

GNETACEAE

Chamlong Phengklai*

This is a monogeneric family, Gnetum being the only genus.

GNETUM

Linn., Mant. I. : 18n. 1278. 1763; Mgf. in Bull. Jard. Bot. Btzg. III. 10 : 407 map 1-8, t. 1-14. 1930; Fl. Mal. I. 4 : 337. 1951.

Evergreen monoecious (rarely dioecious) trees, shrubs, or woody climbers; branches with swollen joints. *Leaves* simple, decussate, entire, penninerved, exstipulate, mostly provided with fine pellucid lines parallel to the secondary nerves. *Spikes* simple or branched in leaf-axil or on stem, each one with 2 opposite basal scales and several collars containing monilliform hairs and sessile flowers, with numerous, spirally arranged males either below a ring of some sterile females or a ring of few fertile females. *Male flowers* claw-shaped with transversely splitting perianth and a central stamen with 2 apical, yellow microsporangia opened by an apical median split. *Female flowers* without perianth; ovule erect with 2 or 3 coats, one produced into a style-like tube with a round mouth. *Drupe* mostly ellipsoid, ripened pink or red, fruiting perianths fleshy, enclosing the hard seed.

KEY TO SPECIES

(based on female plant)

1. Inflorescence simple, rarely branched; small tree, shrub or climber
 2. Small tree, shrub or climber; leaves chartaceous, greenish turning yellowish when dry; collars flats; peduncle and internodes thin, the latter linear; fruits sessile.
 3. Tree, about 10 m high; inflorescence once or less branched; flowers globose; fruit with obtuse apex **1.a G. gnemon var. gnemon**
 3. Shrub about 3 m high; inflorescence simple; flowