, membranous, 1-keeled, scabrid along keel, 3-veined, lateral vein a thin green vein near each edge, apex acute, straw-colour, tinged with purple dots. *Paleas* 2-keeled, narrowly winged on keel, 2-veined, apex slightly bifid (2-teethed), margins enfolding fruit. *Lodicules* 2, minute. *Stamens* 3; anther yellow, ca. 0.5 mm long. *Ovary* triangular, orangish-yellow, ca. 0.5 mm long, with 2 diverging styles; stigma feathery. *Fruits* a caryopsis within soft pericarp. *Grains* narrowly elliptic to oblong, dark brown, usually concave, obliquely striate, 1.2–1.5 mm long.

Thailand.— NORTHERN: Mae Hong Son (Pang Mu), Chiang Mai (Chiang Dao, Chiang Mai University, Doi Inthanon National Park, Doi Suthep National Park, Mae Pan waterfall, Mae Rim, Praw), Phayao (Kwan Phayao), Lamphun (Paa Saang), Tak (Ban Lansang), Sukhothai, Phitsanulok (Thung Salang Luang National Park); NORTH-EASTERN: Loei (Phu Kradeung, Wang Saphung), Udon Thani; EASTERN: Nakhon Ratchasima (Pakthongchai, Pak Chong); SOUTH-WESTERN: Kanchanaburi, Ratchaburi (Damnoen Saduak), Prachuap Khiri Khan (Thap Sakae); CENTRAL: Sing Buri, Krung Thep Maha Nakhon (Bang Khen); SOUTH-EASTERN: Prachin Buri, Chon Buri, Trat (Laem Ngop); PENINSULAR: Surat Thani (Wiengsa), Phangnga (Nai Chong), Yala, Narathiwat (Tak Bai).

Distribution.— Tropical and subtropical, widely cultivated.

Ecology.— Decumbent tufted grass, common by roadsides and in open area.

Vernacular.— Ya tin ka (หญ้าตีนกา), Ya pak khwai (หญ้าปากควาย) (Central).

Specimens examined.— *F. Anderson* 6137 (CMU-P); *N.N. Aung* 1 (CMU-B); *BGO Staff* 7755 (QBG); *G. den Hoed* s.n. (K); *G.F. Floto* 7619 (K); *R. Geesink & T. Santisuk* 5281 (BKF); *C.W. Heckman* 114 (K), 137 (K), 138 (K); *W. Jariyanan* 7 (CMU-B); *S. Jereunpohndee* 116 (CMU-B); *A.F.G. Kerr* 848 (K), 3793 (K); *H. Koyama* T-61161 (BKF); *J.F. Maxwell* 90-1173 (CMU-B, CMU-P), 92-385 (CMU-B, CMU-P); *G. Murata*, *C. Phengklai*, *S. Mitsuta*, *H. Nagamasu* & *N. Nantasan* T-37165 (BKF), T-38345 (BKF); *G. Murata*, *N. Fukuoka* & *C. Phengklai* T-17397 (BKF); *W. Nanakorn et al.* 2645 (QBG), 7322 (QBG); *C. Niyomtham & D. Sriboonma* 1610 (BKF, K); *M. Norsangsri* 199 (QBG), 200 (QBG), 202 (QBG), 524 (QBG); *D.E. Parry* 2 (K); *C. Phengklai & T. Smitinand* 6030 (BKF); *C. Phengklai et al.* 6690 (BKF); *S. Phengnaren* 645 (BKF); *PS.* 924 (BKF, K), 1400 (BKF, K), 1703 (BKF); *Put* 21 (K), 2636 (K); *S. Rachdawong & W. Liewkongsataporn* 110 (CMU-B); *T. Shimizu*, *H. Toyokuni*, *H. Koyama*, *T. Yahara* & *T.*

Santisuk T-18225 (BKF); *T. Shimizu, N. Fukuoka & A. Nalampoon* T-7693 (BKF); *T. Smitinand* 1948 (BKF, K), 4603 (BKF), 5974 (BKF, K); *Th. Sørensen, K. Larsen & B. Hansen* 1115 (BKF), 1513 (K), 2099 (BKF), 3568 (K); *Sutone* 10 (CMU-P); *M. Tagawa, K. Iwatsuki* T-279 (BKF); *J. Thatsaneeyakorn* 23 (CMU-B); *S. Tsugaru* T-61761 (BKF); *S. Tummakun* 31 (CMU-B); *B. Wasuntrasuk* 1 (CMU-B); *R. Wehner* 60 (CMU-B); *S. Zhou* 1105 (CMU-B).

5. ERAGROSTIS

Wolf, Gen. Pl.: 23. 1776; Hook.f., Fl. Brit. Ind. 7: 312. 1897; Merr., En. Philipp.: 88. 1925; Ridl., Fl. Mal. Pen. 5: 245. 1925; Bor, Grasses of Burma, Ceylon, India and Pakistan: 495. 1960; Backer & Bakh.f, Fl. Java 3: 529. 1968; Lazarides in Dassanayake, Fl. Ceylon, 8: 203. 1994; Chen & Peterson in Wu, Raven & Hong, Fl. China 22: 471. 2006.

1. *Eragrostis alopeculooides* Balansa, in Morot, J. de Bot. 4.: 168. 1890.

Thailand.— EASTERN: Nakhon Ratchasima; SOUTH-WESTERN: Phetchaburi; SOUTH-EASTERN: Rayong.

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *B. Balansa* s.n. (K); *A.F.G Kerr* 8086 (K), 20588 (K); *K. Larsen* 2113 (K); *A. Marcan* 1371 (K); *Th. Sørensen et al.* 2113 (K).

2. *Eragrostis amabilis* (L.) Hook. & Arn., Bot. Beechey Voy.: 251. 1838; Hook.f., Fl. Brit. Ind. 7: 317. 1897; Merr., En. Philipp.: 88. 1925; Ridl., Fl. Mal. Pen. 5: 246. 1925.

Poa amabilis L., Sp. Pl.: 68. 1753.

Thailand.— NORTHERN: Chiang Mai (Chiang Mai University), Lampang (Jae Sawn National Park Headquarter); SOUTH-WESTERN: Kanchanaburi (Sangklaburi); CENTRAL: Krung Thep Maha Nakhon; SOUTH-EASTERN: Chon Buri (Si Chang).

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *K. Aeksak* 31 (CMU-B); *G. den Hoed* 132 (K); *G.W. Groff* 303 (K); *J.F. Maxwell* 93-1030 (CMU-B), 93-1204 (CMU-B), 96-1217 (BKF, CMU-B), 96-1292 (BKF, CMU-B), 98-1420 (CMU-B); *P. Nootboo* 502 (CMU-B); *Phunwipha* 399 (CMU-B); *S. Rachdawong* 121 (CMU-B); *Y. Saengdee* 399 (CMU-B).

3. *Eragrostis atrovirens* (Desf.) Trin. ex Steud., Nom. Bot. Ed. 2,1: 562. 1840; Bor, Grasses of Burma, Ceylon, India and Pakistan: 503. 1960; Lazarides in Dassanayake, Fl. Ceylon, 8: 207. 1994.

Poa atrovirens Desf., Fl. Atlant. 1: 73. 1798; Chen & Peterson in Wu, Raven & Hong, Fl. China 22: 474. 2006.

Perennial, caespitose, loosely tufted, blue-green, glaucous, rhizomes absent, erect or geniculate, butt sheath glabrous, base with shining straw-coloured sometime purplish. *Culms* geniculately ascending, 30-80 cm long, leaves basal and cauline. *Leaf-sheaths* coriaceous with membranous margins, loose and involute, glabrous, smooth, strongly nerved, subequal to the lower internodes and much shorter than the other ones, the lower sheaths often purplish. *Ligules* a ciliolate membrane. *Collars* glabrous. *Auricles* bearded with hairs. *Blades* 5-8 mm by 20-30 cm, flat, inrolled when dry, long acuminate and very finely pointed, strongly nerved with primary and secondary veins, broad near the ligule, scabrous or smooth, pilose at least near the ligule or glabrous. *Inflorescences* an open panicle, branched, terminal, oblong or ovate, 30-50 cm long, contracted ca. primary branches, primary panicle branches ascending. *Spikelets* solitary, lanceolate-oblong, glaucous, laterally compressed, breaking up at maturity; rhachilla persistent, shedding paleas, internodes eventually visible between lemmas, pedicelled; fertile spikelet comprising 12-20 loosely imbricate florets, with diminished florets at the apex; apical sterile florets resembling fertile though, maturing from below upwards. *Glumes* deciduous, similar, subequal, shorter than spikelet; lower glume lanceolate-acute or ovate, 1 times length of upper glume, 1-keeled, 1-veined, lateral veins absent, apex acute; upper glume ovate or

boat-shaped or lanceolate-acute, 0.6–0.8 times length of adjacent fertile lemma, 1-keeled, 1-veined, the nerve scabrid on the back, apex acute. *Florets* fertile floret divergent, free at tip, membranous, grey, keeled, 3-veined, upper florets similar, lemmas and paleas falling together from below up, leaving stumps on the persistent rachilla. *Lemma* oblong-elliptic, acute to subobtuse, surface asperulous, scabrid on the back of the mid-nerve, the lateral nerves prominent and distinctly closer to the margins than to the midnerve. *Palea* slightly shorter than its lemma, narrowly ovate between the 2 nerves, scarious to hyaline, keels scaberulous, apex acute or subobtuse, scabrid on the back of the nerves, margins infolded, laterally compressed. *Stamens* 3; anther dark purple. *Fruits* a caryopsis with adherent pericarp, ellipsoid.

Thailand.— NORTHERN: Chiang Mai (Doi Inthanon National Park, Doi Suthep National Park, Hang Dong, Mae Jam, Mae Rim, Mae Tun, Sahn Ba Dong, Thung Luang Royal Project), Phayao (Kwan Phayao), Lamphun (Koon Tan National Park), Phrae (Rong Kwang), Phitsanulok (Thung Salang Luang National Park), Nakhon Sawan (Bung Boraphet); NORTH-EASTERN: Loei (Naa Haew), Udon Thani, Nakhon Phanom, Khon Kaen (Phu Wiang National Park); EASTERN: Chaiyaphum, Nakhon Ratchasima, Roi Et (Ban Na, Suwan Naphum); SOUTH-WESTERN: Phetchaburi; CENTRAL: Nakhon Nayok (Khao Yai National Park); SOUTH-EASTERN: Prachin Buri (Khao Yai National Park), Chon Buri, Chanthaburi (Makham); PENINSULAR: Ranong, Surat Thani (Khao Rahu, Kiriratnikorn), Phangnga (Tung Rha Suung), Nakhon Si Thammarat.

Distribution.— Sri Lanka, India, Myanmar, Peninsular Malaysia, Sumatra, Borneo, Philippines.

Ecology.— Decumbent tufted grass, common on sandy soil in open area and in mixed deciduous forest.

Vernacular.— -

Specimens examined.— *BGO Staff* s.n. (QBG); *P. Chantaranothai et al.* 894 (K), 1151 (K); *B. Hansen, G. Seidenfaden & T. Smitinand* 11012 (BKF), 11330 (BKF, K); *C.W. Heckman* G-20 (K), G-23a (K), G-233 (K), G-236 (K); *B. Hensen et al.* 11012 (K), 11013 (K); *C.C. Hussens* 484 (K); *A.F.G. Kerr* 1899 (K), 2623 (K), 15635 (K), 19783 (K), 21521 (K); *S. Laegaard & M. Norsangsri* 21596 (K), 21638 (K); *K. Larsen* 10054 (K), 10211 (K); *K. Larsen et al.* 239 (K); *K. Larsen, T. Smitinand & E. Warncke* 238 (BKF); *J.F. Maxwell* 01-174 (CMU-B), 03-146 (CMU-B), 06-433 (CMU-B), 89-789 (CMU-P), 97-37 (CMU-B); *G. Murata, K. Iwatsuki, C. Phengklai & C. Charoenphol* T-15883 (BKF), 17163 (BKF); *W. Nanakorn et al.* 4119 (QBG), 6513 (QBG); *M. Norsangsri* 344 (QBG), 350 (QBG), 543 (QBG), 945 (QBG); *Nur* 4213 (K); *Y. Paisooksantivatana* Y313-80 (BK, CMU-B); *C. Phengklai et al.* 6692 (BKF); *T.B. Ryves* 95/035 (K); *S. Sasirat* 127 (QBG); *T. Smitinand* 1141 (K), 5770 (BKF, K), 5772 (BKF, K), 5812 (BKF, K), 5838 (K), 8901 (BKF); *Th. Sørensen et al.* 3348 (K), 4324 (K); *Th. Sørensen, K. Larsen & B. Hansen* 846 (BKF), 2162 (BKF), 3234 (BKF, K); *P. Suksathan* 2608 (QBG); *S. Sutheesorn* 1169 (BK), 5568 (BK); *K. Suvatabhandhu* 359 (BK), 732 (BK); *TDBS* 10067 (K), 10106 (BKF, K), 10211 (BKF, K); *C.F. van Beusekom & C. Phengklai* 1182 (K).

4. *Eragrostis brownii* (Kunth) Nees, Cat. Indian Pl.: 105. 1834; Backer & Bakh.f, Fl. Java 3: 530. 1968; Chen & Peterson in Wu, Raven & Hong, Fl. China 22: 473. 2006.

Poa brownii Kunth, Révis. Gramin. 1: 112. 1829.

Thailand.— NORTHERN: Chiang Mai; NORTH-EASTERN: Loei (Wang Saphung); SOUTH-EASTERN: Chon Buri, Trat (Koh Chang).

Distribution.— -

Ecology.— Common in dry deciduous forest and savannah.

Vernacular.— -

Specimens examined.— *S. Laegaard & M. Norsangsri* 21627 (K); *K. Larsen* 10054 (BKF); *J.F. Maxwell* 01-608 (CMU-B), 02-412 (CMU-B); *T. Smitinand* 2242 (BKF), 3061 (BKF), 3621 (BKF).

5. *Eragrostis burmanica* Bor, Kew Bull.: 166. 1951. Bor, Grasses of Burma, Ceylon, India and Pakistan: 503. 1960. Type: Myanmar, *U. Thein Lwin* 582, 20 Jul 1948.

Thailand.— NORTHERN: Chiang Mai (Chiang Dao), Phitsanulok, Kamphaeng Phet, Nakhon Sawan; EASTERN: Chaiyaphum, Roi Et (Thung Kula Rong Hai).

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *TDBS* 7603 (BKF); *R. Geesink, T. Hattink & C. Phengkklai* 7140 (BKF); *B. Hansen & T. Smitinand* 12831 (BKF); *K. Larsen, T. Smitinand & E. Warncke* 671 (BKF); *M. Norsangsri, P. Suksathan & R. Pongsattayapipat* 1489 (QBG); *T. Smitinand* 5959 (BKF), s.n. (BKF); *T. Smitinand & A. Nalamphun* 10717 (BKF).

6. *Eragrostis capensis* (Thunb.) Trin., Mem. Acad. Petersb. Ser. 6. Sci. Math. 1: 400. 1830.

Briza capensis Thunb., Prodr. Pl. Cap.: 21. 1794.

Thailand.— NORTH-EASTERN: Loei (Phu Kradeung); EASTERN: Nakhon Ratchasima.

Distribution.— -

Ecology.— Tufted grass, common in open pine forest and savanah.

Vernacular.— Ya kon hep (หญ้ากันเห็บ) (Loei).

Specimens examined.— *L. B. & E.C. Abbe, T. Smitinand* 9469 (BKF, K); *D. Bunpheng* 614 (BKF); *F. Floto* 7553 (K); *KB* 137 (BKF); *A.F.G. Kerr* 8682 (BK, K), 17651 A (K); *T. Smitinand* 1145 (BKF, K), 1795 (BKF, K); *Th. Sørensen et al* 2361 (K); *Th. Sørensen, K. Larsen & B. Hansen* 2244 (BKF, K); *K. Suvatabhandhu* 73 (BK).

7. *Eragrostis ciliaris* (L.) R. Br., Congo.: 478. 1818; Hook.f., Fl. Brit. Ind. 7: 314. 1897; Bor, Grasses of Burma, Ceylon, India and Pakistan: 506. 1960; Lazarides in Dassanayake, Fl. Ceylon, 8: 210. 1994; Chen & Peterson in Wu, Raven & Hong, Fl. China 22: 478. 2006.

Poa ciliaris L., Syst. Nat., Edi. Dec. 2: 875. 1759.

Thailand.— EASTERN: Nakhon Ratchasima (Dahn Koon Toht); SOUTH-EASTERN: Chon Buri.

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *J.F. Maxwell* 03-463 (CMU-B); *S. Rachdawong* 120 (CMU-B).

8. *Eragrostis cilianensis* (Bellardi) Vignolo ex Janch., Mitt. Naturwiss. Vereins Univ. Wien. 5: 110. 1907; Bor, Grasses of Burma, Ceylon, India and Pakistan: 503. 1960; Backer & Bakh.f, Fl. Java 3: 532. 1968; Lazarides in Dassanayake, Fl. Ceylon, 8: 209. 1994.

Poa cilianensis Bellardi, Fl. Pedem. 2: 246. 1785; Chen & Peterson in Wu, Raven & Hong, Fl. China 22: 477. 2006.

Thailand.— NORTHERN: Chiang Mai (Doi Suthep).

Distribution.— -

Ecology.— Common grass in dry evergreen forest.

Vernacular.— -

Specimens examined.— *Th. Sørensen et al.* 5089 (K); *Th. Sørensen, K. Larsen & B. Hansen* 4423 (BKF, K).

Eragrostis chariis (Schult.) Hitchc., Lingnan Sci. J. 7: 193. 1929.

Poa chariis Schult., Mantissa 2: 314. 1824.

Thailand.— SOUTH-EASTERN: Chon Buri, Trat.

Distribution.— -

Ecology.— Erect tufted grass, common in savanah and in paddy field.

Vernacular.— -

Specimens examined.— *T. Smitinand* 248 (BKF), 1339 (BKF), 1407 (BKF), 3623 (BKF), 3680 (BKF).

9. *Eragrostis ciliata* (Roxb.) Nees, Fl. Bras. Enum. Pl. 2: 512. 1829; Hook.f., Fl. Brit. Ind. 7: 313. 1897; Bor, Grasses of Burma, Ceylon, India and Pakistan: 506. 1960; Chen & Peterson in Wu, Raven & Hong, Fl. China 22: 478. 2006.

Poa ciliata Roxb., Fl. Ind. 1: 336. 1820.

Thailand.— NORTHERN: Sukhothai; EASTERN: Nakhon Ratchasima; SOUTH-EASTERN: Chon Buri (Sattahip), Rayong (Muang, Tung Ta Node).

Distribution.— -

Ecology.— Common grass on sandy soil, sometimes on the beach.

Vernacular.— -

Specimens examined.— *A.F.G. Kerr* 8086 (BK); *J.F. Maxwell* 71-202 (BK), 71-773 (BK); *Y. Paisooksantivatana* Y1202-82 (BK); *S. Suthesorn* 251 (BK); *Umpai* 525 (BK).

10. *Eragrostis cumingii* Steud., Syn. Pl. Glumac. 1: 266. 1854; Bor, Grasses of Burma, Ceylon, India and Pakistan: 507. 1960.

Thailand.— NORTH-EASTERN: Loei, Khon Kaen (Chumphae); EASTERN: Ubon Ratchathani; SOUTH-EASTERN: Chon Buri; PENINSULAR: Ranong.

Distribution.— -

Ecology.— Common grass in savanah.

Vernacular.— -

Specimens examined.— *C. Hambananda* 213 (K); *A.F.G. Kerr* 16633 (BK); *S. Laegaard, M. Norsangsri, P. Pornpongrungrueng & S. Khoomgratok* 21824 (K); *Th. Sorensen, K. Larsen & B. Hansen* 2210 (BKF); *C.F. van Beusekom, R. Geesink, C. Phengkklai & B. Wongwan* 4511 (BKF); *L. Williams* 17249 (K).

11. *Eragrostis diplachnoides* Steud, Syn. Pl. Glumac. 1: 268. 1854; Bor, Grasses of Burma, Ceylon, India and Pakistan: 508. 1960. Type: Sudan, *Kotschy* 346 (isotype K, L)

Thailand.— NORTHERN: Chiang Mai (Mae Tang), Nakhon Sawan (Huawai), Kamphaeng Phet; NORTH-EASTERN: Phetchabun (Lom Khao), Nakhon Phanom, Maha Sarakham (Gosum Pisai); SOUTH-WESTERN: Kanchanaburi, Ratchaburi (Ban Rai, Nakhon Chum), Phetchaburi (Thung Luang), Prachuap Khiri Khan (Sam Roi Yod); CENTRAL: Saraburi (Sam Lahn forest, Muang); SOUTH-EASTERN: Prachin Buri (Aran Pratet), Chanthaburi (Tha Mai).

Distribution.— -

Ecology.— Erect tufted grass on sandy soil in open area, sometimes grow in marshy pool.

Vernacular.— -

Specimens examined.— *A.F.G. Kerr* 10901 (BK), 13078 (BK), 15985 (BK), 19542 (BK), 21411 (BK); *J.F. Maxwell* 71-45 (BK), 74-1032 (BK); *Y. Paisooksantivatana* Y612-81 (BK), Y793-82 (BK), Y2115-87 (BK); *Put* 1975 (BK); *T. Smitinand* 5956-A (BKF); *Th. Sorensen, K. Larsen & B. Hansen* 1939 (BKF); *S. Suthesorn* 397 (BK), 399 (BK), 434 (BK), 448 (BK), 694 (BK), 1945 (BK).

12. *Eragrostis elongata* (Willd.) Jacq., Ecl. Gram. Rar. 3: 1813; Hook.f., Fl. Brit. Ind. 7: 319. 1897; Ridl., Fl. Mal. Pen. 5: 248. 1925; Backer & Bakh.f., Fl. Java 3: 533. 1968; Chen & Peterson in Wu, Raven & Hong, Fl. China 22: 473. 2006.

Poa elongata Willd., Enum. Pl. Hort. Bot. Berol. 1: 108. 1809.

Thailand.— NORTHERN: Chiang Mai (Doi Suthep); NORTH-EASTERN: Loei (Phu Kradeung foothill), Nakhon Phanom; EASTERN: Surin (Chumponburi), Nakhon Ratchasima; CENTRAL: Saraburi (Sahm Lahn, Muang); SOUTH-EASTERN: Prachin Buri (Prachantakram), Chanthaburi (Lan Sing); PENINSULAR: Chumphon, Surat Thani, Phangnga (Thap Put), Krabi (Khlom Thom), Songkhla (Khao Noi), Narathiwat (Sungai Padi).

Distribution.— -

Ecology.— Tufted grass in open area and scattered in wet paddy field.

Vernacular.— -

Specimens examined.— *C. Chermisrivathana* 1507 (BK); *C. Chermisrivathana & Kasem* 1345 (BK); *N. Jongsamanjat* 727 (BK); *A.F.G. Kerr* 2801 (K), 8071 (K), 8407 (K), 9369 (K), 9547 (K), 11416 (K), 13671 (BK), 15094 (BK); *J.F. Maxwell* 4-316 (BKF), 74-316 (BK, BKF); *Y. Paisooksantivatana & S. Suthesorn* 908-82 (BK); *J. Sadakorn* 270 (BK), s.n. (BK); *T. Smitinand & William* 17268 (BKF); *Th. Sorensen, K. Larsen & B. Hansen* 2419 (BKF); *S. Suthesorn* 93 (BK); *Umpai* 426 (BK).

13. *Eragrostis gangetica* (Roxb.) Steud., Syn. Pl. Glumac. 1: 266. 1854; Bor, Grasses of Burma, Ceylon, India and Pakistan: 508. 1960; Lazarides in Dassanayake, Fl. Ceylon, 8: 211. 1994.

Poa gangetica Roxb., Fl. Ind. 1: 341. 1820.

Thailand.— NORTHERN: Chiang Mai (Mae Klang waterfall).

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *A.F.G. Kerr* 2623 (K), 15755 (K); *S. Laegaard & M. Norsangsri* 21614 (K); *M. Tagawa, K. Iwatsuki & N. Fukuoka* T-2206 (BKF, K).

14. *Eragrostis geniculata* Nees & Meyen, Gramineae: 71. 1841.

Thailand.— NORTHERN: Chiang Mai (Jom Tong); EASTERN: Nakhon Ratchasima; CENTRAL: Nakhon Nayok (Khao Yai National Park).

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *J.F. Maxwell* 01-24 (BKF, CMU-B), 93-86 (CMU-B); *C. Phengkklai* 655 (K).

15. *Eragrostis interrupta* P. Beauv., Ess. Agrostogr. 162: 71, 175. 1812; Hook.f., Fl. Brit. Ind. 7: 316. 1897; Ridl., Fl. Mal. Pen. 5: 246. 1925.

Poa interrupta R. Br., Prodr. Fl. Nov. Holland.: 180. 1810.

Thailand.— NORTH-EASTERN: Loei (Phu Kradeung); EASTERN: Nakhon Ratchasima.

Distribution.— -

Ecology.— Common grass in swampy area.

Vernacular.— Ya khamong (หญ้าขามเฒ่า) (Loei).

Specimens examined.— *K. Bunchuai* 1321 (BKF, K); *D. Bunpheng* 356 (BKF); *A.F.G. Kerr* 8083 (K).

16. *Eragrostis japonica* (Thunb.) Trin. in Mém. Acad. Sci. Pétersb., sér. 6,1: 405. 1831; Bor, Grasses of Burma, Ceylon, India and Pakistan: 509. 1960; Backer & Bakh.f, Fl. Java 3: 531. 1968; Lazarides in Dassanayake, Fl. Ceylon, 8: 212. 1994; Chen & Peterson in Wu, Raven & Hong, Fl. China 22: 479. 2006.

Poa japonica Thunb., Fl. Jap.: 51. 1784.

Thailand.— NORTHERN: Chiang Mai (Chiang Mai University, Doi Inthanon National Park, Mae Rim), Sukhothai, Kamphaeng Phet, Nakhon Sawan; NORTH-EASTERN: Loei (Phu Kradeung), Sakon Nakhon, Nakhon Phanom, Khon Kaen; EASTERN: Nakhon Ratchasima; SOUTH-WESTERN: Prachuap Khiri Khan; CENTRAL: Saraburi (Phu Khae); SOUTH-EASTERN: Prachin Buri; PENINSULAR: Surat Thani, Phatthalung, Songkhla, Narathiwat.

Distribution.— Tropical and subtropical Asia.

Ecology.— Tufted grass, common in open area and dry deciduous forest.

Vernacular.— -

Specimens examined.— *K. Bunchuai* 1320 (K); *D. Bunpheng* 356 (K), 804 (BKF, K); *P. Chawpbragit* 3 (CMU-B); *F. Floto* 7602 (K); *A.F.G. Kerr* 2897 (K), 2963 (K), 8083 (K), 10901 (K), 12832 (K), 13078 (K), 15985 (K), 19240 (K), 19260 (K), 19542 (K), 21411 (K); *H. Koyama, C. Phengkklai, S. Mitsuta, T. Yahara, H. Nagamasu & N. Nantasan* T-39946 (BKF); *S. Laegaard & M. Norsangsri* 21868 (K); *E. Lindhard* s.n. (K); *A. Marcan* 2155 (K); *J.F. Maxwell* 86-1043 (BKF); *H.P. Nooteboom* c.s. 767 (BKF); *D.E. Parry* 8 (K); *PS.* 1282 (BKF, K); *Put* 1975 (K), 2172 (K), 2179 (K); *T. Smitinand* 1939 (K), 5826 (BKF), 5828 (K), 5956A (K), 5982 (K), 10009 (BKF), s.n. (BKF); *Th. Sørensen, K. Larsen & B. Hansen* 2185 (BKF); *P. Suvannakoses* 1901 (BKF, K); *R. Wehner* 61 (CMU-B).

17. *Eragrostis luzoniensis* Steud., Syn. Pl. Glumac. 1: 266. 1854. Type: H. Cuming 1416, Philippines: Luzon (L.)

Thailand.— NORTHERN: Chiang Mai (Sahn Gahm Pang), Chiang Rai (Wiang Pah Pao), Lampang.

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *S. Laegaard* & *M. Norsangsri* 21596 (K), 21638 (K); *J.F. Maxwell* 97-107 (BKF, CMU-B); *Y. Paisooksantivatana* 333-80 (CMU-B); *M. Panatkool* 10 (CMU-B); *M. Panatkool*, *P. Tepwitukgit* & *O. Petmitr* 28 (CMU-B).

18. *Eragrostis malayana* Stapf in Hook., Fl. Brit. Ind. 7: 317. 1896; Hook.f., Fl. Brit. Ind. 7: 317. 1897; Ridl., Fl. Mal. Pen. 5: 247. 1925; Bor, Grasses of Burma, Ceylon, India and Pakistan: 510. 1960.

Thailand.— NORTHERN: Chiang Mai (Doi Suthep); NORTH-EASTERN: Khon Kaen; EASTERN: Si Sa Ket, Ubon Ratchathani (Lam Dom Noi); SOUTH-WESTERN: Phetchaburi, Prachuap Khiri Khan; SOUTH-EASTERN: Prachin Buri, Chachoengsao, Chon Buri, Chanthaburi; PENINSULAR: Surat Thani, Phangnga, Trang (Thale Sawng Hawng), Songkhla (Sadao), Satun, Narathiwat (Tak Bai, Sungai Padi).

Distribution.— -

Ecology.— Decumbent tufted grass, common in dry deciduous forest.

Vernacular.— Ya langka (หญ้าล้มก) (Satun); Ya khai hep (หญ้าไร่ห่ม) (Narathiwat).

Specimens examined.— *K. Larsen* 10057 (BKF, K), 10059 (K); 10105 (BKF), 10107 (BKF, K); *J.F. Maxwell* 86-799 (BKF, CMU-P); *C. Niyomdham* 1655 (BKF); *PS.* 1503 (BKF, K); *T. Smitinand* 3033 (BKF, K), 5753 (BKF, K), 12397 (BKF); *T. Smitinand* & *J. Turbang* 10500 (BKF); *Th. Sørensen*, *K. Larsen* & *B. Hansen* 178 (BKF, K).

19. *Eragrostis minor* Host, Fl. Austr. I.: 135. 1827. Hook.f., Fl. Brit. Ind. 7: 321. 1897; Lazarides in Dassanayake, Fl. Ceylon, 8: 219. 1994.

Thailand.— -

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *A.F.G. Kerr* 21389 (K).

20. *Eragrostis montana* Balansa, in Morot, J. de Bot. iv.: 168. 1890; Chen & Peterson in Wu, Raven & Hong, Fl. China 22: 477. 2006.

Thailand.— EASTERN: Nakhon Ratchasima (Dahn Koon Toht).

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *J.F. Maxwell* 03-462 (CMU-B).

21. *Eragrostis nigra* Nees ex Steud., Syn. Pl. Glumac. 1: 267. 1854; Hook.f., Fl. Brit. Ind. 7: 324. 1897; Bor, Grasses of Burma, Ceylon, India and Pakistan: 511. 1960; Backer & Bakh.f., Fl. Java 3: 532. 1968; Lazarides in Dassanayake, Fl. Ceylon, 8: 214. 1994; Chen & Peterson in Wu, Raven & Hong, Fl. China 22: 475. 2006.

Thailand.— NORTHERN: Mae Hong Son (Pai), Chiang Mai (Doi Suthep National Park, Sameung).

Distribution.— -

Ecology.— Common grass along roadsides.

Vernacular.— -

Specimens examined.— *B. Hansen* & *T. Smitinand* 12831 (K); *H. Koyama* T-61222 (BKF), T-61223 (BKF), T-61124 (BKF); *J.F. Maxwell* 04-681 (CMU-B), 88-670 (BKF), 88-1160 (BKF, CMU-P), 92-409 (CMU-B), 98-1080 (BKF, CMU-B).

22. *Eragrostis nutans* (Retz.) Nees ex Steud., Nomencl. Bot. 1: 563. 1840; Bor, Grasses of Burma, Ceylon, India and Pakistan: 511. 1960; Backer & Bakh.f., Fl. Java 3: 531. 1968; Lazarides in Dassanayake, Fl. Ceylon, 8: 216. 1994; Chen & Peterson in Wu, Raven & Hong, Fl. China 22: 473. 2006.

Poa nutans Retz., Obs. Bot. 4: 19. 1786.

Thailand.— CENTRAL: Saraburi.

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *G. Murata & N. Fukuoka* T-17359 (BKF).

23. *Eragrostis pilosa* (L.) P. Beauv., Ess. Agrost. 71: 162, 175. 1812; Hook.f., Fl. Brit. Ind. 7: 323. 1897; Ridl., Fl. Mal. Pen. 5: 247. 1925; Bor, Grasses of Burma, Ceylon, India and Pakistan: 512. 1960; Lazarides in Dassanayake, Fl. Ceylon, 8: 217. 1994; Chen & Peterson in Wu, Raven & Hong, Fl. China 22: 476. 2006.

Poa pilosa L., Sp. Pl.: 68. 1753.

Thailand.— NORTHERN: Chiang Mai (Chiang Dao, Doi Suthep National Park), Nakhon Sawan; SOUTH-WESTERN: Prachuap Khiri Khan; SOUTH-EASTERN: Chon Buri; PENINSULAR: Krabi (Klong Tawn), Nakhon Si Thammarat.

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *A.F.G. Kerr* 14349 (K); *J.F. Maxwell* 05-532 (CMU-B), 90-926 (CMU-P), 90-1046 (CMU-P); *T. Smitinand* 1367 (BKF), 5810 (BKF, K); *T. Smitinand & H.St. John* 6867 (K).

24. *Eragrostis riparia* (Willd.) P. Beauv., Ess. Agrostogr. 71: 162, 175. 1812; Bor, Grasses of Burma, Ceylon, India and Pakistan: 513. 1960; Lazarides in Dassanayake, Fl. Ceylon, 8: 220. 1994.

Poa riparia Willd., Gesell. Natur. Freunde zu Berlin, neue Schriften. 4: 185. 1803.

Thailand.— SOUTH-WESTERN: Prachuap Khiri Khan.

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *K. Larsen, T. Smitinand & E. Warncke* 1199 (K), 1247 (K).

25. *Eragrostis spartinoides* Steud., Syn. Pl. Glumac. 1: 265. 1854.

Thailand.— NORTH-EASTERN: Loei (Phu Kradeung), Nakhon Phanom; EASTERN: Nakhon Ratchasima; SOUTH-EASTERN: Chon Buri, Chanthaburi.

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *Ch. Charoenphol, K. Larsen & E. Warncke* 4928 (BKF, K); *C. Hambanada* 213 (K); *A.F.G. Kerr* 8071 (K), 8467 (K), 9369 (K), 17651 (K); *K. Larsen* 10058 (K), 10104 (K); *M. Lazarides* 7453 (K), 7465 (K), 7467 (K), 7480 (K); *T. Smitinand* 2242 (K), 4879 (K); *Th. Sørensen et al.* 3375 (K); *C.F. van Beusekom et al.* 4511 (K).

26. *Eragrostis stenophylla* Hochst. ex Miq., Anal. Bot. Ind. 2: 27. 1851; Hook.f., Fl. Brit. Ind. 7: 318. 1897.

Thailand.— PENINSULAR: Surat Thani.

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *A.F.G. Kerr* 13060 (K).

27. *Eragrostis subsecunda* (Lam.) Fourn., Mex. Pl. 2: 118. 1886.

Poa subsecunda Lam., Illustr. 1: 184. 1791.

Thailand.— -

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *D.J. Collins* 1907 (K); *A.F.G. Kerr* 13671 (K), 15096 (K), 16633 (K); *T. Smitinand* 5813 (K); *Th. Sørensen et al.* 2210 (K).

28. *Eragrostis superba* Peyr., Sitzungsber. Kaiserl. Akad. Wiss., Math.-Naturwiss. Cl. 38: 584. 1860; Bor, Grasses of Burma, Ceylon, India and Pakistan: 513. 1960. Type: Angola, Benguela, *Wawra* 244 (holotype W).

Thailand.— CENTRAL: Saraburi.

Distribution.— -

Ecology.— Introduced grass from India for fodder as a good pasture.

Vernacular.— -

Specimens examined.—

29. *Eragrostis tef* (Zucc.) Trotter, Boll. Soc. Bot. Ital.: 62. 1918; Bor, Grasses of Burma, Ceylon, India and Pakistan: 513. 1960.

Poa tef Zucc., Dissertazione Ditef s.p. 1775.

Thailand.— EASTERN: Nakhon Ratchasima.

Distribution.— -

Ecology.—

Vernacular.— -

Specimens examined.— *A.F.G. Kerr* s.n. (K).

30. *Eragrostis tenella* (L.) P. Beauv. ex Roem. et Schult., Syst. Veg. 2: 576. 1817; Hook.f., Fl. Brit. Ind. 7: 315. 1897; Ridl., Fl. Mal. Pen. 5: 245. 1925; Bor, Grasses of Burma, Ceylon, India and Pakistan: 513. 1960; Backer & Bakh.f, Fl. Java 3: 530. 1968; Lazarides in Dassanayake, Fl. Ceylon, 8: 205. 1994.

Poa tenella L., Sp. Pl.: 69. 1753. Chen & Peterson in Wu, Raven & Hong, Fl. China 22: 478. 2006.

Small annual grass, loosely tufted, base with shining straw-coloured cataphylls, caespitose. *Clumps* slender, moderately or densely, erect or geniculate, slightly compressed or terete, 2-noded, culm-nodes glabrous, simple or sparsely branched. *Leaf-sheaths* membranous to coriaceous, strongly nerved, green, suffused purple, loose, smooth, glabrous or hairy near the blade, much shorter than internodes, pilose along margins and summit, leaf-sheath lacking hairs. *Ligules* a fringe of hairs. *Auricles* bearing a tuft of long hairs. *Blades* flat or loosely involute, narrowly linear or long acuminate and very finely pointed, often tinged purple, adaxial surface scabrous, abaxial surface smooth, glabrous. *Inflorescences* an open or contracted and loose panicle, lanceolate to ovate, contracted about secondary branches, panicle axis scabrous, branches solitary or clustered, shortly exserted above the uppermost leaves, long pilose in axils, branchlet and pedicels glandular, rachis terete, smooth, primaries, secondaries and tertiaries capillary, angular, scabrid, with prominent long white hairs. *Spikelets* solitary, ovate or oblong-ovate, laterally compressed, falling off at maturity, disarticulating below each fertile floret; fertile spikelet comprising 7- 10 fertile florets with diminished florets at the apex, rachilla articulated between the florets, pedicelled, pedicels scabrous, apical sterile florets resembling fertile though underdeveloped. *Glumes* deciduous, usually unequal, similar, shorter than spikelet; lower glume lanceolate, glabrous, 1 times length of upper glume, membranous, 1-keeled, 1-veined, primary vein scaberulous, lateral vein absent, apex acute; upper glume lanceolate, glabrous, 0.5-1 times length of adjacent fertile lemma, membranous, 1-keeled, 1-veined, primary vein scaberulous, lateral veins absent, apex acute. *Lemma* fertile lemma broadly ovate or oblong, mucronulate or muticous, membranous, keeled, strongly 3-veined, lateral veins reaching the margins, apex acute, the lemma of the succeeding flowers are progressively more truncate. *Palea* persistent or tardily deciduous, as long as its lemma, long ciliate along keels, hairs rigidly spreading at maturity, margins infolded. *Lodicules* 2, cuneate, fleshy. *Stamens* 3. *Fruits* a caryopsis with adherent pericarp, ovoid or cylindric-fusiform.

Thailand.— NORTHERN: Mae Hong Son, Chiang Mai (Mae Jam, Tham Chiang Dao), Tak (Lansang Forest Park), Sukhothai, Phitsanulok (Thung Salang Luang National Park); NORTH-EASTERN: Loei (Wang Saphung, Phu Luang); EASTERN: Nakhon Ratchasima; SOUTH-WESTERN: Kanchanaburi (Erawan), Ratchaburi, Prachuap Khiri Khan (Khao Chong Grachok); CENTRAL: Phra Nakhon Si Ayutthaya

(Nong Kae), Krung Thep Maha Nakhon; SOUTH-EASTERN: Chon Buri (Samaesan Islands, Anghin Pong Namrawn), Chanthaburi; PENINSULAR: Surat Thani (Pha Phet), Narathiwat (Tak Bai).

Distribution.— Widely spread in the tropics of the Old World; introduced to America.

Ecology.— Widespread and common in the lowlands and lower highlands in elevations from sea-level to 2,000 m. often in shady sites, on sandy soils and as a weed, but also in grasslands and dry forests.

Vernacular.— Ya khai hep lek (หญ้าหีบเล็ก) (Narathiwat).

Specimens examined.— *K. Bunchuai* 1004 (BKF, K), 1320 (BKF); *Ch.* 219 (BKF); *G. den Hoed* 132 (K); *G. den Hoed & A. Kostermans* s.n. (K); *A.F.G. Kerr* 844 (K), 3785 (K), 12631 (K), 12796 (K), 19536 (K), 19884 (K), 20443 (K); *K. Larsen & S.S. Larsen* 34052 (BKF, K); *K. Larsen et al.* 1287 (K); *E. Lindhard* 286 (K); *J.F. Maxwell* 98-1420 (BKF); *G. Murata et al.* T-17816 (K); *G. Murata, K. Iwatsuki & C. Phengklai* T-14773 (BKF), T-16641 (BKF), T-17153 (BKF), T-17816 (BKF); *C. Niyomdham & D. Sriboonma* 1628 (BKF, K); *D.E. Parry* 3 (K); *Put* 7, 4252 (K); *T. Shimizu, N. Fukuoka & A. Nalampoon* T-7610 (BKF); *T. Smitinand* 3531 (BKF, K), 3835 (K), 4621 (K), 5609 (BKF); *T. Smitinand & G. seidenfaden* 11633 (BKF); *Th. Sorensen, K. Larsen & B. Hansen* 636 (BKF), 734 (BKF), 1221 (BKF); *Th. Wongprasert* s.n. (BKF).

31. *Eragrostis tenuiflora* Rupr. ex Steud., Syn. PL. Gram. 1: 268. 1854.

Thailand.— NORTHERN: Chiang Mai (Mae Rim).

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *BGO Staff* 5380 (QBG); *L. Chamsai* 31 (CMU-B); *O. Khopai* 88 (CMU-B); *J.F. Maxwell* 92-254 (CMU-B), 02-161 (CMU-B).

32. *Eragrostis unioloides* (Retz.) Nees ex Steud., Syn. Pl. Glumac. 1: 264. 1854; Bor, Grasses of Burma, Ceylon, India and Pakistan: 515. 1960; Backer & Bakh.f, Fl. Java 3: 531. 1968; Lazarides in Dassanayake, Fl. Ceylon, 8: 224. 1994; Chen & Peterson in Wu, Raven & Hong, Fl. China 22: 477. 2006.

Poa unioloides Retz., Obs. Bot. 5: 19. 1788.

Annual or perennial. 10–50 cm high, often compact at the base, base with straw-coloured cataphyll. *Culm* erect or decumbent to stoloniferous, glabrous, smooth, with few nodes, nodes glabrous. *Leaf-sheath* 1–3 cm long, striate, chataceous to membranous, strongly nerved, glabrous, in the lower internodes shorter than the upper ones, often purplish when young. *Blade* up to 5 cm by 1–2.5 mm, flat, involute, acute, scaberulous on the upper surface, strongly nerved with primary veins and numerous secondary ones. *Ligule* a ciliolate membranous. *Collar* glabrous. *Auricle* pilose. *Inflorescence* a terminal panicle, up to 20 cm long though often much shorter, 2–5 cm wide, loose to open or contracted. *Peduncle* glabrous, strongly striate; *Axis* glabrous, strongly striate; branches and pedicels compressed or triquetrous, glabrous, scaberulous on the angles or smooth; the primary branches up to 5 cm long. *Spikelet* 4–10 by 3–4 mm, with 10–15 imbricate florets, ovate or ovate-oblong to lanceolate-oblong, laterally compressed, the florets break up from below upwards, with deciduous glumes, lemmas and paleas, the median groove prominent, often pale to dark purple; the rachilla stout, angular, glabrous, smooth. *Glume* subequal, thinly membranous to scarious, 1-nerved, a strongly scabrid keel, acute; lower 1–2 mm long, narrowly lanceolate; upper 1.5–2.5 mm long, thinly membranous, elliptic, acute, muticous, glabrous, with prominent ridged nerves, the lateral nerves distinctly closer to the margins than to the midnerve. *Palea* slightly shorter than its lemma, hyaline, scaberulous-ciliolate on the keels. *Stamens* 2; anther 0.2–0.3 mm long. *Ovary* with feathery stigmata; lodicules 2.

Thailand.— NORTHERN: Mae Hong Son (Ban Huay Hee, Doi Pui, Mae Sa Rieng), Chiang Mai (Chiang Mai University, Doi Chiang Dao Wildlife Sanctuary, Doi Inthanon National Park, Doi Suthep National Park, Doi Saket, Fang, Mae Rim, Praw, Sameung), Lamphun (Khun Tan, Mae Tah), Lampang (Jae Hom National Park, Jae Sawn National Park Headquarter), Phitsanulok; NORTH-EASTERN: Phetchabun (Tung Salang Luang National Park), Loei, Sakon Nakhon (Phu Phan National Park); EASTERN: Chaiyaphum, Nakhon Ratchasima, Si Sa Ket (Kantalarak), Ubon Ratchathani (Khong Chiam); SOUTH-WESTERN: Kanchanaburi (Sai Yok, Sangklaburi), Phetchaburi (Phu Miang), Prachuap Khiri Khan (Hua Hin); CENTRAL: Nakhon Nayok (Muang); SOUTH-EASTERN: Prachin Buri, Chon Buri (Pong Namrawn), Chanthaburi (Makhom), Trat (Ban Saphan Hin, Huay Rang, Koh Chang); PENINSULAR: Ranong (Kaper,

Klong Naka), Surat Thani (Khao Sok), Nakhon Si Thammarat (Chawang), Trang (Thale Sawng Hawng), Satun (Tahpae), Narathiwat (Tak Bai).

Distribution.— India.

Ecology.— Decumbent grass, common on sandy soil in dipterocarp forest and in open area.

Vernacular.— Ya krok nu (หญ้าโครกหนู) (Trat); Ya kho (หญ้าขี้) (Trang); Ya khai pu (หญ้าไผ่), Ya mung kratai (หญ้ารุ่งกระต่าย) (Mae Hong Son); Ya hoi khat (หญ้าฮอยเขียด) (Chiang Mai).

Specimens examined.— *BGO Staff* 4304 (QBG), 5342 (QBG), s.n. (QBG); *P. Chantaranothai & J. Panell* 90/122 (K), 90/715 (K); *G. den Hoed* 134 (K); *Haniff et Nur* 2925 (K); *N. Fukuoka* T-36291 (BKF), T-62173 (BKF); *R. Geesink, P. Hiepto & C. Charoenphol* 7542 (BKF, K); *G.W. Groff* 305 (K); *K. Iwatsuki & N. Fukuoka* T-10379 (BKF); *A.F.G. Kerr* 860 (K), 866 (K), 6879 (K), 11696 (K), 12649 (K), 17620 (K), 18296 (K), 19782 (K); *W.T. Komes* s.n. (BKF); *H. Koyama* T-61011 (BKF), T-61116 (BKF); *Kwanchai* 304 (BKF); *K. Larsen et al.* 1839 (K); *K. Larsen, A.S. Barfod, W. Nanakorn, W. Ueachirakan & P. Sirirugsa* 40844 (BKF); *K. Larsen & S.S. Larsen* 34315 (BKF, K); *K. Larsen, T. Santisuk & E. Warnck* 2424 (BKF, K); *L.B. & E.C. Abbe, T. Smitinand* 9239A (BKF, K); *A. Marcan* 2530 (K), 2592 (K); *J.F. Maxwell* 86-926 (CMU-P), 87-880 (BKF, CMU-P), 89-1 (BKF, CMU-P), 89-1385 (CMU-P), 92-408 (CMU-B), 92-722 (CMU-B), 93-1142 (CMU-B), 93-1205 (CMU-B), 95-844 (BKF, CMU-B), 96-1216 (BKF, CMU-B), 00-432 (BKF, CMU-B), 01-468, 01-517 (CMU-B), 02-413 (BKF, CMU-B), 03-418 (CMU-B); *G. Murata, N. Fukuoka & C. Phengklai* T-17698 (BKF); *G. Murata, K. Iwatsuki, C. Phengklai & C. Charoenphol* T-15400 (BKF); *G. Murata, C. Phengklai, S. Mitsuta, H. Nagamasu & N. Nantasan* T-38187 (BKF), T-49709 (BKF), T-52142 (BKF); *C. Niyomdham & D. Sriboonma* 1554 (BKF, K); *C. Niyomdham* 1655 (K); *C. Niyomdham et al.* 295 (K); *M. Norsangsri* 346 (QBG), 436 (QBG), 442 (QBG), 951 (QBG), s.n. (QBG); *Y. Paisooksantiwatana* 394-80 (CMU-B); *M. Panakool* 398 (CMU-B); *C. Phengkla* i678 (BKF, K); *S. Pinnin, N. Chiwiwat & S. Phusomsaeng* 105 (BKF); *PS.* 1924 (BKF); *Put* 4548 (K); *Rabil* 242 (K); *T. Shimizu, K. Iwatsuki, N. Fukuoka, M. Hutch, D. Chaiglom & A. Nalampoorn* T-11387 (BKF); *T. Shimizu, H. Toyokuni, H. Koyama, T. Yahara & C. Niyomdham* T-21887 (BKF), T-26278 (BKF); *S. Simabamrungwong* 38 (CMU-B); *T. Smitinand* 1368, 1470 (BKF), 1840 (BKF, K), 2241 (BKF), 3025 (BKF), 3654 (BKF), 5526 (BKF); *Snan* 694 (BKF, K); *Th. Sørensen et al.* 5370 (K), 6318 (K); *Th. Sørensen, K. Larsen & B. Hansen* 1406 (BKF), 5370 (BKF), 6318 (K); *P. Suksathan* 1916 (QBG), 2049 (QBG); *J. Supapol* 60 (CMU-P); *P. Suvannakoses* 1903 (BKF); *B. Tantisewie & C. Phengklai* 852 (BKF); *U. Toawichakchaikon* 136 (CMU-B); *C.F. van Beusekom et al.* 3948 (K); *C.F. van Beusekom, R. Geesink, C. Phengklai & B. Wongwan* 3948 (BKF), 4233 (BKF, K); *S. Vessabutr, S. Saairt & M. Norsangsri* 850 (QBG); *L. Williams* 17248 (K).

33. *Eragrostis viscosa* (Retz.) Trin., Mem. Acad. Imp. Sci. St.-Petersbourg. Ser. 6, Sci. Math. 1: 397. 1830; Ridl., Fl. Mal. Pen. 5: 246. 1925; Bor, Grasses of Burma, Ceylon, India and Pakistan: 515. 1960; Lazarides in Dassanayake, Fl. Ceylon, 8: 227. 1994.

Poa viscosa Retz., Obs. Bot. 4: 20. 1786.

Thailand.— SOUTH-WESTERN: Prachuap Khiri Khan; PENINSULAR: Satun.

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *A.F.G. Kerr* 13463 (K), 13721 (K); *K. Larsen* 8414 (K).

34. *Eragrostis zeylanica* Nees & Meyen, Gramineae: 72-73. 1841; Bor, Grasses of Burma, Ceylon, India and Pakistan: 515. 1960; Lazarides in Dassanayake, Fl. Ceylon, 8: 228. 1994.

Thailand.— NORTHERN: Chiang Mai, Nakhon Sawan; NORTH-EASTERN: Loei (Wang Saphung), Udon Thani, Khon Kaen (Muang Phon); EASTERN: Nakhon Ratchasima; SOUTH-EASTERN: Chon Buri, Chanthaburi (Makhamb); PENINSULAR: Surat Thani.

Distribution.— -

Ecology.— Decumbent tufted grass, common in dry deciduous forest and on open sandy soil.

Vernacular.— Ya wai (หญ้าไผ่) (Nakhon Ratchasima).

Specimens examined.— *C.H.* 168 (BKF); *P. Chantaranothai et al.* 808 (K); *A.F.G. Kerr* 2801 (K), 11416 (K); *K. Larsen* 10104 (BKF, K); *C. Phengklai* 655 (BKF); *T. Smitinand* 3061 (K), 3621 (K), 4879 (BKF), 5742 (BKF), 5763 (BKF), 5769 (BKF), 5813 (BKF), 5838 (BKF); *Th. Sørensen et al.* 2073 (K), 2468 (K); *Th. Sørensen, K. Larsen & B. Hansen* 2468 (BKF); *TDBS* 10055 (K).

6. LEPTOCHLOA

P. Beauv., Ess. Agrostogr. 71, pl. 15, f. 1. 1812; Hook.f., Fl. Brit. Ind. 7: 297. 1897; Merr., En. Philipp.: 86. 1925; Ridl., Fl. Mal. Pen. 5: 248. 1925; Bor, Grasses of Burma, Ceylon, India and Pakistan: 516. 1960; Backer & Bakh.f, Fl. Java 3: 535. 1968; Lazarides in Dassanayake, Fl. Ceylon, 8: 297. 1994; Chen & Phillips in Wu, Raven & Hong, Fl. China 22: 469. 2006.

1. *Leptochloa chinensis* (L.) Nees, Syll. Pl. Nov. 1: 4. 1824; Hook.f., Fl. Brit. Ind. 7: 299. 1897; Merr., En. Philipp.: 86. 1925; Ridl., Fl. Mal. Pen. 5: 249. 1925; Bor, Grasses of Burma, Ceylon, India and Pakistan: 516. 1960; Backer & Bakh.f, Fl. Java 3: 536. 1968; Lazarides in Dassanayake, Fl. Ceylon, 8: 298. 1994; Chen & Phillips in Wu, Raven & Hong, Fl. China 22: 470. 2006.

Poa chinensis L., Sp. Pl.: 69. 1753.

Thailand.— NORTHERN: Mae Hong Son (Khun Yuam), Chiang Mai (Chiang Mai University, Fang, Tham Chiang Dao), Kamphaeng Phet, Nakhon Sawan; NORTH-EASTERN: Udon Thani, Nakhon Phanom, Khon Kaen; SOUTH-WESTERN: Kanchanaburi, Phetchaburi; CENTRAL: Chai Nat, Ang Thong, Saraburi; PENINSULAR: Songkhla (Had Yai).

Distribution.— Widespread in Asia and Africa.

Ecology.— In marshy habitats and rice fields.

Vernacular.— Ya dok khao (หญ้าดอกขาว) (Ang Thong).

Specimens examined.— *T. Boonkird* 20 (BK); *G. den Hoed* 140 (K); *G. den Hoed & A. Kostermans* 684 (K); *F. Floto* 7601 (K); *C.W. Heckman* 113 (K); *A.F.G. Kerr* 3816 (K), 7955 (K), 11091 (BK, K), 11160 (BK), 11161 (BK), 19638 (K), 21380 (K); *S. Laegaard* 21749 (K), 21889 (K); *K. Larsen et al.* 2272 (K); *K. Larsen & S.S. Larsen* 34246 (BKF, K); *J.F. Maxwell* 84-506 (BKF); *Nur* 43701 (K); *P. Palee* 490 (BKF); *M. Panakool, P. Tepwitukgit & O. Petmitr* 33 (BKF); *Put* 2586 (BK, K), 2597 (BK, K); *T. Shimizu, M. Hutoh & D. Chaiglom* T-8686 (BKF); *T. Smitinand* 4272 (BKF, K), 5956 (BKF, K); *Th. Sørensen et al.* 1906 (K), 3385 (K), 5930 (K); *Th. Sørensen, K. Larsen & B. Hansen* 1165 (BKF), 1427 (BKF); *S. Sutheesorn* 348 (BK), 745 (BK); *TDBS* 7601 (BKF, K).

2. *Leptochloa malabarica* (L.) Veldkamp, Blumea 19: 64. 1971.

Poa malabarica L., Sp. Pl.: 69. 1753.

Thailand.— NORTHERN: Lampang.

Distribution.— -

Ecology.— In open area.

Vernacular.— -

Specimens examined.— *J.F. Maxwell* 96-1341 (BKF).

3. *Leptochloa malayana* (C.E. Hubb.) Jansen ex Veldkamp, Blumea 19: 64. 1971.

Diplachne malyana C.E. Hubb., Bull. Misc. Inform., Kew 1934: 106. 1934.

Thailand.— NORTHERN: Kamphaeng Phet; SOUTH-EASTERN: Chanthaburi, Trat; PENINSULAR: Surat Thani, Trang.

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *A.F.G. Kerr* 13075 (K), 15978 (K), 19028 (K), 21521 (K); *K. Larsen* 9783 (K), 10038 (K); *K. Larsen, T. Smitinand & E. Warncke* 1686 (K); *K. Larsen et al.* s.n. (K); *Haniff et Nur* 470 (K); *T. Smitinand* 1338 (K), 1843 (K); *T. Smitinand & H.St. John* 6855 (K); *TDBS* 10063 (K), 10065 (K).

4. *Leptochloa neesii* (Thwaites) Benth., Jour. Linn. Soc. Bot. 19: 108. 1881; Bor, Grasses of Burma, Ceylon, India and Pakistan: 517. 1960; Backer & Bakh.f, Fl. Java 3: 535. 1968; Lazarides in Dassanayake, Fl. Ceylon, 8: 299. 1994.

Cynodon neesii Thwaites, Enum. Pl. Zeyl.: 371. 1864.

Thailand.— SOUTH-WESTERN: Ratchaburi.

Distribution.— India, Sri Lanka, Peninsular Malaysia, Indonesia, Australia.

Ecology.— -

Vernacular.— -

Specimens examined.— *K. Larsen* 1594 (K).

5. *Leptochloa panicea* (Retz.) Ohwi, Bot. Mag. Tokyo 55: 311. 1941; Bor, Grasses of Burma, Ceylon, India and Pakistan: 517. 1960; Backer & Bakh.f, Fl. Java 3: 536. 1968; Lazarides in Dassanayake, Fl. Ceylon, 8: 300. 1994; Chen & Phillips in Wu, Raven & Hong, Fl. China 22: 470. 2006.

Poa panicea Retz., Obs. Bot. 3: 11. 1783.

Thailand.— NORTHERN: Chiang Mai, Phitsanulok; NORTH-EASTERN: Loei; EASTERN: Nakhon Ratchasima; SOUTH-WESTERN: Ratchaburi; CENTRAL: Krung Thep Maha Nakhon (Bang Khen, Wat Samphraya); SOUTH-EASTERN: Chanthaburi (Pong Nam Rawn); PENINSULAR: Surat Thani, Songkhla (Rattapum).

Distribution.— Asia and Africa.

Ecology.— In dry and sandy soil as a roadside weed.

Vernacular.— Ya nok (หญ้าหนุ่ย) (Krung Thep Maha Nakhon).

Specimens examined.— *G. den Hoed & A. Kostermans* 684 (K); *A.F.G. Kerr* 6766 (K); *S. Laegaard & M. Norsangsri* 21877 (K); *K. Larsen et al.* 391 (K), 1230 (K); *G. Murata* T-17237 (BKF); *Y. Paisooksantivatana* Y295-80 (BK); *PS.* 2118 (BKF); *T.B. Ryves* KS95/008 (K); *T. Smitinand* 3137 (BKF, K), 3420 (BKF), 4559 (BKF), 5410 (BKF); *Th. Sørensen et al.* 1941 (K); *Th. Sørensen, K. Larsen & B. Hansen* 2000 (BKF, K); *J. Supapol* 195 (CMU-P); *K. Suvatabhandhu* 427 (BK); *K. Suvatabhandhu* 533 (BK).

6. *Leptochloa tectoneticola* (Backer) Jansen ex Veldkamp, Blumea 19: 64. 1971.

Diplachne tectoneticola Backer, Bull. du Jard. Bot. Buitenzorg, ser. 3, 2: 326. 1920.

Thailand.— NORTH-EASTERN: Loei; SOUTH-WESTERN: Kanchanaburi, Phetchaburi; PENINSULAR: Satun.

Distribution.—

Ecology.—

Vernacular.—

Specimens examined.— *A.F.G. Kerr* 13121 (K), 13786 (K), 20633 (K); *T. Smitinand* 6114 (K).

7. MYRIOSTACHYA

(Benth.) Hook.f., Fl. Brit. Ind. 7: 327. 1897; Bor, Grasses of Burma, Ceylon, India and Pakistan: 518. 1960; Lazarides in Dassanayake, Fl. Ceylon, 8: 317. 1994.

Eragrostis sect. *Myriostachya* Benth. Jour. Linn. Soc. Bot. 19: 117. 1881.

1. *Myriostachya wightiana* (Nees ex Steud.) Hook.f., Fl. Brit. Ind. 7: 327. 1897; Ridl., Fl. Mal. Pen. 5: 245. 1925; Bor, Grasses of Burma, Ceylon, India and Pakistan: 518. 1960; Lazarides in Dassanayake, Fl. Ceylon, 8: 317. 1994.

Leptochloa wightiana Nees ex Steud., Syn. Pl. Glumac. 1: 209. 1854.

Thailand.— PENINSULAR: Phangnga.

Distribution.— Southern India, Sri Lanka, coast of Bengal, Laos, Cambodia, Vietnam, Peninsular Malaysia.

Ecology.— -

Vernacular.— -

Specimens examined.— *C. Chermisrivathana* 1312 (BKF, BK).

8. NEYRAUDIA

Hook.f. Fl. Brit. Ind. 7: 305. 1897; Bor, Grasses of Burma, Ceylon, India and Pakistan: 518. 1960; Backer & Bakh.f, Fl. Java 3: 536. 1968; Chen & Phillips in Wu, Raven & Hong, Fl. China 22: 459. 2006.

Perennial, reed-like grass, lacking stolons, rhizotomous, flowering culms erect, caespitose, glabrous. *Leaf-sheaths* shorter than the internode, with smooth margins, not ciliate. *Blades* cauline, linear, flat sometimes narrow and subinvolute, tapering to a filiform apex, not pungent. *Ligules* a line of hairs, without auricle. *Inflorescences* a panicle, exserted, main axis smooth, primary branches spreading from main axis, terminating in a spikelet, with appressed secondary branches; pedicels glabrous, disarticulate above glume, lemma and palea falling separately. *Callus* glabrous. *Spikelets* solitary, laterally compressed. Florets, sterile florets present below fertile florets. *Glumes* shorter than spikelets, unequal, smooth glabrous; lower glume 1-nerved; upper glume shorter than lower lemma, awnless, 1-nerved, *Rachillas* pronounced between florets. *Lemmas* central awn recurved, lateral awn setaceously bidentate, hairy, long villous, smooth, 3-nerved, membranous, with hairy nerves. *Paleas* glabrous, not extending into awns, membranous, margins not enfolding fruit, smooth. *Lodicules* acuminate. *Stamens* 3; anther yellow. *Ovary* with 2 stigmata. *Fruits* a caryopsis terete.

1. **Neyraudia arundinacea** (L.) Henr., Med. Rijks Herb. 58: 8. 1929; Bor, Grasses of Burma, Ceylon, India and Pakistan: 518. 1960; Chen & Phillips in Wu, Raven & Hong, Fl. China 22: 460. 2006.

Aristida arundinacea L., Mant. 2: 186. 1771.

Thailand.— NORTHERN: Chiang Mai (Doi Inthanon National Park); NORTH-EASTERN: Loei (Phu Kradeung Pha Mak Dook); EASTERN: Nakhon Ratchasima (Pak Thong Chai); SOUTH-EASTERN: Chon Buri; PENINSULAR: Nakhon Si Thammarat (Khi Ri Wong).

Distribution.— -

Ecology.— Tufted grass, common in open area and scattered in savannah, sometimes scattered in dry dipterocarp forest.

Vernacular.— -

Specimens examined.— *F. Konta* & *S. Khao-iem* 10985 (BKF); *C. Phengnaren* 644 (BKF); *PS* 1786 (BKF); *T. Smitinand* 2082 (BKF), 3693 (BKF).

2. **Neyraudia madagascariensis** (Kunth) Hook.f., Fl. Brit. Ind. 7: 305. 1897.

Arundo madagascariensis Kunth, Révis. Gramin. 2: 273. 1830.

Thailand.— NORTHERN: Chiang Mai; PENINSULAR: Surat Thani, Krabi, Songkhla, Pattani, Yala.

Distribution.—

Ecology.—

Vernacular.—

Specimens examined.— *V. Chamchumroon* 1206 (BKF); *A.F.G. Kerr* 1639 (K), 4556 (K), 8000 (K), 8930 (K), 13365 (K), 15029 (K), 18218 (K), 18892 (K), s.n. (K); *S. Sangkhachand* 1393 (K).

3. **Neyraudia reynaudiana** (Kunth) H.Keng ex Hitchc., Amer. Bot. 21: 131. 1934; Bor, Grasses of Burma, Ceylon, India and Pakistan: 518. 1960; Backer & Bakh.f, Fl. Java 3: 536. 1968; Chen & Phillips in Wu, Raven & Hong, Fl. China 22: 460. 2006.

Arundo reynaudiana Kunth, Rév. Gram. 1: 275. 1830.

Rhizomes short. *Culms* erect, internodes solid, filled with soft pith, leaves cauline. *Leaf-sheaths* enclosed the culms. *Blades* flattened, abaxial pubescent, deciduous at the ligule, 1.3–1.8 by 30–40 cm, surface smooth, apex filiform. *Ligules* a fringe of brownish hairs. *Collars* glabrous. *Auricles* pubescent. *Inflorescences* a panicle, open, lanceolate, dense, 45–60 cm long, primary panicle branches profusely divided, branches angular, scaberulous. *Peduncles* 7–15 cm long. *Axis* 30–50 cm long. *Spikelets* solitary, comprising 4–6 fertile florets, with diminished florets at the apex, the lowest floret sterile, fertile florets pedicelled, oblong, laterally compressed, 0.5 mm long, breaking up below each fertile florets at maturity, sterile florets without significant palea, persisting on inflorescence; floret callus pubescent. *Glumes* persistent, similar, subequal, shorter than spikelet, similar to fertile lemma in texture; lower glume lanceolate, 0.3–0.5 by 2.8–3.2 mm, membranous, 1-keeled, 1-veined, apex acuminate, sometimes cuspidate; upper glume lanceolate, 0.3–0.5 by 3–3.2, membranous, 1-keeled, 1-veined, apex acuminate. *Lemmas* of sterile floret similar to fertile lemma, lanceolate, 0.5–1 by 3.5–4 mm, apex acute to acuminate, not prolong to awn, membranous, 1-keeled, 3-veined; fertile lemma lanceolate to elliptic, 1–1.5 by 5–6.5 mm, membranous, 1-keel, 3-veined, lateral veins pilose with creamy white hairs, 1.5–2.5 mm long, margins

slightly enclosed, apex acute and prolong to awn, ca. 1–1.5 mm long. *Paleas* 2-keeled, 2-veined, keels scaberulous, scarious, apex acute, margine enfolded fruit. *Stamens* 3; anther oblong, 1.5–1.8 mm long, yellow. *Ovary* minute, ca. 0.5 mm long; stigma feathery; lodicules 2. *Grain* oblong, 0.2–0.5 by 1.5–2 mm long, reddish brown.

Thailand.— NORTHERN: Chiang Mai (Doi Inthanon National Park, Chiang Dao, Doi Suthep National Park), Tak (Doi Mussur), Phitsanulok (Phu Rom Rot); NORTH-EASTERN: Loei (Phu Luang Wildlife Sanctuary, Phu Kradeung), Sakon Nakhon; EASTERN: Nakhon Ratchasima (Sakaerat Training Camp); SOUTH-WESTERN: Kanchanaburi; CENTRAL: Nakhon Nayok (Khao Yai National Park); SOUTH-EASTERN: Chon Buri (Khao Keaw), Chanthaburi; PENINSULAR: Chumphon (Patil), Krabi (Khaopra-Bangkram), Nakhon Si Thammarat (Khao Khao Thung Song), Satun, Songkhla (Had Yai).

Distribution.— Eastern India, China, Japan, Myanmar, Peninsular Malaysia.

Ecology.— Erect tufted grass, common in open area and in mountain slope.

Vernacular.— Phong (ພຶງ), Lao (ໄພັງ) (General).

Specimens examined.— *K. Bunchuai* 1332 (BKF, K); *D. Bunpheng* 956 (BKF, K); *C. Chantharaprasong* 12915 (BKF); *A.F.G. Kerr* 11340 (K); *F. Konta & C. Phengkklai* 3910 (BKF); *K. Larsen* 9266 (K); *S. Laegaard & M. Norsangsri* 21610 (K); *K. Larsen, S.S. Larsen, A.S. Barfod, W. Nanakorn, W. Ueachirakan & P. Sirirugsa* 41160 (BKF), 41823 (BKF); *K. Lazarides* 7485 (K); *J.F. Maxwell* 86-216 (CMU-P), 86-218 (BKF); *G. Murata, K. Twatsuki, C. Phengkklai & C. Charoenphol* T-15800 (BKF); *G. Murata, N. Fukuoka & C. Phengkklai* T-16461 (BKF); *C. Niyomdham et al.* 2167 (BKF); *Y. Paisooksantivatana* s.n. (BK); *C. Phengkklai* 413 (BKF, K), 530 (BKF); *T. Santisuk* 252 (BKF); *T. Shimizu, N. Fukuoka & A. Nalampoon* T-8157 (BKF); *T. Shimizu, K. Iwatsuki, N. Fukuoka, M. Hutch, D. Chaiglom & A. Nalampoon* T-1154 (BKF); *T. Shimizu, H. Toyokuni, H. Koyama, T. Yahara & T. Santisuk* T-19782 (BKF); *T. Smitinand* 1797 (BKF), 3693 (BKF), 4429 (BKF), 7043 (BKF); *Th. Sørensen, K. Larsen & B. Hansen* 1392 (BKF, K), 1394 (K), 6028 (BKF, K); *J. Supapol* 301 (CMU-P); *P. Suvarnakoses* 2043 (K); *M. Tagawe, K. Iwatsuki & N. Fukuoka* T-2578 (BKF).

9. SPOROBOLUS

R.Br., Prodr.: 169. 1810; Hook.f., Fl. Brit. Ind. 7: 247. 1897; Wu & Phillips in Wu, Raven & Hong, Fl. China 22: 482. 2006.

1. *Sporobolus coromandelianus* (Retz.) Kunth, Révis. Gramin. 1: 68. 1829; Wu & Phillips in Wu, Raven & Hong, Fl. China 22: 483. 2006.

Agrostis coromandeliana Retz. Obs. Bot. 4: 19. 1786.

Thailand.— SOUTH-WESTERN: Prachuap Khiri Khan.

Distribution.—

Ecology.—

Vernacular.— -

Specimens examined.— *A.F.G. Kerr* 10928 (K).

2. *Sporobolus diandrus* (Retz.) P. Beauv., Ess. Agrostogr. 26: 147, 178. 1812; Hook.f., Fl. Brit. Ind. 7: 247. 1897; Merr., En. Philipp.: 80. 1925; Ridl., Fl. Mal. Pen. 5: 244. 1925; Backer & Bakh.f, Fl. Java 3: 539. 1968; Wu & Phillips in Wu, Raven & Hong, Fl. China 22: 484. 2006.

Agrostis diandra Retz., Obs. Bot. 5: 19. 1789.

Thailand.— NOUTHERN: Chiang Mai; SOUTH-WESTERN: Kanchanaburi; CENTRAL: Krung Thep Maha Nakhon; PENINSULAR: Chumphon, Surat Thani, Satun, Songkhla.

Distribution.—

Ecology.—

Vernacular.— -

Specimens examined.— *A.F.G. Kerr* 843 (K), 4422 (K), 10710 (K), 11260 (K), 11314 (K), 13699 (K), 19657 (K); *M. Lazarides* 7429 (K); *A. Marcan* 2102 (K); *Th. Sørensen, K. Larsen & B. Hansen* 3691 (K); *L. Williams* 17265 (K).

3. *Sporobolus fertilis* (Steud.) Clayton, Kew Bull. 19(2): 291. 1965; Wu & Phillips in Wu, Raven & Hong, Fl. China 22: 484. 2006.

Agrostis fertilis Steud., Syn. Pl. Glumac. 1: 170. 1854.

Thailand.— NORTHERN: Chiang Mai; SOUTH-EASTERN: Prachin Buri.

Distribution.—

Ecology.—

Vernacular.— -

Specimens examined.— *K. Larsen* 10242 (K); *Th. Sørensen, K. Laesen & B. Hansen* 5441 (K).

4. *Sporobolus humilis* J. Presl, Reliq. Haenk. 1: 241. 1830. HT: Philippines: Luzon, *Haenke* s.n., (PR; IT: MO, US (fragm.)).

Thailand.—

Distribution.—

Ecology.—

Vernacular.— -

Specimens examined.—

5. *Sporobolus indicus* (L.) R.Br., Prodr.: 170. 1810; Hook.f., Fl. Brit. Ind. 7: 247. 1897.

Agrostis indica L., Sp. Pl.: 63. 1753.

Thailand.— NORTHERN: Chiang Mai, Phitsanulok; SOUTH-WESTERN: Kanchanaburi; PENINSULAR: Chumphon.

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *A.F.G. Kerr* 2754 (K), 6477 (K); *S. Laegaard & M. Norsangsri* 21633 (K); *K. Larsen, T. Smitinand & E. Warncke* 634 (K); *Th. Sørensen, K. Larsen & B. Hansen* 5709 (K); *C.F. van Beusekom, R. Geesink, C. Phengklai & B. Wongwan* 3475 (K).

6. *Sporobolus kerrii* Bor, Kew Bull.: 252. 1949.

Thailand.— NORTH-EASTERN: Loei (Phu Krading, Phu Luang).

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *D. Bunpheng* 618 (K), 960 (K), 961 (K); *E. Hennipman* 3561 (K); *A.F.G. Kerr* 20049 (K); *T. Smitinand* 2061 (K), 2063 (K), 2128 (K), 2472 (K); *Th. Sørensen, K. Larsen & B. Hansen* 2311 (K), 6166 (K); *M. Tagawa, K. Iwatsuki & N. Fukuoka* T-560 (K); *C.F. van Beusekom, R. Geesink, C. Phengklai & B. Wongwan* 4587 (K); *C.F. van Beusekom & C. Phengklai* 3105 (K).

7. *Sporobolus tetragonus* Bor, Kew Bull.: 251. 1949.

Thailand.— NORTHERN: Chiang Mai; NORTH-EASTERN: Loei; SOUTH-WESTERN: Kanchanaburi.

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *A.F.G. Kerr* 19762 (K); *T. Smitinand* 2011 (K); *Th. Sørensen, K. Larsen & B. Hansen* 3179 (K), 4598 (K).

8. *Sporobolus virginicus* (L.) Kunth, Révis. Gramin. 1: 67. 1829; Hook.f., Fl. Brit. Ind. 7: 249. 1897; Wu & Phillips in Wu, Raven & Hong, Fl. China 22: 483. 2006.

Agrostis virginica L., Sp. Pl.: 63. 1753.

Thailand.— SOUTH-WESTERN: Ratchaburi, Prachuap Khiri Khan; SOUTH-EASTERN: Prachin Buri; PENINSULAR: Surat Thani.

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *A.F.G. Kerr* 8975 (K), 12954 (K), 12957 (K); *K. Larsen, T. Smitinand & E. Warncke* 1215 (K), 1309 (K); *A. Marcan* 2445 (K), 2474 (K).

9. *Sporobolus wallichii* Munro ex Trimen, *J. Bot.* 27: 171. 1889; Hook.f., *Fl. Brit. Ind.* 7: 248. 1897; Wu & Phillips in Wu, Raven & Hong, *Fl. China* 22: 484. 2006.

Thailand.— SOUTH-WESTERN: Kanchanaburi; CENTRAL: Saraburi (Muak Lek).

Distribution.— -

Ecology.— -

Vernacular.— -

Specimens examined.— *A.F.G. Kerr* 9134 (K), 9136 (K); *A. Marcan* 2337 (K).

9. TRIPOGON

Roem. & Schult., *Syst. Veg.* 2: 34, 600. 1817; Hook.f., *Fl. Brit. Ind.* 7: 285. 1897; Bor, *Grasses of Burma, Ceylon, India and Pakistan*: 519. 1960; Backer & Bakh.f, *Fl. Java* 3: 534. 1968; Lazarides in Dassanayake, *Fl. Ceylon*, 8: 443. 1994; Chen & Phillips in Wu, Raven & Hong, *Fl. China* 22: 466. 2006.

1. *Tripogon larsenii* Bor, *Dansk Bot. Ark.* 23: 470. 1968. Type: Thailand, Phitsanulok, *Larsen, Smitinand & Warncke* 1012 (holotype AAU; isotype K).

Thailand.— NORTHERN: Phitsanulok.

Distribution.— Laos, Cambodia, Vietnam.

Ecology.— On open sandy stone plateau.

Vernacular.— -

Specimens examined.— *K. Larsen, T. Smitinand & E. Warncke* 1012 (BKF, K); *T. Smitinand* 11675 (BKF, K).

2. *Tripogon siamensis* Bor, *J. Indian Bot. Soc.* 42: 14, t. 3. 1963; Type: Thailand, Loei, Phu Kradeng, *Smitinand* 6074 (holotype K).

Thailand.— NORTH-EASTERN: Loei; EASTERN: Ubon Ratchathani.

Distribution.— Laos, Cambodia, Vietnam.

Ecology.— Common grass in dry deciduous dipterocarp forest.

Vernacular.— -

Specimens examined.— *T. Smitinand* 6074 (K), 11673 (K).

3. *Tripogon trifidus* Munro ex Hook.f., *Fl. Brit. Ind.* 7: 286. 1897; Bor, *Grasses of Burma, Ceylon, India and Pakistan*: 524. 1960; Chen & Phillips in Wu, Raven & Hong, *Fl. China* 22: 467. 2006. Type: India, Meghalaya, *Griffith HEIC* 6634 (lectotype K; isolectotype L).

Thailand.— NORTHERN: Chiang Mai; NORTH-EASTERN: Loei; EASTERN: Chaiyaphum, Nakhon Ratchasima, Si Sa Ket.

Distribution.— India, Laos, Cambodia, Vietnam.

Ecology.— Erect grass on open area in deciduous dipterocarp forest and in savannah.

Vernacular.— -

Specimens examined.— *P. Chantaranonthai et al.* 90/641 (K); *A.F.G. Kerr* 6694 (K, BK); *S. Laegaard & M. Norsangsri* 21668 (K), 21730 (K); *K. Larsen, S.S. Larsen, I Nielsen & T. Santisuk* 31828 (BKF, K); *J.F. Maxwell* 76-518 (BK); *C. Phengkklai* 476 (K); *T. Shimizu, H. Koyama & A. Nalampoon* T-10085 (BKF); *C.F. van Beusekom & C. Charoenphol* 1831 (K).

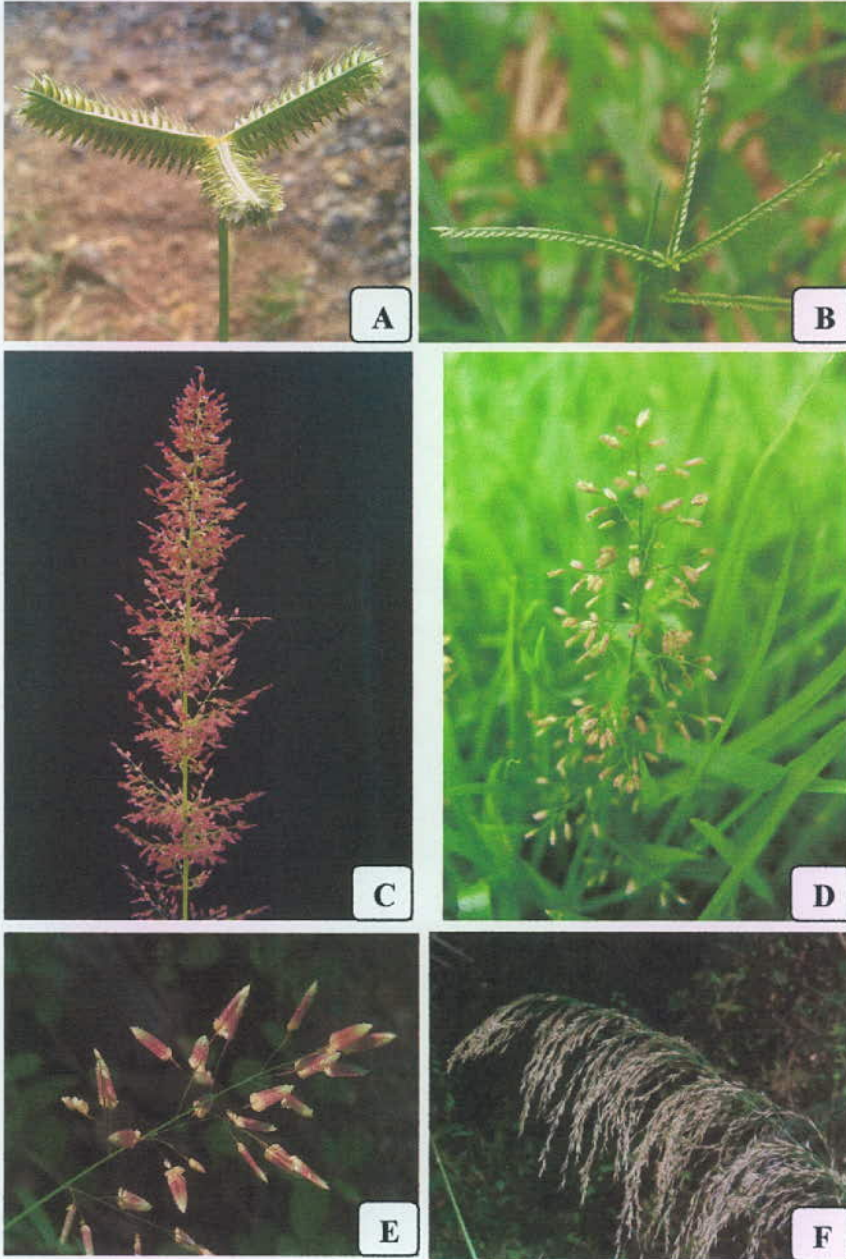


Figure 6: A) *Dactyloctenium aegyptium*
 B) *Eleusine indica*
 C) *Eragrostis japonica*
 D) *Er. tenella*
 E) *Er. unioloides*
 F) *Neyraudia reynaudiana*.

INDIGOFERA nom. cons.

L., Sp. Pl.: 751. 1753; Benth. & Hook.f., Gen. Pl. 1: 494. 1865; Baker in Hook.f., Fl. Brit. Ind. 2: 92. 1876; Gagnep. Fl. Gén. I.-C. 2: 422. 1916; Hutch., Gen. Fl. Pl. 1: 400. 1964; J.B. Gillett, Pl. Trop. E. Afr., Leg. Pap. 1: 212. 1971; Pohill in Pohill & Raven, Adv. Legum. Syst. 289. 1981; de Kort & G. Thijssse, Blumea 30: 89. 1984. Lectotype: *I. tinctoria* L. Type species selected by Britton & Brown: 371 (1913).

Sphaeridiophorum Desv., J. Bot. 1: 125. 1813. Type species: *S. linifolium* (L.) Desv.

Hemospadon Endl., Flora 15(2): 385. 1832. Type species: *H. pilosus* Engl.

Amecarpus Benth. in Lindl., Veg. Kingd.: 554. 1846, *nom nud.*

Acanthonotus Benth. in Benth. & Hook., Niger Fl.: 293. 1849. Type species: *A. echinathus* (Willd.)

Benth.

1. Indigofera aralensis Gagnep., Not. Syst. 3: 197. 1914 & Fl. Gén. I.-C. 2: 436. 1916; de Kort & G. Thijssse, Blumea 30(1): 109. 1984; Thuân, Phon & Niyomdham, Fl. C.L.V. 23: 85. 1987. Type: Cambodia, Samrong Tong, Mt. Aral, *Pierre* 998 (holotype P!; isotypes K!, L!, SING!, US!).

Shrubs 1–5 m high; twigs densely hairy. *Leaves* imparipinnate, alternate; petioles (5–) 7–10 mm long; stipules separate or connate, lanceolate, 9–13 by 2–2.5 mm, caducous; rachis up to 30 cm long. *Leaflets* 7–21 up to 75 in fruit, opposite-subopposite, sometimes alternating in the lower or middle part of rachis; petiolules 1–1.5 mm long; stipels narrowly triangular to linear, 1–1.5 mm long, caducous; blade oblong, (15–) 35–50 by (5–) 10–16 mm, apex acute-emarginate, mucro *ca.* 0.5 mm long, base rounded, margin hairy; upper surface hairy with equally and unequally long arms; lower surface hairy with mostly very unequally long arms; secondary veins 8–10-paired, anastomosing. *Racemes* 4–7 cm long, hairy; bracts triangular, 6–7 by 1 mm. *Pedicels* 2–3.5 mm long, hairy. *Calyx tube* 1.5–2 mm long; lobes triangular 1–1.5 by 1–1.5 mm. *Corolla* pinkish; standard ovate or elliptic to slightly oblong, 17–20 by 8–9 mm, apex acute, base cuneate, margin ciliate, densely hairy outside, glabrous inside; wings oblong, 10–12 by 2.5–3.5 mm, apex acute, base oblique, margin entire or ciliate at the tip; keel 19–20 by 3–3.5 mm, apex acute, base attenuate, margin ciliate, glabrous outside and hairy the tip, glabrous inside, lateral pocket absent. *Staminal tube* 15–16 mm long; anthers 1–1.5 by 0.5–0.7 mm, lacking apiculate at the tip, with a tufted hairs at base. *Ovary* densely hairy with 12–14 ovules. *Pods* cylindrical, 4–5 by 0.4–0.5 cm, hairy. *Seeds* oblong, 2.5–3 by 2 mm, yellowish, shiny.

Laos.-

Distribution.- Cambodia, Thailand, Vietnam.

Ecology.- Dry dipterocarp forest. Flowering March-April.

2. Indigofera caloneura Kurz, J. Asiat. Soc. Bengal. 42(2): 229. 1874; Baker in Hook.f., Fl. Brit. Ind. 2: 93. 1876; Kurz, For. Fl. Br. Burma 1: 360. 1877; de Kort & G. Thijssse, Blumea 30(1): 112, fig. 3. 1984; Thuân, Phon & Niyomdham, Fl. C.L.V. 23: 67. 1987; Sanjappa, Reinwardtia 10(2): 218. 1985. Type: Myanmar, *Kurz* 2124 (K, CAL).

I. oblonga Craib, Bull. Misc. Inform., Kew 1914: 6. 1914 & Fl. Siam. Enum. 1(3): 379. 1928; Gagnep., Fl. Gén. I.-C. 2: 440. 1916. Type: Thailand, Doi Nang Keo, *A.F.G. Kerr* 2524 (BM!, E!, K!).

Shrubs 1–3 m high; twigs with very unequally long arms. *Leaves* unifoliate, alternate; petioles 1–1.7 cm long, densely hairy; stipules linear to narrowly triangular, 4–8 by 1 mm, apex acuminate, margin entire, densely hairy outside, glabrous inside; petiolules 3–5 mm long; stipels linear to narrowly triangular, 2–6 by 0.5 mm, apex acuminate; blade ovate to broadly ovate, 11–14 (–25) by 5–(8–13) cm, apex acute with mucro 2 mm long, base obtuse, margin entire; upper surface glabrous; lower surface densely hairy, unequally long arms; secondary veins 19–25-paired. *Racemes* (8–) 15–20 cm long, densely hairy; bract triangular, 3–5 mm long, hairy outside, glabrous inside, apex acuminate. *Pedicels* 1.5–2 mm long, densely hairy. *Calyx tube* 1.5–2 mm long; lobes triangular, 0.5–1.5 by 0.5–1 mm, apex acute, margin hairy, hairy outside, glabrous inside. *Corolla* creamy white; standard broadly ovate to orbicular, 8–10 by 7–8 mm, apex obtuse or retuse, base rounded, margin entire, densely hairy outside, glabrous inside; wings oblong to slightly obovate, 5–6.5 by 2.5–3 mm, claw 0.5–1 mm long, apex rounded, base oblique, margin ciliate, densely hairy, glabrous inside; keel ovate, 8–10 by 2.5–3 mm, base oblique, margin ciliate, densely hairy outside, glabrous

inside. *Staminal tube* 7-8 mm long; anthers 0.5 by 0.5 mm with a tufted hairs at base. *Ovary* glabrous with 10-15 ovules. *Pods* oblong, 4-5 cm long, curved at apex, densely hairy. *Seeds* 2 by 1.5 mm, glabrous, shiny.

Laos.-

Distribution.- Myanmar, Thailand, Vietnam

Ecology.- Open areas, dry dipterocarp, mixed deciduous and open evergreen forests, 1000-1100 m.

3. *Indigofera cassioides* Rottler ex DC., Prodr. 2: 225. 1825; Ali, Bot. Notis. 111(3): 569. 1958; de Kort & Thijssse, Blumea 30(1): 113. 1984; Thuân, Phon & Niyomdham, Fl. C.L.V. 23: 86. 1987; Sanjappa, Reinwardtia 10(2): 219. 1985. Type: India, Nilgiry hills, *Leschenault* 31 (holotype G-DC; isotype P).

I. elliptica Roxb., [Hort. Beng.: 57. 1814, *nom. nud.* ex]; Fl. Ind. 3: 380. 1832; Kurz, For. Fl. Br. Burma 1: 360. 1877; Craib, Fl. Siam. Enum. 1(3): 377. 1928.

I. puchella Roxb., [Hort. Beng.: 57. 1814, *nom. nud.* ex]; Baker in Hook.f, Fl. Brit. Ind. 2: 101. 1987.

I. violacea Roxb., Fl. Ind. 3: 380. 1832; Wall., Cat. 5479A, B (K!) (except specimen on the right handside).

I. arborea Roxb., Fl. Ind. 3: 381. 1832; Wall., Cat. 5478A, B (K!).

I. verrucosa Grah. in Wall., Cat. 5469 (K!), *nom. nud.*

Shrubs 1-2 m high; twigs sparsely hairy with unequally long arms. *Leaves* imparipinnate, alternate; petioles 20-25 mm long; stipules narrowly triangular, 2-5 by 0.5-1 mm; rachis 10-15 cm long. *Leaflets* 15-21, opposite-subopposite, sometimes a few alternating at rachis; petiolules 3-4 mm long, densely hairy; stipels linear 0.5 mm long; blade rounded or elliptic, 25-28 by 15-20 mm, apex rounded or emarginated; mucro 0.5 mm long, margin entire, base rounded; both surfaces densely hairy; secondary veins 10-11-paired. *Racemes* 5-10 cm long; bract 2-4 by 1.5-2 mm, apex acuminate, margin ciliate, densely hairy outside, glabrous inside. *Pedicels* 1.5-2 mm long, densely hairy. *Calyx tube* 2 mm long; lobes 2 by 1 mm, apex acute, margin ciliate, densely hairy outside, glabrous inside. *Corolla* pink; standard elliptic 10-12 by 6-7 mm, apex rounded or emarginate, margin ciliate, glabrous somewhat sparsely hairy outside, glabrous inside, wings oblong 10 by 2-3.5 mm, apex rounded, base oblique, margin ciliate; keel 10-11 by 3 mm, base attenuate, margin ciliate; lateral pocket 1 mm long. *Staminal tube* 8-9 mm long. *Ovary* glabrous with 11-12 ovules. *Pods* oblong, 30-50 by 3-3.5 mm. *Seeds* 2 by 1.5 mm, glabrous.

Laos.-

Distributon.- India, Myanmar, China, Taiwan, Thailand, Vietnam.

Ecology.- Open savanna, mixed deciduous forest and disturbed dry dipterocarp forests, 1000 m.

4. *Indigofera colutea* (Burm.f.) Merr., Philipp. J. Sc. 19: 355. 1921; Ali, Bot. Notis. 111(3): 548. 1958; Backer & Bakh.f., Fl. Java 1: 590. 1963; de Kort & G. Thijssse, Blumea 30(1): 115. 1984; Thuân, Phon & Niyomdham, Fl. C.L.V. 23: 73. 1987; Sanjappa, Reinwardtia 10(2): 220. 1985. Type: India, Herb. Sloane vol. 95, fol. 185 (BM!).

Galega colutea Burm.f, Fl. Ind.: 172. 1768.

I. viscosa Lam., Encyc. M^rth., Bot. 3: 247. 1789; Baker in Hook.f., Fl. Brit. Ind. 2: 95. 1876; Kurz, J. Asiat. Bengal. 46: 269. 1876; Kanjilal, Kanjilal & Das, Fl. Assam 3: 22. 1938. Type: ?Wall., Cat. 5451 A-G (K!).

Shrubs 0.5-3 m high; twigs densely hairy with unequally long arms. *Leaves* imparipinnate, alternate; petioles 3-5 mm long, densely hairy; stipules narrowly triangular, 8-11 mm long, apex attenuate, margin ciliate; rachis (6-) 10-16 cm long. *Leaflets* 24-37, opposite with a few alternating in lower part of rachis; petiolules 0.5-1 mm long, densely hairy; stipels absent; blade oblong, 15-18 by 3-5 mm, apex obtuse, mucro 0.5 mm long, base rounded, margin hairy; both surfaces densely hairy; secondary veins indistinct. *Racemes* (9-) 15-25 cm long, densely hairy; bract triangular, 8-10 by 1.5 mm, apex acuminate, margin ciliate. *Pedicels* 1.2 mm long, densely hairy. *Calyx tube* 1-1.5 mm long; lobes triangular, 1 by 1-1.5 mm, apex acute, margin ciliate. *Corolla* pink; standard broadly ovate, 8-11 by 6-7 mm, apex acute to emarginate, base obtuse, margin cililate, densely hairy outside, glabrous inside; wings irregularly ligulate, 7-8 by 3-3.5 mm, apex obtuse, base oblique, margin ciliate, hairy at base outside, glabrous inside; keel 7-8 by 3-3.5 mm, base

attenuate, margin ciliate, hairy near margin, glabrous inside; lateral pocket 1.5–2 mm long. Staminal tube 7–8 mm long. Ovary densely hairy or glabrescent with 7–9 ovules. Pods oblong, 25–30 by 2–3 mm, densely hairy. Seeds 1.5–2 by 1.5–2 mm, shiny.

Laos.-

Distribution.- India, China, Myanmar, Vietnam.

Ecology.- Evergreen, hill evergreen and open pine forests.

5. *Indigofera galeoides* DC., Prodr. 2: 225. 1825; Baker in Hook.f., Fl. Brit. Ind. 2: 100. 1876; Kurz, For. Fl. Br. Burma 1: 360. 1877; Gagnep., Fl. Gén. I.-C. 2: 432. 1916; Kanjilal, Kanjilal & Das, Fl. Assam 3: 19. 1938; Backer & Bakh.f., Fl. Java 1: 592. 1963; de Kort & Thijssse, Blumea 30(1): 118. 1984; Thu@n, Phon & Niyomdham, Fl. C.L.V. 23: 87. 1987; Sanjappa, Reinwardtia 10(2): 222. 1985; Huang & Ohashi, Fl. Taiwan 3: 296. 1993. Type: Sri Lanka (1823), *Leschenault* s.n. (G-DC, L microfiche!).

I. finlaysoniana Grah. ex Ridl., Fl. Mal. Pen. 1: 581. 1922. Type: *Wallich* 5488 (K!).

I. uncinata Roxb., [Hort Beng.: 57. 1814, *nom. nud.* ex]; Craib, Fl. Siam. Enum. 1: 382. 1928. Type: I.c., Roxb. 2331 (K).

Shrubs 1–2 m high, twigs densely hairy with equally long arms. *Leaves* imparipinnate; petioles 2.5–3 cm long; stipules narrowly triangular, 3–4 by 0.5–1 mm; rachis (5.5–) 6.5–10 cm long. *Leaflets* (7–) 11–15, opposite; petiolules 2–3 mm long; blade oblong–oblanceolate or broadly elliptic, (2.5–) 4–6 by (1–) 2–2.5 cm, apex acute with apiculate, base rounded or oblique, margin entire or slightly serrate; both surfaces with equally long arms; secondary veins 8–15-paired. *Racemes* (4–) 8–11 long; bract narrowly triangular, 1.5–2 by 1 mm. *Pedicels* ca. 1.5 mm long. *Calyx* cup-shaped, 1.5–2 mm long; lobes narrowly triangular, 0.5–1 by 0.5–1 mm, hairy outside, glabrous inside. *Corolla* creamy–white; standard ovate or orbicular, 6.5–8 by 6–7 mm, brownish hairs outside, glabrous inside; wings oblanceolate, 4–5 by 1.5–2 mm, brownish hairs outside, glabrous inside; keel 5–6 by 2.5 mm, margin ciliate, brownish hairs outside, glabrous inside; lateral pocket 1 mm long. *Staminal tube* 5–6 mm long; anthers ca. 1 mm long. *Ovary* glabrous. *Pods* cylindrical, 50–70 mm long with 2–3 mm diam.. *Seeds* 3 by 2 mm, glabrous.

Laos.-

Distribution.- Sri Lanka, India, Myanmar, China, Taiwan, Cambodia, Thailand, Vietnam.

Ecology.- Mixed deciduous and bamboo forest, roadsides, 800–2400 m.

6. *Indigofera hendecaphylla* Jacq., Collectanea 2: 358. 1788 & Icon. Pl. Rar. 3: t. 570. 1789. Type: West Africa, Guinea, Cultivated, *S.N.* (holotype W).

I. endecaphylla sensu Poir. in Lam., Encycl. Suppl. 3: 147. 1813. et *sensu* auct. Mult., sphalm. *I. hendecaphyll* Jacq.

I. aiceps Vahl ex Poir. in Lam., Encycl. Suppl. 3: 147. 1813. Type: Ghana, Herb. Jussieu, *Thonning* s.n. (holotype P).

I. onobrychioides Boriv. ex Baillon in Bull. Mens Soc. Linn. Paris 1: 398. 1853. Type: E. Madagascar, Ilot Madame, Lanaonbo, *Boivin* 1910 (holotype P).

I. hendecaphylla var. *angustata* Harvey in Harvey & Sonder, Fl. Cap. 2: 199. 1862. as '*endecaphylla*'. Type: South Africa, Port Natal, *Gueinzus* 195 (syntype K).

I. petinata Baker, J. Linn. Soc., Bot. 20: 127. 1883. Type: Madagacar, *Baron* 746 (holotype K; isotype P).

I. bolusii N.E. Br. in Burtt Davy, Man. Pl. Transvaal 2: 371. 1932. Type: South Africa, Transvaal, Barberton, *Bolus* 7722 (holotype K; isotype BOL).

var. *hendecaphylla*

Prostate shrubs; twigs densely hairy with equally long arms; petioles 1–3 mm long, densely hairy; stipules lanceolate, 5–10 mm long, apex acuminate, margin entire, sparsely hairy outside, glabrous inside; rachis 1–3.5 mm long. *Leaves* imparipinnate, alternate. *Leaflets* 5–11, alternate, rarely opposite or subopposite; petiolules 1–2 mm long, densely hairy; stipels lanceolate, 0.5 mm long; blade obovate–oblong (6) –15–20 by 4–8 mm, apex obtuse with apiculate, 0.5 mm long or emarginate, base obtuse, margin entire, hairy; upper surface glabrous; lower surface densely hairy; midrib raised below; secondary veins inconspicuous. *Racemes* 3–7 (–13) cm long; bract ovate to triangular, 1–2 by 0.5 mm, apex acute, margin

ciliate, hairy outside, glabrous inside. *Pedicels* 1–1.5 mm long, densely hairy. *Calyx tube* 1 mm long; lobes 2–3 by 0.5–1 mm, apex acute, margin entire. *Corolla* pink; standard obovate to orbicular, 5.5–6 by 6–6.5 mm, apex obtuse, base cuneate, margin entire, glabrous outside, except at apex, glabrous inside; wings obovate, irregular, 5–6 by 2–3 mm, claw 0.5 mm long, apex obtuse, base oblique, margin entire, glabrous both outside and inside; keel 5–6 by 2 mm, apex obtuse, margin entire, base attenuate, glabrous both outside and inside; lateral pocket 1 mm long. *Staminal tube* 4–5 mm long; filament 0.5–1 mm long; anthers 0.5 by 0.5 mm, a tufted hairs at base. *Ovary* densely hairy with 7–10 ovules. *Pods* oblong, 2–3 mm long, 2–2.5 mm diam.. *Seeds* oblong, 2–2.5 mm long, 1.5–2 mm diam., glabrous.

Laos.-

Distribution.- Cosmopolitan.

Ecology.- Open areas on roadsides.

7. *Indigofera hirsuta* L., Sp. Pl.: 751. 1753; Baker in Hook.f., Fl. Brit. Ind. 2: 98. 1876; Gagnep., Fl. Gén. I.-C. 2: 429. 1916; Craib, Fl. Siam. Enum. 1(3): 378. 1928; Backer & Bakh.f., Fl. Java 1: 591. 1963; Collett & Army, Fl. Siml. 1: 121. 1980; de Kort & G. Thijssse, Blumea 30(1): 120. 1984; Thuân, Phon & Niyomdham, Fl. C.L.V. 23: 74. 1987; Huang & Ohashi, Fl. Taiwan 3: 296. 1993. Type: Sri Lanka, *Hermann* 272 (BM!).

I. ferruginea Schum. & Thunn., Beskr. Guin. Pl. : 370. 1829. Type: Ghana, Gold coast, *Thonning* 35 (C).

Shrubs ca. 1 m high; twigs densely hairy with unequally long arms. *Leaves* imparipinnate; petioles 1–2 cm long; rachis 2–6 cm long, densely hairy; stipules lanceolate, 10–17 by 0.5 mm, apex acuminate, margin villous, densely hairy outside, glabrous inside. *Leaflets* 5–7; blade elliptic or obovate, apex rounded or obtuse with apiculate, 0.5 mm long, base cuneate, margin villous; both surfaces densely hairy with unequally long arms; petiolules 2–3 mm long, densely hairy; stipels lanceolate, 1–3 mm long. *Racemes* 10–25 mm long, densely hairy; bract lanceolate or narrowly triangular, 3.5–4 mm long, apex acuminate, margin villous, densely hairy outside, glabrous inside. *Calyx tube* 0.5 mm long; lobes lanceolate 2.5–3 mm long, apex acuminate, margin villous, densely hairy outside, glabrous inside. *Corolla* pink; standard orbicular, 4 by 2.5–3 mm, apex obtuse, base cuneate, margin villous, densely hairy outside, glabrous inside; wings 4.5 by 1 mm, claw 0.5 mm long, apex obtuse, margin ciliate, densely hairy outside at below, glabrous inside; keel 5 by 1.5 mm; lateral pocket 1 mm long, apex rounded, base attenuate, margin ciliate, glabrescent outside, glabrous inside. *Staminal tube* 4 mm long; filament 0.5–1 mm long; anthers 0.3–0.4 mm long. *Ovary* hairy with 5–8 ovules. *Pods* oblong, 14–16 mm long, 1–1.5 diam., densely hairy. *Seeds* 1 by 1 mm, smooth.

Laos.-

Distribution.- Sri Lanka, India, Myanmar, China, Taiwan, Cambodia, Vietnam.

Ecology.- Open areas, rice field, roadsides, *ca.* 1,000 m.

8. *Indigofera linnaei* Ali, Botis. 3: 549. 1958; Backer & Bakh.f., Fl. Java 1: 591. 1963; de Kort & Thijssse, Blumea 30(1): 125. 1984; Sanjappa, Reinwardtia 10(2): 225. 1985; Thuân, Phon & Niyomdham, Fl. C.L.V. 23: 77. 1987. Type: India, Coromandel, Herb. Sloane vol. 95 (BM!).

I. enneaphylla L., Mant. 2: 272. 1771, Append: 571. 1771; Roxb. Fl. Ind. 3: 376. 1832; Baker in Hook.f., Fl. Brit. Ind. 2: 94. 1876; Gagnep., Fl. Gén. I.-C. 2: 423. 1916; Craib, Fl. Siam. Enum. 1(3): 378. 1928.

I. caespitosa Wight in Wall., Cat. 5447 (K!), *nom. nud.*

Prostrate shrub; twigs hairy with equally and unequally long arms. *Leaves* imparipinnate, alternate; petioles 1–3 mm long, densely hairy; stipules triangular, 3–4 by 2 mm, apex aristate, 1–2 mm long; hairy at base outside, glabrous inside; rachis (7–) 10–15 mm. *Leaflets* 5–11, alternate; petiolules 0.5–1 mm long, densely hairy; stipels triangular, 0.5 mm long, apex acute, caducous; blade obovate or elliptic, 10–14 by 3.5–5.5 mm, apex rounded with apiculate, 0.1–0.2 mm long or emarginate, margin entire; upper surface with the most unequally long arms; lower surface with equally long arms or sparsely unequally long arms; secondary veins inconspicuous. *Racemes* 3–5 cm long, hairy; bract broadly ovate, 2 by 1.5 mm, apex acute, margin entire, glabrous outside, hairy inside. *Pedicels* 0.1–0.2 mm long, densely hairy. *Calyx* cup-shaped, 1–1.5 mm long; lobes lanceolate to triangular, 2 by 1 mm, apex acuminate, margin ciliate, densely hairy outside, glabrous inside. *Corolla* pink; standard obovate, 3–4 by 3 mm, claw 0.1–0.2 mm long, apex rounded or

emarginate, margin entire, base oblique, glabrous both outside and inside; wings 3–3.5 by 1 mm, apex rounded, margin entire, base oblique, glabrous both outside and inside; keel 3–3.5 by 1 mm, apex rounded, margin entire or slightly ciliate, margin attenuate, glabrous both outside and inside. *Staminal tube* 2 mm long; filament 0.1 long; anthers 0.1 by 0.1 mm, glabrous. *Ovary* glabrous with 2 ovules. *Pods* subglobose, 3–3.5 mm long, densely hairy. *Seeds* 1–1.5 by 1 mm, glabrous, lustrous.

Laos.-

Distribution.- Sri Lanka, India, Myanmar, Vietnam.

Ecology.- Roadsides, 0–400 m.

9. *Indigofera sootepensis* Craib, Bull. Misc. Inform., Kew. 1911: 35. 1911; Gagnep., Fl. Gén. I.-C. 2: 433. 1916; Craib, Fl. Siam. Enum. 1: 381. 1928; de Kort & Thijssse, Blumea 30(1): 131. 1984; Thuân, Phon & Niyomdham, Fl. C.L.V. 23: 85. 1987. Type: Thailand, Chiang Mai, Doi Suthep, *A.F.G. Kerr* 684 (holotype K!, isotypes E!, BM!).

Shrubs 1–2 m high; twigs with equally long arms. *Leaves* imparipinnate, alternate; petioles 2–10 mm long, densely hairy; stipules 5–8 mm long; rachis 27–33 mm long. *Leaflets* 35–43, alternate; petiolules 1–3 mm long; stipels lanceolate; blade oblong, ovate or oblanceolate, 1.5–2 by 1–1.5 mm, apex rounded or with apiculate 1 mm long, base acute or rounded, margin entire; both surfaces hairy; secondary veins 10–13-paired. *Racemes* 7–20 mm long; bract triangular or lanceolate, 2–3 by 0.5 mm, apex acute, margin hairy, densely hairy outside, glabrous inside. *Pedicels* 1.5–2 mm long. *Calyx tube* 1.5–1 by 2.5 mm, dark brown outside; lobes triangular or subtruncate, hairy outside, glabrous inside. *Corolla* pink or reddish; standard ovate, 11–14 by 5–6 mm, margin ciliate, densely hairy outside, glabrous inside; wings 13–15 by 2.5–3 mm, margin ciliate, hairy outside, glabrous inside; keel 13–15 by 2–3 mm, margin ciliate; lateral pocket 1 mm long, densely hairy outside, glabrous inside. *Staminal tube* 10–12 mm long; filament 1–1.5 mm long. *Ovary* densely hairy with 8–10 ovules; style glabrous. *Pods* oblong, 40–50 mm long, 3–4 diam., hairy. *Seeds* oblong 2.5–3 by 2–2.5 mm, glabrous.

Laos.-

Distribution.- Thailand, Cambodia, Vietnam.

Ecology.- Dry dipterocarp forest, ca. 1,000 m.

10. *Indigofera squalida* Prain, J. Asiat. Soc. Bengal. 66(2): 355. 1897; Gagnep., Fl. Gén. I.-C. 2: 439. 1916; Craib, Fl. Siam. Enum. 1(3): 381. 1928; de Kort & Thijssse Blumea 30(1): 134. 1984; Sanjappa, Reinwardtia 10(2): 235. 1985; Thuân, Phon & Niyomdham, Fl. C.L.V. 23: 68. 1987. Type: Myanmar, Shan hills, *King's collection* 442 (CAL, K!).

I. polygaloides Gagnep., Not. Syst. 3: 198. 1914; Fl. Gén. I.-C. 2: 426. 1916. Type: Vietnam, Bien Hoa, *Pierre* s.n. (P); Laos, *Massie* s.n. (P); Laos, *Thorel* s.n. (P).

I. changensis Craib, Bull. Misc. Inform., Kew 1922: 171. 1922.; Craib, Fl. Siam. Enum. 1(3): 377. 1928. Type: Thailand, Mae Chang, *A.F.G. Kerr* 3607 (BM!, K!).

Shrubs 30–60 cm high with storage roots. *Leaves* simple, alternate; petioles 2–7 mm long; stipules lanceolate, caducous; blade obovate, elliptic or lanceolate, (3–) 5–9 by 0.9–1.5 cm, apex apiculate, base attenuate, margin entire; both surfaces hairy; midrib raised above; secondary veins 6–10-paired, inconspicuous. *Racemes* 0.5–2 cm long; bract triangular or lanceolate, 1–1.5 by 1 mm, apex acute, margin ciliate, densely hairy outside, glabrous inside. *Pedicels* 9–10 mm long. *Calyx* cup-shaped, 9–10 mm long; lobes 1–2 by 0.5 mm, densely hairy outside, glabrous inside. *Corolla* reddish to pinkish; standard elliptic, 2.5–4 by 1–2 mm, apex acute, margin entire, pubescent outside, glabrous inside; wings oblong, 2.5–3.5 by 0.8–1 mm, apex rounded, base oblique, or truncate, margin rounded, pubescent outside, glabrous inside; keel 3–5 by 1–1.5 mm, apex rounded, base oblique, margin ciliate; lateral pocket 1 mm long. *Staminal tube* 5–6 mm long; filament 0.5–4 mm long; anthers 0.5 by 0.2 mm. *Ovary* densely hairy with 4–5 ovules; styles 2.5–3 mm long. *Pods* oblong, 10–15 mm long, densely hairy. *Seeds* oblong, 1.5–2 mm long, ca. 1 mm diameter, glabrous.

Laos.-

Distribution.- Myanmar, China, Thailand, Cambodia, Vietnam.

Ecology.- Dry dipterocarp and pine forests, ca. 1,300 m.

11. *Indigofera suffruticosa* Mill., Gard. Dict. ed. 8, no. 2. 1768; Craib, Fl. Siam. Enum. 1(3): 381. 1928; Backer & Bakh.f., Fl. Java 1: 592. 1963; de Kort & Thijssse Blumea 30(1): 134. 1984; Sanjappa, Reinwardtia 10(2): 237. 1985; Thuân, Phon & Niyomdham, Fl. C.L.V. 23: 81. 1987; Huang & Ohashi, Fl. Taiwan 3: 305. 1993. Type: India, *Miller* s.n., Herb. Sloane (Jan. 1742) (BM!).

I. anil L., Mant 2: 272. 1771; Gagnep., Fl. Gén. I.-C. 2: 427. 1916; Kanjilal, Kanjilal & Das, Fl. Assam 3: 23. 1938. Type: *Linnaeus* 923-20 (LINN).

Shrubs 1–2 m high; twigs hairy with equally long arms. *Leaves* imparipinnate, alternate; petioles 1.3–2.2 cm long, densely hairy; stipules narrowly triangular, 3–6 by 0.5–1 mm, apex acuminate, margin entire, hairy outside, glabrous inside; rachis 4.5–7 cm long. *Leaflets* 7–15, opposite; petiolules 1.5–2.5 mm long; stipels lanceolate, hairy or glabrous; blade obovate or elliptic, 20–30 by 7–10 cm, apex rounded with apiculate, 0.5 mm long, base attenuate, margin entire; upper surface hairy; lower surface densely hairy; midrib impressed above, raised below; secondary veins inconspicuous. *Racemes* (2–) 5–9 cm long, hairy; bract lanceolate 2 by 2 mm, apex acuminate, margin ciliate, hairy outside, glabrous inside. *Pedicels* 1 mm long, densely hairy. *Calyx* cup-shaped, 1 mm long; lobes triangular to lanceolate, 1–1.5 by 0.5–1 mm, apex acute, margin entire. *Corolla* pink; standard obovate, 4–5 by 3–4 mm, apex rounded, margin ciliate, base cuneate, densely hairy outside, glabrous inside; wings oblong, 4–4.5 by 1–1.5 mm, claw 0.5 mm long, sparsely hairy outside, glabrous inside; keel 5 by 2 mm, apex rounded, margin ciliate, base attenuate, hairy outside, glabrous inside; lateral pocket 0.5 mm long. *Staminal tube* 2.5–3 mm long; filament 0.5–1 mm long; anthers 0.5 by 0.5 mm. *Ovary* densely hairy with 5–6 ovules; style glabrous. *Pods* oblong, curved at apex, 10–15 mm long, 3 mm diam. *Seeds* quadrangular, 1.5–2 by 1.5–2 mm, glabrous, lustrous.

Laos.-

Distribution.- India, China, Taiwan, Thailand, Cambodia, Vietnam.

Ecology.- Roadsides, waste ground, grasslands, 0–1,800 m.

12. *Indigofera tinctoria* L., Sp. Pl.: 751. 1753; Roxb., Fl. Ind. 3: 379. 1832; Baker in Hook.f., Fl. Brit. Ind. 2: 99. 1876; Fl. Gén. I.-C. 2: 428. 1916; Craib, Fl. Siam. Enum. 1(3): 382. 1928; Backer & Bakh.f., Fl. Java 1: 592. 1963; de Kort & Thijssse Blumea 30(1): 136. 1984; Sanjappa, Reinwardtia 10(2): 238. 1985; Thuân, Phon & Niyomdham, Fl. C.L.V. 23: 89. 1987; Huang & Ohashi, Fl. Taiwan 3: 310. 1993. Type: Sri Lanka, *Hermann* 273 (BM!).

I. indica Lam., Encm Méth., Bot. 3: 245. 1789. Type: Herb. Lamarck (P).

I. cinerascens DC., Prodr. 2: 226. 1825. Type: Herb. De Candolle II-226-47 (G-DC, L).

Shrubs 1–1.5 m high; twigs hairy with equally long arms. *Leaves* imparipinnate, alternate; petioles 2–3 cm long hairy; stipules lanceolate, 1–1.5 mm long, densely hairy outside, glabrous inside; rachis (1.5–) 4–7 cm long. *Leaflets* 7–11, opposite; petiolules 1.5–2 mm long; densely hairy; stipels 0.5 mm long, lanceolate; blade elliptic to narrowly obovate, 2.5–3 by 1.4–1.8 cm, apex rounded with apiculate, 0.5 mm long, base cuneate, margin entire; upper surface glabrous; lower surface hairy with equally long arms; secondary 6–8-paired; midrib impressed above, raised below. *Racemes* 1.5–8 cm long, hairy; bract triangular, 1 by 0.5 mm, apex acute, margin ciliate, densely hairy outside, glabrous inside. *Pedicels* 1.5–2 mm long, densely hairy. *Calyx* cup-shaped, 1 mm long; lobes triangular, 1 by 0.5 mm, apex acute, margin ciliate, densely hairy outside, glabrous inside. *Corolla* pink; standard elliptic-narrowly obovate, 5–6 by 4 mm, apex acute, base cuneate, margin ciliate, densely hairy outside, glabrous inside; wings obovate, irregular, 4.5–5 by 2 mm, claw 0.5 mm long, apex rounded, margin entire or sparsely ciliate, base oblique, sparsely hairy at base outside, glabrous inside; keel 5–5.5 by 2 mm, apex rounded, base attenuate, margin ciliate, densely hairy outside, glabrous inside. *Staminal tube* 4–4.5 mm long; filament 0.5–1 mm long; anthers 0.5 by 0.5 mm, glabrous. *Ovary* densely hairy with 9–10 ovules; style glabrous. *Pods* oblong, 20–28 mm long, 3–5 mm diam., sparsely hairy, indehiscent. *Seeds* oblong, 0.5 mm long, 0.5 diam., glabrous, lustrous.

Laos.-

Distribution.- Sri Lanka, India, Pakistan, China, Taiwan, Japan, Thailand, Vietnam, Indonesia, Philippines.

Ecology.- Cultivated.

13. *Indigofera trifoliata* L., Cent. Pl. 2: 29. 1756; DC., Prodr. 2: 223. 1825; Baker in Hook.f., Fl. Brit. Ind. 2: 96. 1876; Gagnep., Fl. Gén. I.-C. 2: 437. 1916; Craib, Fl. Siam. Enum. 1(3): 382. 1928; Kanjilal, Kanjilal & Das, Fl. Assam 3: 22. 1938; Backer & Bakh.f., Fl. Java 1: 590. 1963; Collett & Army, Fl. Siml. 1: 121. 1980; de Kort & Thijssse, Blumea 30(1): 137. 1984; Sanjappa, Reinwardtia 10(2): 239. 1985; Huang & Ohashi, Fl. Taiwan 3: 310. 1993. Type: India, *Linnaeus* 923-3 (LINN microfice!).

I. trifoliata var. *brachycarpa* Gagnep., Fl. Gén. I.-C. 2: 438. 1916. Type: Vietnam, *Thorel* s.n. (P).

I. canescens Grah. in Wall., Cat. 5448A, B (K!), *nom. nud.*

I. congesta Grah. in Wall., Cat. 5471A, B (K!), *nom. nud.*

I. adenophylla Grah. in Wall., Cat. 5462A, B (K!), *nom. nud.*

Shrubs 15-30 cm high; petioles 10–15 mm long; stipels 2 by 0.5 mm; hairy outside, glabrous inside; rachis 1 mm long. *Leaves* trifoliolate; petiolules 1–1.5 mm long, hairy; blade obovate–lanceolate, 20–28 by 5–8 mm, apex with apiculate, 0.5 mm long, base cuneate, margin entire; upper surface hairy with equally long arms, lower surface hairy with glands; secondary veins 3–5-paired. *Racemes* 4–5 mm long, hairy; bract triangular, 1.5 by 0.5 mm, apex acute, margin entire, hairy outside, glabrous inside. *Pedicels* 0.5 mm long. *Calyx tube* 1 mm long; lobes triangular 2 by 0.5 mm, apex acuminate, margin entire, hairy outside, glabrous inside. *Corolla* pink; standard orbicular, 5 by 2.5 mm, apex rounded, margin entire, hairy and glandular outside, glabrous inside; wings 5 by 2.5 mm; keel 4–5 by 2 mm, margin ciliate, hairy outside, glabrous inside. *Staminal tube* 4 mm long, glabrous; filament 0.5 mm long. *Ovary* densely hairy; style 1.5–2 mm long. *Pods* 2 cm long, 4-ridged, hairy.

Laos.-

Distribution.- India, Myanmar, China, Taiwan, Thailand, Vietnam, Indonesia, Philippines.

Ecology.- Open areas.

14. *Indigofera wightii* Grah. ex Wight & Arn., Prodr.: 202. 1834; Gagnep., Fl. Gén. I.-C. 2: 434. 1916; de Kort & Thijssse Blumea 30(1): 137. 1984; Sanjappa, Reinwardtia 10(2): 241. 1985; Thuân, Phon & Niyomdham, Fl. C.L.V. 23: 88. 1987. Type: India, *Wallich* 5458 (K!, P).

I. inamoena Thw., Enum. Pl. Zeyl.: 83. 1859. Type: Sri Lanka, *Thwaites* 3513 (K!, P).

I. pallida Craib, Bull. Misc. Inform., Kew 1927: 56. 1927; Fl. Siam. Enum. 1: 380. 1928. Type: Thailand, Lampang, *A.F.G. Kerr* 3083 (BM!, K!, SING!).

I. cinerascens Franch., Pl. Delav.: 153. 1859. Type: China, Yunnan, *Tapintze*, *Delavay* 519 (P).

I. foliolosa Grah. in Wall., Cat. 5485 (K!), *nom. nud.*

Shrubs 1-1.5 m high. *Leaves* imparipinnate, alternate; petioles 4–10 mm long; stipules triangular or lanceolate, hairy outside, glabrous inside; rachis 3–6 cm long. *Leaflets* 13–37, opposite or subopposite; petiolules 1 mm long; blade obovate or elliptic, 8–10 by 3–5 mm, apex emarginate or cordate rarely rounded, base cuneate; midrib raised below; secondary veins inconspicuous; both surfaces densely hairy. *Racemes* 2–5 cm long; bract ovate, 1 mm long. *Pedicels* 1.5–2 mm long, hairy. *Calyx* cup-shaped, 1 mm long; lobes triangular, 0.5–1 by 0.5 mm, apex acute, margin hairy. *Corolla* pinkish; standard broadly ovate, 5–6 by 3.5–4 mm, base rounded, apex acute, margin entire, densely hairy outside, glabrous inside; wings 4–5 by 1.5–2 mm, claw 0.5 mm long, apex acute, margin entire, glabrous both outside and inside; keel 6–7 by 2 mm, hairy outside, glabrous inside; lateral pocket 1.5 mm long, apex rounded, base attenuate, margin ciliate, hairy outside, glabrous inside. *Staminal tube* 4–5 mm long, glabrous; filament 0.5–1 mm long. *Ovary* densely hairy; style 2 mm long. *Pods* oblong, 2–3 cm long, densely hairy. *Seeds* 10–12, quadrangular, 1.5 mm long, 1 mm diam., glabrous.

Laos.-

Distribution.- Sri Lanka, India, Myanmar, China, Thailand, Cambodia, Vietnam.

Ecology.- Deciduous, dry dipterocarp and pine forests, ca. 2,000 m.

15. *Indigofera zollingeriana* Miq., Fl. Ind. Bat. 1(2): 310. 1855; Craib, Fl. Siam. Enum. 1(3): 383. 1928; Backer & Bakh.f., Fl. Java 1: 592. 1963; de Kort & Thijssse, Blumea 30(1): 142. 1984; Thuân, Phon & Niyomdham, Fl. C.L.V. 23: 82. 1987; Huang & Ohashi, Fl. Taiwan 3: 314. 1993. Type: Java, *Zollinger* 2390 (holotype P; isotypes BM, BO, U).

I. teysmannii Miq., Fl. Ind. Bat. 1(6): 1083. 1855; Gagnep., Fl. Gén. I.-C. 2: 429. 1916.- Type: Indonesia, Sumatra, *Teijsmann* HB 867 (U!).

I. benthamiana Hance, Ann. Nat. Bot. 18 (4): 219. 1862. Type: China, Whampoam, Hance 6063 (K!).

Small trees 5–10 m high; twigs with equally long arms. *Leaves* imparipinnate, alternate; petioles 2–3 mm long; stipules lanceolate, 5–7 mm; rachis 9.5–16 (–20). *Leaflets* 23–47, opposite or subopposite; petiolules 1–2 mm long; blade elliptic or ovate, 5–7 by 1.9–2.2 cm, apex acute, base cuneate, margin entire; lower surface glaucous; secondary veins 14–20-paired. *Racemes* 11–17.5 cm long, hairy; bract 2.5–3 mm long. *Pedicels* 1.8–2.2 mm long, densely hairy. *Calyx* cup-shaped, 1.9–2 by 2.5–3 mm; lobes triangular, 0.5–1 by 1 mm, apex acute, margin serrate, hairy outside, glabrous inside. *Corolla* pinkish; standard ovate, 9.5–10.5 by 7–8 mm, apex rounded, base obtuse, margin entire, hairy outside, glabrous inside; wings oblong, 6–7 by 2.5 mm, claw 0.5 mm long, apex rounded, margin entire, base oblique or truncate, glabrous outside and inside; keel falcate, 8.5–11 by 2.5–3 mm, apex acute, margin ciliate, base cuneate, hairy outside at apex, glabrous inside; lateral pocket, 2–2.5 mm long. *Staminal tube* 5–7.5 mm long, glabrous; filament 1.5–2 mm long; anthers 1 by 0.5 mm. *Ovary* glabrous with 13–15 ovules; style 4.5–5 mm long, glabrous. *Pods* oblong, 3.5–4 mm long, indehiscent. *Seeds* globose, 2.5–3 mm diam., glabrous.

Laos.-

Distribution.- Myanmar, China, Taiwan, Thailand, Vietnam, Indonesia.

Ecology.- Swamp forest, 0-1,200 m.

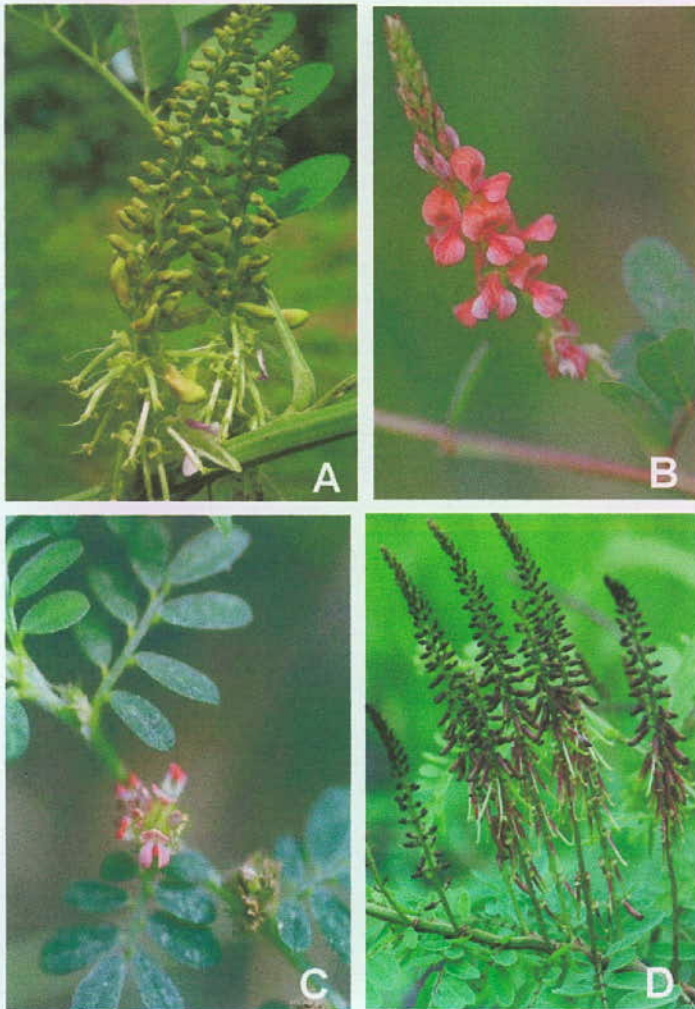


Figure 7: A) *Indigofera galegoides* DC.
B) *I. hendecaphylla* Jacq. var. *hendecaphylla*
C) *I. linnaei* Ali
D) *I. sootepensis* Craib

MYRTACEAE

1. CLEISTOCALYX

Blume, Mus. Bot. Ludg.-Bat. 1: 84. 1849.

Cleistocalyx nervosum (DC.) Kosterm., Bull. Bot. Soc. India 29: 17. 1987 (publ. 1989); J.Parn. & P. Chantaranothai in Santisuk & Larsen, Fl. Thailand 7(4): 785. 2002.

Syzygium nervosum DC., Prodr. 3: 260. 1828.

var. *nervosum*

Tree to 25 m. *Twigs* terete or compressed, the bark greyish white or dark brown. *Leaves* with petiole 11–23 mm; lamina 18.2–27.6 by 4.7–10 cm, elliptic, obovate or lanceolate, base cuneate, apex acute or acuminate; midrib impressed on the upper surface, secondary veins 10–12 pairs; intramarginal vein absent or 1, very faint. *Inflorescence* up to 14 cm, in the axils of fallen leaves, cymose-paniculate; peduncle absent or up to 5 cm, rachis and branches terete, compressed or more or less angled; bracts 1.3 by 1.2 mm, triangular; bracteoles 0.4 by 0.3 mm, triangular. *Flowers* white, sessile. *Hypanthial cup* 2.8–4.2 mm, funnel-shaped. *Pseudostipe* absent or < 1 mm. *Calyx* 2.4–5.5 mm diam., calyprate, apex apiculate, 0.2 mm. *Petals* 4, 1.8–4.2 mm, orbicular, sometimes with a long narrow base, cohering and attached to the inside of the calyx, 34–50 gland dots per petal. *Outer stamens* 4.5–6.8 mm, anther 0.2–0.3 mm, oblong or ovate. *Style* 4.9–8.4 mm, not exceeding the stamens. *Ovary* 2-locular, 11–23 ovules per locule. *Fruits* ca. 1 cm diam., globose.

Laos. —

Distribution.— India (type), Sri Lanka, Myanmar, Thailand, Vietnam, Cambodia, Malesia, Australasia.

Ecology.— Streams, river banks and waterfalls, evergreen forest and scrub; 20–800 m.

2. PSIDIUM

L., Gen. Pl.: 615. 1772.

Psidium guajava L., Sp. Pl. 1: 470. 1753; Blume, Bijdr.: 1092. 1826; Miq., Sum. seine Pflanzenwelt: 119. 1862; Kurz, Forest Fl. Burma 1: 476. 1877; Koord. & Valetton, Bidjr Boomsoort. Java 6: 35. 1900; Backer, Schooffl. Java: 498. 1911; Koord. in Exkurs.-Fl. Java 2: 673. 1912; Gagnep. in Lec., Fl. Gén. I.-C. 2: 848. 1920; Craib in Fl. Siam. Enum. 1: 627. 1931; van Steenis, den Hoed & Eyma, Fl. voor de Schulen in Indonesia: 300. 1951; Backer & Bakh.f., Fl. Java 1: 334–335. 1963; D.G. Long & Rae in Grierson & D.G. Long, Fl. Bhutan 2: 287. 1991; P.H. Hô, CÂYCO VIỆT NAM 2: 64. 1992; J.Parn. & P. Chantaranothai in Santisuk & Larsen, Fl. Thailand 7(4): 803. 2002.

Tree or large shrub to 9 m. *Outer bark*, smooth light grey-green-brown, soon peeling or flaking, inner bark light-brown, twigs sharply 4-angled, often pubescent, glandular. *Leaves* elliptical to ovate, 8–14 by 4–6 cm, acute or obtuse, midrib impressed on upper surface, with an incomplete intramarginal vein ca. 0.75 mm from margin, upper surface drying light grey-brown, glabrous, lower surface drying darker brown and pubescent, both surfaces dotted with minute glands, veins impressed. *Petioles* very short, pubescent or absent. *Flowers* mostly solitary or in clusters, axillary. *Bracteoles* filiform, ca. 4 mm, deciduous. *Pedicels* 20–25 mm, glandular punctate, pubescent. *Calyx* infundibuliform, eglandular, 6 mm, puberulent; lobes obtuse ca. 2 mm. *Pseudostipe* absent. *Petals* white, ca. 12 mm long, puberulent. *Stamens* numerous; filaments glabrous ca. 10 mm long, connective with a very small apical gland. *Style* 10 mm; stigma capitate. *Hypanthium* shallowly cup-shaped, glabrous. *Fruits* 1–6 cm long, globose or pyriform, yellow. *Seeds* strongly folded, the radicle included in a cotyledon.

Laos.— Widely cultivated.

Distribution.— New World and Old World tropics, India (type).

Ecology.— Cultivated.

3. RHODAMNIA

Jack, Malay. Misc. 2: 48. 1822.

1. *Rhodamnia cineria* Jack, Malay. Misc. 2: 48. 1822; Miq., Fl. Ind. Bat. 1: 478. 1855; Miq., Sum. seine Pflanzenwelt: 120. 1862; Koord. & Valetton, Bidjr. Boomsoort. Java 6: 30–33. 1900; Backer, Schoolfl. Java: 497. 1911; Ridl., Fl. Mal. Pen. 1: 716. 1922; Kochummen in Ng, Tree Fl. Mal. 3: 250. 1978; Turner, Gard. Bull. Singapore 47: 371. 1995; J.Parn. & P. Chantaranonthai in Santisuk & Larsen, Fl. Thailand 7(4): 805. 2002.

R. trinervia Blume, Mus. Bot. 1: 79. 1849.

Shrub or small tree normally less than 10 m (–17 m in Malay Peninsula). Outer bark black, brown or greyish-green, young twigs usually grey, inner bark white yellow. *Twigs* pubescent. *Leaves* ovate to elliptic, 6–15 by 3–6 cm; apex acuminate, with evenly sized, very small glands (< 0.1 mm) (bright light needed); upper surface dark brown on drying, more or less glabrous, veins obscure, midvein impressed; lower surface light grey-green on drying, more or less sericeous, primary veins almost glabrous and prominent with the primary veins raised, intramarginal vein < 0.5 mm from leaf-margin. *Petioles* ca. 5 mm, pubescent. *Flowers* axillary, in clusters or dichasia. *Peduncles* usually < 5 mm or absent. *Pseudostipe* absent. *Pedicels* up to 10 mm slender, sericeous. *Calyx* sericeous, campanulate ca. 4 mm; lobes obtuse ca. 1.5 mm. *Petals* sericeous, ca. 4 mm long, white-yellow. *Stamens* numerous. *Style* ca. 3 mm. *Hypanthium* shallowly cup-shaped, weakly tomentose. *Fruits* green, red or purple. *Seeds* < 5 mm, angular.

Laos.—

Distribution.— Myanmar, Thailand, Peninsular Malaysia, Sumatra (type), Java, Borneo.

Ecology.— Coastal; often in evergreen forests up to 100 m.

2. *Rhodamnia dumetorum* (DC.) Merr. & L.M.Perry, J. Arnold Arbor. 19: 195. 1938; P.H. Hô, CÂYCO VIỆT NAM 2: 41. 1992; Turner, Gard. Bull. Singapore 47: 371. 1995; J.Parnell & P. Chantaranonthai in Santisuk & Larsen, Fl. Thailand 7(4): 806. 2002.

Shrub or small tree normally less than 5 m. Outer bark brown, young twigs usually grey. *Twigs* sericeous. *Leaves* ovate to elliptic; 6–9 by 2–3 cm; triveined or tripliveined, intramarginal vein often inconspicuous; apex long acuminate; usually with both very small (< 0.05 mm) and larger (ca. 0.1 mm) glands (bright light needed); upper surface dark brown on drying, glabrous or sericeous, secondary veins obscure, almost glabrous; lower surface light brown on drying, more or less sericeous, intramarginal vein > 0.5 mm from leaf-margin. *Petioles* ca. 5 mm, pubescent. *Flowers* axillary, solitary or in clusters or dichasia. *Peduncles* usually < 10 mm or absent. *Pedicels* up to 10 mm slender, sericeous. *Calyx* sericeous; campanulate ca. 4 mm; lobes obtuse ca. 1.5 mm. *Pseudostipe* 2 mm or absent. *Petals* sericeous, 5–8 mm long, white-yellow, or pink. *Stamens* numerous. *Style* ca. 3 mm, stigma obscure. *Hypanthium* shallowly cup-shaped, weakly tomentose. *Fruit* green, red or purple, 6–8 mm. *Seeds* ca. 4 mm, angular.

Laos.—

Distribution.— Thailand, China, Vietnam (type), Cambodia, Peninsular Malaysia.

Ecology.— Common in coastal forest or scrub. Also in dry dipterocarp forest/savanna below 700 m.

4. RHODOMYRTUS

(DC.) Reich. Deut. Bot. Herb.-Buch.: 177. 1841.

Rhodomyrtus tomentosa (Aiton) Hassk., Flora 25: 35. 1842; Miq., Sum. seine Pflanzenwelt: 1200. 1862; Miq., Fl. Ind. Bat 1: 477. 1855; Koord. & Valetton, Bidjr. Boomsoort. Java 6: 41. 1900; Backer, Schoolfl. Java: 499. 1911; Koord. in Exkurs.-Fl. Java 2: 674. 1912; Gagnep. in Lec., Fl. Gén. I.-C. 2: 794. 1920; Backer & Bakh.f., Fl. Java 1: 335. 1963; Kochummen in Ng, Tree Fl. Mal. 3: 251. 1978; Ridl., Fl. Mal. Pen. 1: 717. 1922; Craib in Fl. Siam. Enum. 1: 628. 1931; Scott, Kew Bull. 33: 313. 1978; P.H. Hô, CÂYCO VIỆT NAM 2: 43. 1992; Turner, Gard. Bull. Singapore 47: 371. 1995; J.Parn & P.Chantaranonthai in Santisuk & Larsen, Fl. Thailand 7(4): 809. 2002.

Myrtus tomentosa Aiton, Hort. Kew, ed. 1, 2: 159. 1789.

Shrub or small tree less than 4 m. Outer bark light brown soon flaking or peeling to reveal orangish-red underbark. *Twigs* dark brown tomentose when mature. *Leaves* ovate to elliptic; 2–10 by 1.5–4 cm; tripliveined with an intramarginal vein; margin sub-revolute; apex obtuse, acute or apiculate; glandular (bright light needed); upper surface dark brown on drying, more or less glabrous, veins often slightly impressed, obscure, sometimes white pubescent at the base; lower surface ocherous on drying, tomentose, sub-hispid with scattered dark brown hairs (especially on the veins), primary veins raised. *Petioles* ca. 5 mm, angled, tomentose. *Flowers* axillary or terminal, solitary or in dichasia. *Peduncles* 1–2 cm densely tomentose and sub-hispid. *Pedicels* up to 1.5 cm, tomentose. *Pseudostipe* present, 4–8 mm. *Calyx* infundibuliform, ca. 10 mm; lobes obtuse ca. 6 mm, inner 2 lobes longer than outer 3, densely tomentose. *Petals* pink, white-tomentose on outside, 1.5–2 cm long. *Stamens* numerous, filaments 10 mm long, connective with a minute apical gland. *Style* ca. 1.5 cm. *Hypanthium* shallowly cup-shaped or flat, hoary. *Fruit* ca. 9 by 10 mm, green, red or purple, densely tomentose. *Seeds* 2 mm by 3 mm, light brown, tuberculate, reniform.

Laos.—

Distribution.— India, Sri Lanka, Myanmar, Thailand, China (type cultivated at K), Cambodia, Vietnam, Peninsular Malaysia, Sumatra, Java, Lesser Sunda Islands, Borneo, Moluccas, Celebes, Philippines.

Ecology.— Common in coastal (sometimes swampy) forest or scrub also in secondary forest and by roadsides, usually below 100 m.

5. SYZYGium

Gaertn., *Fruct. Sem. Pl.* 1: 166, t. 33. 1788.

1. *Syzygium abortivum* (Gagnep.) Merr. & L.M.Perry, *J. Arnold Arbor.* 19: 101. 1938; P.H. Hô, *Câyco Việt Nam* 2: 45. 1992; P.Chantaranothai & J.Parn., *Thai Forest Bull. (Bot.)* 21: 32. 1994; J.Parn. & P.Chantaranothai in Santisuk & Larsen, *Fl. Thailand* 7(4): 826. 2002.

Eugenia abortiva Gagnep. in Lecomte, *Notul. Syst. (Paris)* 3: 316. 1917.

Small tree, height unknown. *Twigs* terete (the young twigs 4-angled and winged), the bark brownish or whitish grey. *Leaves* with petiole 1.7–3.5 mm; lamina 3.5–4.5 by 1–2 cm, narrowly lanceolate or oblong lanceolate, sometimes oblanceolate, base acute, apex acute or attenuate-obtuse; midrib impressed on the upper surface, secondary veins 11–12 pairs, inconspicuous, intramarginal vein 1. *Inflorescence* up to 2.5 cm, both terminal and axillary, corymbose, with 6–9 flowers; peduncle up to 2 mm; bracts 1.4 by 0.8 mm, triangular, oblong or elliptic. *Flowers* sessile, solitary or in groups at the branchlet ends. *Hypanthial cup* 10–12 mm, narrowly clavate or narrowly funnel-shaped. *Pseudostipe* 7 mm. *Sepals* 5, 0.7–0.8 mm, triangular or semiorbicular. *Petals* 5, 1.9–4.4 mm, pseudo-calyprate, orbicular, 30–70 gland dots per petal. *Outer stamens* 8.1–11.3 mm, anther 0.5 mm, oblong. *Style* 10–10.5 mm. *Ovary* 2-locular, only one locule fertile, ca. 17 ovules per locule. *Fruits* unknown.

Laos.—

Distribution.— Myanmar, Thailand, Vietnam.

Ecology.— Unknown.

2. *Syzygium angkæ* (Craib) P.Chantaranothai & J.Parn., *Kew Bull.* 48: 592. 1993; J.Parn. & P.Chantaranothai in Santisuk & Larsen, *Fl. Thailand* 7(4): 830. 2002.

Eugenia angkæ Craib, *Bull. Misc. Inform. Kew* 1929: 115. 1929.

subsp. *angkæ*

Tree to 25 m. *Twigs* terete (the young sometimes angled), the bark whitish grey or reddish brown. *Leaves* with petiole 6.3–9.1 mm; lamina 7.7–14.5 by 2–5.8 cm, elliptic, oblong elliptic or ovate, base acute or cuneate, apex caudate-acuminate; midrib impressed on the upper surface, secondary veins 27–36 pairs, intramarginal veins 2. *Inflorescence* up to 2 cm, both terminal and axillary, paniculate; peduncle 0.8–2.5 mm, branches terete; bracts 0.8–1 by 0.5–0.8 mm, triangular; bracteoles 0.6 by 0.4 mm, triangular. *Flowers*

white or greenish white; pedicel 1–3 mm; either in a group of three or groups of three at the branchlets ends. *Hypanthial cup* 5.2–7 mm, funnel-shaped. *Pseudostipe* 2–5 mm. *Sepals* 4, 1.6–1.8 mm, semiorbicular, rim hyaline. *Petals* 4, 4.7–6.3 mm, free, orbicular, 30–50 gland dots per petal. *Outer stamens* 6–7 mm, anther 0.7–0.8 mm, elliptic oblong. *Style* 7.5–7.8 mm. *Ovary* 2-locular, 6–9 ovules per locule. *Fruits* (immature) globose, depressed globose or oblong ovoid.

Laos. —

Distribution.—Myanmar, Thailand.

Ecology.—

3. *Syzygium attopeuense* (Gagnep.) Merr. & L.M.Perry, J. Arnold Arbor. 19: 107. 1938.

Eugenia attopeuensis Gagnep. in Lecomte, Notul. Syst. (Paris) 3: 316. 1917.

Laos.— Endemic.

Distribution.—

Ecology.—

4. *Syzygium bullockii* (Hance) Merr. & L.M.Perry, J. Arnold Arbor. 19: 107. 1938.

Eugenia bullockii Hance

Laos.—

Distribution.— Vietnam, China.

Ecology.—

5. *Syzygium campylocarpum* (Gagnep.) Merr. & L.M.Perry

Eugenia campylocarpum Gagnep. in Lecomte, Notul. Syst. (Paris) 3: 320. 1917.

Laos.— Endemic.

Ecology.—

6. *Syzygium cumini* (L.) Skeels in U.S.D.A. Bur. Pl. Industr. Bull. 248: 25. 1912; Alston, Handb. Fl. Ceylon 6 (Suppl.): 116. 1931; Merr. & L.M. Perry, J. Arnold Arbor. 19: 108. 1938; Backer & Bakh.f., Fl. Java 1: 340. 1963; Kosterm. in Quat. J. Taiwan Mus. 34: 134. 1981; N.P. Balakr, Fl. Jowai 1: 199. 1981; P.S. Ashton in Dassan. & Fosberg, Fl. Ceyl. 2: 443. 1981; Harid. & R.R. Rao, Forest Fl. Meghalaya: 394. 1985; D.G. Long & Rae in Grierson & D.G. Long, Fl. Bhutan 2: 284. 1991; P.H. Hô, Cáyco Viêtnam 2: 45. 1992 [as *Syzygium cumini* (L.) Druce]; P.Chantaranonthai & J.Parn., Thai Forest Bull. (Bot.) 21: 56. 1994; J.Parn. & P.Chantaranonthai in Santisuk & Larsen, Fl. Thailand 7(4): 847. 2002.

Myrtus cumini L., Sp. Pl.: 471. 1753.

Tree to 35 m. *Twigs* terete (the young twigs angled), the bark smooth, whitish grey. *Leaves* with petiole 6–28 mm; lamina 8.8–13.6 by 3.4–7.2 cm, ovate, oblong ovate or elliptic, base cuneate, acute or rounded, apex rather shortly acuminate; midrib impressed on the upper surface, secondary veins 19–30 pairs, intramarginal vein 1. *Inflorescence* 4.5–10 cm, both terminal and axillary, panicle, several together, shorter than the leaves; peduncles 3–10 mm, branches and branchlets striate; bracts 0.7 by 1 mm, triangular; bracteoles 0.6 by 0.4 mm, triangular. *Flowers* white or pale yellow, sessile. *Hypanthial cup* 2.4–5.1 mm, funnel-shaped. *Pseudostipe* 1–2 mm. *Sepals* 4, 0.3–0.7 by 0.3–0.5 mm, triangular or rounded, obscure. *Petals* 4, 1.4–2.8 mm, pseudo-calyptate, orbicular, membranous, 5–19 gland dots per petal. *Outer stamens* 3.8–6 mm, anther 0.4–0.5 mm, oblong to elliptic. *Style* 1.8–6.4 mm, stout. *Ovary* 2-locular, 10–18 ovules per locule. *Fruits* 8–9 mm, oblong, ovoid or oblong ellipsoid.

Laos.—

Distribution.— Widely distributed in the Indo-Malayan region (Sri Lanka, type), introduced in other tropical regions.

Ecology.— Widespread in cultivation and the wild in many types of forest; 0–1100 m.

7. *Syzygium grande* (Wight) Walp., Repert. 2: 180. 1843, J. Arnold Arbor. 19: 112. 1939; in Mem. Amer. Acad. Arts 18: 176. 1939; N.P. Balakr., Fl. Jowai 1: 200. 1981; Harid. & R.R. Rao, Forest Fl. Meghalaya: 397. 1985; P.H. Hô, Cáyco Viêtnam 2: 51. 1992 [as *Zyzygium grandis* (Wight)]; P.Chantaranothai & J.Parn., Thai Forest Bull. (Bot.) 21: 68. 1994; Turner, Gard. Bull. Singapore 47: 376. 1995; J.Parn. & P.Chantaranothai in Santisuk & Larsen, Fl. Thailand 7(4): 858. 2002.

var. *grande*

Tree to 20 m. *Twigs* slender, terete, the bark brownish or greyish, smooth or flaky. *Leaves* with petiole 5–25 mm; lamina 9.4–18.3 by 4–9.1 cm, elliptic, elliptic oblong or ovate, base decurrent, cuneate, apex deflexed and acute or acuminate; midrib impressed on the upper surface, secondary veins 9–16 pairs, intramarginal veins 2. *Inflorescence* 4–7.5 cm, both terminal and in the upper axils, paniculate, usually clustered; peduncle 3–22 mm, rachis and branches terete, striate. *Flowers* white, sessile. *Hypanthial cup* 8.4–10.9 mm, broadly funnel-shaped. *Pseudostipe* 5–6 mm. *Sepals* 4, the outer lobes 2.3–3.2 mm, transverse oblong, the inner lobes 4.3–5.6 mm, petaloid, orbicular. *Petals* 4, 3.5–5.7 mm, free, suborbicular, membranous, 100–150 gland dots per petal. *Outer stamens* 9.1–12.6 mm, anther 0.7 mm, elliptic oblong. *Style* 9–15.4 mm, exceeding the stamens. *Ovary* 2-locular, 15–20 ovules per locule. *Fruits* 1.8–2.8 by 1.6–2.3 cm, elliptic oblong or globose.

Laos.—

Distribution.— India, Sri Lanka, Myanmar (type), Thailand, Vietnam, Cambodia, Peninsular Malaysia, Singapore, Borneo.

Ecology.— Bamboo forest, savannah, edges of evergreen forest, especially bordering beaches near to seashores; 0–1,200 m.

8. *Syzygium harmandii* (Gagnep.) Merr. & L.M.Perry, J. Arnold Arbor. 19: 115. 1938.

Eugenia harmandii Gagnep. in Lecomte, Notul. Syst. (Paris) 3: 325. 1917.

Laos.— Endemic.

Ecology.—

9. *Syzygium jambos* (L.) Alston in Trimen, Handb. Fl. Ceylon 6 (Suppl.): 155. 1931; Merr. & L.M. Perry, J. Arnold Arbor. 19: 114, 217. 1938; Mem. Amer. Acad. Arts 18: 165. 1939; Merr., Philipp. J. Sci. 79: 397. 1950; Backer & Bakh.f., Fl. Java 1: 344. 1963; Kosterm. in Quat. J. Taiwan Mus. 34: 141. 1981; P.S. Ashton in Dassan. & Fosberg, Fl. Ceyl. 2: 427. 1981; Harid. & R.R. Rao, Forest Fl. Meghalaya: 397. 1985; Whistler, J. Arnold Arbor. 69: 183. 1988; D.G. Long & Rae in Grierson & D.G. Long, Fl. Bhutan 2: 280. 1991; P.H. Hô, Cáyco Viêtnam 2: 44. 1992; P.Chantaranothai & J.Parn., Thai Forest Bull. (Bot.) 21: 77. 1994; J.Parn. & P.Chantaranothai in Santisuk & Larsen, Fl. Thailand 7(4): 868. 2002.

Eugenia jambos L., Sp. Pl.: 470. 1753.

Tree to 10 m. *Twigs* slender, compressed or angled, the bark whitish grey or brown. *Leaves* with petiole 7–14 mm; lamina 12.2–17.5 by 3–4.5 cm, oblong lanceolate, base cuneate, apex acute or acuminate; midrib impressed on the upper surface, secondary veins 11–14 pairs, intramarginal veins 2. *Inflorescence* up to 6 cm, terminal, raceme, with 3–8 flowers, rarely 1-flowered; peduncle 30–50 mm, rachis and branches terete. *Flowers* white or pale yellow; pedicel 3–13 mm. *Hypanthial cup* 12–14 mm, broadly funnel-shaped. *Pseudostipe* 4–6 mm. *Sepals* 4, 4.9–7.7 mm, semiorbicular, rim hyaline. *Petals* 4, 15–17 mm, free, orbicular, base thick, >200 gland dots per petal. *Outer stamens* 33–37 mm, anther 1–1.2 mm, elliptic oblong. *Style* ca. 43 mm, exceeding the stamens. *Ovary* 2-locular, ca. 28 ovules per locule. *Fruits* 5–6 cm diam., depressed globose.

Laos.—

Distribution.— Native to the Indo-Malayan region, widely cultivated in tropical regions (India, type).

Ecology.— Villages, plantations; 0–300 m.

10. *Syzygium lineatum* (DC.) Merr. & L.M.Perry, J. Arnold Arbor. 19: 109. 1938, in Mem. Amer. Acad. Arts 18: 172. 1939; Backer in Blumea 5: 499. 1945; Airy Shaw, Bull. Misc. Inform. Kew 1949: 121. 1949; Backer & Bakh.f., Fl. Java 1: 343. 1963; P.H. Hô, Cáyco Viêtnam 2: 74. 1992 [as *Syzygium lineatum* (Blume)

Merr. & Perry]; P.Chantaranothai & J.Parn., Thai Forest Bull. (Bot.) 21: 83. 1994; Turner, Gard. Bull. Singapore 47: 378. 1995; J.Parn. & P.Chantaranothai in Santisuk & Larsen, Fl. Thailand 7(4): 873. 2002.

Myrtus lineata Blume, Bijdr.: 1087. 1826, non Swartz.

Jambosa lineata (Blume) DC., Prodr. 3: 287. 1828.

Tree to 20 m. Twigs slender, terete, the bark smooth or flaky, whitish grey or dark brown. Leaves with petiole 4–8 mm; lamina 5.3–11.2 by 2.4–4.7 cm, elliptic, elliptic oblong or ovate lanceolate, base cuneate, apex acute or acuminate; midrib impressed on the upper surface, secondary veins 16–20 pairs, intramarginal veins 2. Inflorescence 2–10 cm, both terminal and in the upper axils, with several branches from the base, sometimes solitary; peduncle up to 20 mm, rachis and branches compressed or slightly angled; bracteoles 1.2 by 0.7 mm, triangular. Flowers white, greenish white or pale yellow, outer two flowers of a triad pedicelled, pedicel 1 mm, the central flower sessile, occasionally pedicelled. Hypanthial cup 5.4–8.4 mm, funnel-shaped. Pseudostipe 2 mm. Sepals 4, 1.4–2.1 mm, oblong, sometimes orbicular, persistent. Petals 4, 4–5.7 mm, free, orbicular or oblong ovate, >100 gland dots per petal. Outer stamens 10–15 mm, anther 0.7 mm, oblong ovate. Style 11–13 mm. Ovary 2-locular, 12–20 ovules per locule. Fruits oblong ovoid, 1–1.3 cm and ca. 1 cm diam.

Laos. —

Distribution.— Myanmar, Thailand, Vietnam, Cambodia, Malesia (Java, type).

Ecology.— Scattered through peat swamp forest, streamsides in evergreen forest, roadsides in secondary forest, the sea-shore and rocky ground in savannah; 0–1000 m.

11. *Syzygium malaccense* (L.) Merr. & L.M.Perry, J. Arnold Arbor. 19: 215. 1938; Backer & Bakh.f., Fl. Java 1: 343. 1963; T.G. Hartley & L.M. Perry, J. Arnold Arbor. 54: 40. 1973; Kosterm. in Quat. J. Taiwan Mus. 34: 123. 1981; P.S. Ashton in Dassan. & Fosberg, Fl. Ceyl. 2: 428. 1981; Whistler, J. Arnold Arbor. 69: 181. 1988; P.H. Hô, Cáyco Viêtnam 2: 44. 1992; P.Chantaranothai & J.Parn., Thai Forest Bull. (Bot.) 21: 85. 1994; J.Parn. & P.Chantaranothai in Santisuk & Larsen, Fl. Thailand 7(4): 875. 2002.

Eugenia malaccensis L., Sp. Pl.: 470. 1753.

Tree to 8 m. Twigs compressed or angled, the bark brownish. Leaves with petiole 10 mm; lamina 31.7–36 by 13–14 cm, elliptic or oblong elliptic, sometimes obovate, base cuneate, apex acute or obtuse; midrib impressed on the upper surface, secondary veins 10–11 pairs, intramarginal veins 2. Inflorescence up to 4 cm, fasciculate in the axils of fallen leaves. Flowers red with pedicel 2–5 mm. Hypanthial cup 14–15 mm, cylindrical funnel-shaped. Pseudostipe 6–7 mm. Sepals 4, the outer lobes 3.2–3.5 mm, the inner lobes 5.6–6.3 mm, semi-orbicular. Petals 4, 8.2–9.1 mm, free, orbicular, >200 gland dots per petal. Outer stamens 15–17 mm, anther 0.4 mm, ovate. Style ca. 21 mm. Ovary 2-locular, 46–47 ovules per locule. Fruits 4–5 cm diam., oblong or globose.

Laos.—

Distribution.— Native to the Indo-Malayan region, frequently cultivated in Southeast Asia and introduced in other tropical countries (India, type).

Ecology.— Villages and plantations; 0–300 m.

12. *Syzygium oblatum* (Roxb.) Wall. ex A.M. Cowan & Cowan, Trees N. Bengal: 68. 1929; Merr. & L.M. Perry, J. Arnold Arbor. 19: 101. 1938; in Mem. Amer. Acad. Arts 18: 187. 1939; P.H. Hô, Cáyco Viêtnam 2: 54. 1992; P.Chantaranothai & J.Parn., Thai Forest Bull. (Bot.) 21: 90. 1994; Turner, Gard. Bull. Singapore 47: 379. 1995; J.Parn. & P.Chantaranothai in Santisuk & Larsen, Fl. Thailand 7(4): 879. 2002.

Eugenia oblata Roxb. [Hort. Bengal.: 37. 1814, nom.nud.] Fl. Ind. ed. 2,2: 493. 1832.

var. **oblatum**

Tree to 20 m. Twigs terete, slightly angled or compressed, the bark brown, smooth or flaky. Leaves with petiole 3.5–10 mm; lamina 7.9–17.3 by 2.4–6.8 cm, elliptic, oblong elliptic or lanceolate, base narrowly or broadly cuneate, apex acuminate or acute; midrib impressed on the upper surface, secondary veins 11–19 pairs, intramarginal veins usually 1 occasionally 2. Inflorescence up to 10 cm, both terminal and in the upper axils, corymbose, lax or dense; branched from the base, branches and branchlets terete, sometimes compressed. Flowers white or yellowish, sessile. Hypanthial cup 4.6–9.1 mm, funnel-shaped. Pseudostipe 2–3 mm. Sepals 4–5, 0.5–2 mm, transverse oblong ovate or semi-orbicular, membranous. Petals 5, 3–7 mm,

orbicular, membranous, 30–60 gland dots per petal. *Outer stamens* 5.6–18.9 mm, anther 0.5–0.6 mm, oblong elliptic. *Style* 6.3–16.8 mm. *Ovary* 2-locular, 4–15 ovules per locule. *Fruits* (immature) globose.

Laos.—

Distribution.— Myanmar, Thailand, Cambodia, Vietnam, China, Peninsular Malaysia, Borneo.

Ecology.— Scattered on plains and mountain ridges in mixed deciduous forest, streamsides in evergreen forest and scrub, in peat swamp forest; 0–1200 m.

13. *Syzygium polyanthum* (Wight) Walp., Repert. 2: 180 1843, non Miq.; Merr. & L.M. Perry, J. Arnold Arbor. 19: 108. 1938; Mem. Amer. Acad. Arts 18: 155. 1939; Merr., Philipp. J. Sci. 79: 409. 1950; Backer & Bakh.f., Fl. Java 1: 339. 1963; P.H. Hô, CÂYCO VIỆT NAM 2: 56. 1992; P.Chantaranothai & J.Parn., Thai Forest Bull. (Bot.) 21: 95. 1994; Turner, Gard. Bull. Singapore 47: 380. 1995; J.Parn. & P.Chantaranothai in Santisuk & Larsen, Fl. Thailand 7(4): 887. 2002.

Eugenia polyantha Wight, Ill. Ind. Bot. 2: 17. 1841.

Tree to 30 m. *Twigs* terete, the bark smooth sometimes flaky, whitish grey, grey, brown or reddish brown. *Leaves* with petiole 5.6–9.8 mm; lamina 6.5–13.2 by 2.2–5 cm, elliptic, oblong elliptic or lanceolate, base cuneate, apex acute or acuminate; midrib impressed on the upper surface, sometimes raised at base, secondary veins 7–10 pairs, intramarginal vein absent. *Inflorescence* up to 2–4.5 cm, axillary, usually 1–3 inflorescences in the axils of fallen leaves, paniculate; peduncle 2–10 mm, rachis and branches slender, striate; bracts 0.7 by 0.4 mm, triangular; bracteoles 0.5 by 0.3 mm, triangular. *Flowers* white or pale yellow, sessile. *Hypanthial cup* 1.9–2.5 mm, funnel-shaped. *Pseudostipe* 1.5–2 mm. *Sepals* 4, 0.6–1.3 mm, triangular. *Petals* 4, 1.4–2.2 mm, free, orbicular, membranous, 30–60 gland dots per petal. *Outer stamens* 2.4–4.6 mm, anther 0.4–0.5 mm, oblong ovate. *Style* 1.4–2 mm. *Ovary* 2-locular, 8–19 ovules per locule. *Fruits* 4–7 mm diam., globose.

Laos.—

Distribution.— Myanmar, Thailand, Vietnam, Cambodia, Malaysia, Java.

Ecology.— Mixed deciduous forest, paddy fields, streams, evergreen and bamboo forests and scrub; 0–1300 m.

14. *Syzygium ripicola* (Craib) Merr. & L.M.Perry in Britton 4: 127. 1941; P.Chantaranothai & J.Parn., Thai Forest Bull. (Bot.) 21: 104. 1994; J.Parn. & P.Chantaranothai in Santisuk & Larsen, Fl. Thailand 7(4): 895. 2002.

Eugenia ripicola Craib, Bull. Misc. Inform., Kew 1915: 428. 1915.

Tree to 10 m. *Twigs* terete or compressed, the bark whitish grey. *Leaves* with petiole 2–8 mm; lamina 5–13.1 by 1.5–3 cm, narrowly oblong, oblanceolate or elliptic, base cuneate, apex acute sometimes obtuse; midrib impressed on the upper surface, secondary veins 13–20(–30) pairs, intramarginal vein 1. *Inflorescence* up to 9 cm, both terminal and axillary; peduncle, branches and branchlets terete or compressed. *Flowers* white, sessile. *Hypanthial cup* 3.5–5.3 mm, funnel-shaped. *Pseudostipe* 2–2.5 mm; *Sepals* 4, 0.4–1.1 mm. *Petals* 4, 1.5–2.5 mm, 5–8 gland dots per petal. *Outer stamens* (3.1–)4.5–6.7 mm, anther 0.4–0.5 mm, ovate. *Style* (2.4–)4.5–6 mm. *Ovary* 2-locular, 10–15 ovules per locule. *Fruits* 8–9 mm, oblong or oblong-ellipsoid.

Laos.—

Distribution.— Myanmar, Thailand, Vietnam, Cambodia.

Ecology.— Banks of rapids, streams and rivers in dry scrub, or dry deciduous forest; 180–300 m.

15. *Syzygium samarangense* (Blume) Merr. & L.M.Perry, J. Arnold Arbor. 19: 115, 216. 1938; l.c., 23: 259. 1942; Mem. Amer. Acad. Arts 18: 167. 1939; Merr., Philipp. J. Sci. 79: 414. 1950; Backer & Bakh.f., Fl. Java 1: 345. 1963; T.G. Hartley & L.M. Perry, J. Arnold Arbor. 54: 192. 1973; Whistler, J. Arnold Arbor. 69: 180. 1980; P.S. Ashton in Dassan. & Fosberg, Fl. Ceyl. 2: 425. 1981; P.H. Hô, CÂYCO VIỆT NAM 2: 43. 1992 [as *Syzygium semarangense* (Blume) Merr. & Perry]; P.Chantaranothai & J.Parn., Thai Forest Bull. (Bot.) 21: 105. 1994; J.Parn. & P.Chantaranothai in Santisuk & Larsen, Fl. Thailand 7(4): 896. 2002.

Myrtus samarangensis Blume, Bijdr.: 1084. 1826.

var. samarangense

Tree to 9 m. *Twigs* terete, the bark smooth or flaky, greenish brown or brown. *Leaves* with petiole 1.8–8 mm; lamina 12.3–20 by 4.5–8.5 cm, elliptic or narrowly oblong, base slightly cordate, rounded to broadly cuneate, apex acute, sometimes obtuse; midrib impressed on the upper surface, secondary veins 9–15 pairs, intramarginal veins 2. *Inflorescence* up to 8 cm, both terminal and axillary, lax; peduncle up to 15 mm, bracts and bracteoles 1 mm, triangular. *Flowers* white or pale yellow, sessile or with pedicel variable in size, to 18 mm. *Hypanthial cup* 15–18 mm long, funnel-shaped. *Pseudostipe* ca. 6 mm. *Sepals* 4, 3.5–7 mm, transverse oblong or semiorbicular, rim membranous. *Petals* 4, 10–13 mm, free, ovate, orbicular or shortly or broadly clawed, base thick, >200 gland dots per petal. *Outer stamens* 12–25 mm, anther 1.5–1.8 mm, linear oblong, with 2–8 gland dots on the back. *Style* 24–35 mm. *Ovary* 2-locular, 32–35 ovules per locule. *Fruits* pyriform.

Laos.—

Distribution.— Pantropical always in cultivation (Java, type).

Ecology.— Cultivation.

16. Syzygium sphaeranthum (Gagnep.) Merr. & L.M.Perry, J. Arnold Arbor. 19: 113. 1938.

Eugenia sphaeranthum Gagnep. in Lecomte, Notul. Syst. (Paris) 3: 333. 1917.

Laos.— Endemic.

Distribution.—

Ecology.—

17. Syzygium stictanthum Merr. & L.M.Perry, J. Arnold Arbor. 19: 116. 1938.

Laos.— Endemic.

Distribution.—

Ecology.—

18. Syzygium syzygioides (Miq.) Merr. & L.M.Perry, J. Arnold Arbor. 19: 109. 1938, in Mem. Amer. Acad. Arts 18: 171. 1939; Backer & Bakh.f., Fl. Java 1: 341. 1963; P.Chantaranothai & J.Parn., Thai Forest Bull. (Bot.) 21: 111. 1994; Turner, Gard. Bull. Singapore 47: 383. 1995; J.Parn. & P.Chantaranothai in Santisuk & Larsen, Fl. Thailand 7(4): 901. 2002

Jambosa syzygioides Miq., Fl. Ind. Bat. 1: 431. 1855.

Tree to 30 m. *Twigs* terete, the bark greenish brown or reddish brown. *Leaves* with petiole 4.2–7.7 mm, lamina 4.5–8.7 by 1.9–3.8 cm, lanceolate, oblong lanceolate or ovate elliptic, base cuneate, apex acuminate or caudate-acuminate; midrib impressed on the upper surface, secondary veins 18–27 pairs, intramarginal vein 1. *Inflorescence* up to 7.5 cm, both terminal and axillary, paniculate; peduncle up to 10 mm, rachis and branches compressed; bracts 0.5 by 0.3 mm, triangular; bracteoles 0.5–0.6 by 0.4 mm, triangular. *Flowers* white, sessile. *Hypanthial cup* 3.1–4.2 mm, funnel-shaped. *Pseudostipe* 1.3–1.7 mm. *Sepals* 4, 0.5–0.8 mm, triangular. *Petals* 4, 1.5–2.6 mm, free, orbicular, membranous, 20–25 gland dots per petal. *Outer stamens* 3.5–5.4 mm, anther 0.4 mm, ovate. *Style* 2.9–6.1 mm. *Ovary* 2-locular, 5–10 ovules per locule. *Fruits* (immature) globose.

Laos.—

Distribution.— Andamans, Assam, Myanmar, Thailand, Vietnam, Cambodia, Malesia.

Ecology.— Streamsides, evergreen and secondary forests, beaches.

19. Syzygium thorelii (Gagnep.) Merr. & L.M. Perry, J. Arnold Arbor. 19: 107. 1938; P.Chantaranothai & J.Parn., Thai Forest Bull. (Bot.) 21: 114. 1994; J.Parn. & P.Chantaranothai in Santisuk & Larsen, Fl. Thailand 7(4): 905. 2002.

Eugenia thorelii Gagnep. in Lecomte, Notul. Syst. (Paris) 3: 333. 1918; in Fl. Gén. I.-C. 2: 816. 1920; Craib in Fl. Siam. Enum. 1: 664. 1931.

Shrub to 2 m. *Twigs* terete or angled when young, the bark whitish grey, dark brown or black. *Leaves* alternate or opposite, with petiole 3.5–7 mm; lamina 5.1–6.7 by 1.7–2.8 cm, obovate, ovate or obovate oblong, base narrowly or broadly cuneate, with unequal sides, apex obtuse, acute or broadly acute; midrib impressed on the upper surface, secondary veins ca. 8 pairs, intramarginal veins 2. *Inflorescence* up to 6 cm,

terminal; peduncle, rachis and branches slender; bracts 1–2 mm, triangular; bracteoles 0.8 by 0.5 mm, triangular. *Flowers* white, sessile, clustered at branchlets ends. *Hypanthial cup* 3.6–3.9 mm, funnel-shaped. *Pseudostipe* 1–1.5 mm. *Sepals* 4, 0.5 mm, triangular, membranous. *Petals* 4, 2.1–2.9 mm, pseudo-calyprate, orbicular, 2–3 gland dots per petal. *Outer stamens* 5.4–6 mm, anther 0.5–0.7 mm, elliptic. *Style* 4.9–6.3 mm. *Ovary* 2-locular, 8–15 ovules per locule. *Fruits* 9 by 5 mm, ovoid oblong.

Laos.—

Distribution.— Thailand.

Ecology.— Rock crevices in Mekong river, partly submerged at high water.

20. *Syzygium thumra* (Roxb.) Merr. & L.M.Perry, *J. Arnold Arbor.* 20: 103. 1939; P.Chantaranothai & J.Parn., *Thai Forest Bull. (Bot.)* 21: 114. 1994; Turner, *Gard. Bull. Singapore* 47: 384. 1995; J.Parn. & P.Chantaranothai in Santisuk & Larsen, *Fl. Thailand* 7(4): 905. 2002.

Eugenia thumra Roxb., [*Hort. Bengal.* 92. 1814, nom. nud.] *Fl. Ind. ed. 2.* 2: 495. 1832.

subsp. **thumra**

Tree to 20 m. *Twigs* terete, the bark smooth or sometimes flaky, whitish grey. *Leaves* black when dry, with petiole 2.8–7.7 mm; lamina 13.5 by 4.7–7.6 cm, ovate or ovate lanceolate, base narrowly or broadly cuneate, apex acute or acuminate; midrib impressed on the upper surface, secondary veins 14–18 pairs, intramarginal veins 2. *Inflorescence* 9.5–12 cm, terminal, paniculate, lax; branched from the base; branches and branchlets terete or compressed. *Flowers* white, sessile. *Hypanthial cup* 4.5–5.7 mm, funnel-shaped. *Pseudostipe* 1.5–2 mm. *Sepals* 4, 1.2–2.2 mm, semiorbicular. *Petals* 4, 2.1–2.8 mm, free, orbicular, sometimes clawed, 5–10 gland dots per petal. *Outer stamens* 4.5–7.7 mm, anther 0.5–0.7 mm, elliptic. *Style* 6.1–7.4 mm. *Ovary* 2-locular, 7–11 ovules per locule. *Fruits* unknown.

Laos.—

Distribution.— Myanmar (type), Thailand.

Ecology.— Streamsides, evergreen and mixed forests; 200–1100 m.

21. *Syzygium tinctorium* (Gagnep.) Merr. & L.M.Perry, *J. Arnold Arbor.* 19: 112. 1938.

Laos.—

Distribution.— Cambodia, Vietnam.

Ecology.—

22. *Syzygium zeylanicum* (L.) DC., *Prodr.* 3: 260. 1828; Gamble in *Fl. Madras* 1: 479. 1919; Merr. & L.M. Perry, *J. Arnold Arbor.* 19: 101, 224. 1938; Mem. Amer. Acad. Arts 18: 159. 1939; Backer in *Blumea* 5: 497. 1945; Backer & Bakh.f., *Fl. Java* 1: 339. 1963; P.S. Ashton in Dassan. & Fosberg, *Fl. Ceyl.* 2: 431. 1981; P.H. Hô, *Câyco Vietnam* 2: 62. 1992; P.Chantaranothai & J.Parn., *Thai Forest Bull. (Bot.)* 21: 118. 1994; Turner, *Gard. Bull. Singapore* 47: 385. 1995; J.Parn. & P.Chantaranothai in Santisuk & Larsen, *Fl. Thailand* 7(4): 908. 2002.

Myrtus zeylanica L., *Sp. Pl.*: 472. 1753.

Tree to 15 m. *Twigs* angled, the bark pale brown or reddish brown. *Leaves* with petiole 1.1–7 mm, lamina 3.4–9.8 by 1.1–3.2 cm, ovate, lanceolate or elliptic, base broadly cuneate or rounded, apex acute or acuminate; midrib impressed on the upper surface, secondary veins 10–14 pairs, intramarginal vein 1. *Inflorescence* up to 3 cm, both terminal and axillary, cymose, several together; branches and branchlets angled or slightly winged. *Flowers* white, sessile. *Hypanthial cup* 5–6.5 mm, cylindrical funnel-shaped; pustulate. *Pseudostipe* 1–2 mm. *Sepals* 4–5, 0.6–1.5 mm. *Petals* 5, (1.4–) 2.1–2.8 mm, pseudo-calyprate, orbicular, membranous, 30–50 gland dots per petal. *Outer stamens* (3.9–)8.4–11.7 mm, anther 0.4 mm, oblong. *Style* (4.2–)8.5–12.3 mm. *Ovary* 2-locular, 7–12 ovules per locule. *Fruits* whitish globose.

Laos.—

Distribution.— India, Sri Lanka (type), Myanmar, Thailand, China, Vietnam, Cambodia, Malesia.

Ecology.— Scattered, in peat swamp, mixed deciduous and evergreen forests; 0–75 m.

23. *Syzygium zimmermannii* (Warb.) Merr. & L.M.Perry, J. Arnold Arbor. 19: 144. 1938; P.H. Hô, Cáyco Vietnam 2: 62. 1992 [as *S. zimmermannii* (Gagnep.) Merr. & Perry]; P.Chantaranothai & J.Parn., Thai Forest Bull. (Bot.) 21: 120. 1994; J.Parn. & P.Chantaranothai in Santisuk & Larsen, Fl. Thailand 7(4): 909. 2002.

Eugenia zimmermannii Warb., Bull. Misc. Inform., Kew 1914: 124. 1914.

Tree to 20 m. *Twigs* terete, the bark whitish grey. *Leaves* with petiole 7–21 mm, lamina 6.3–13 by 2–5.8 cm, ovate, oblanceolate or oblong lanceolate, base broadly cuneate or attenuate, decurrent, apex broadly acute, acuminate or obtuse; midrib impressed on the upper surface, secondary veins 6–9 pairs, intramarginal vein absent. *Inflorescence* 4–8 cm, both terminal and in the upper axils, paniculate, branched from the base; branches and branchlets terete, angled or compressed. *Flowers* white, sessile, sometimes pedicelled. *Hypanthial cup* 7–8.4 mm, funnel-shaped. *Pseudostipe* 3 mm. *Sepals* 4, 1.8–4.5 by 4 mm, orbicular or triangular. *Petals* 4, 5.1–8.5 mm, free, orbicular, >100 gland dots per petal. *Outer stamens* 9.1–13.6 mm, anther 0.7–0.8 mm, linear oblong. *Style* 8.4–13.3 mm. *Ovary* 2-locular, 15–34 ovules per locule. *Fruits* unknown.

Laos.—

Distribution.— Thailand (type), Vietnam.

Ecology.— Streamsides, dry mixed or dry evergreen forest; 100–300 m.

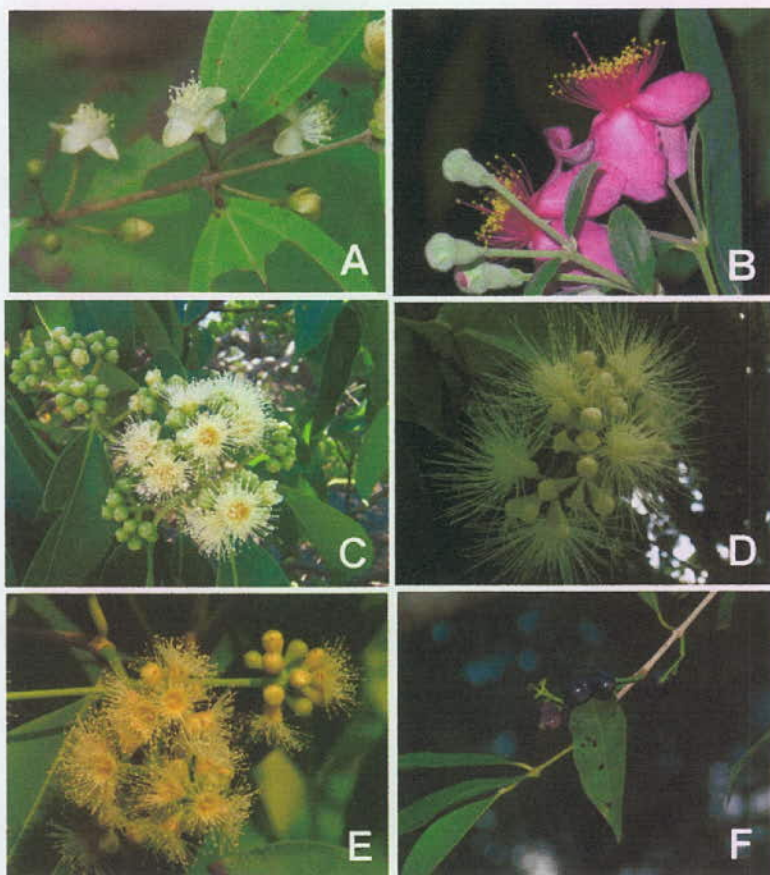


Figure 8: A) *Rhodamnia dumetorum*
B) *Rhodomyrtus tomentosa*
C) *Syzygium grande*
D) *S. oblatum*
E) *S. ripicola*
F) *S. thorelii*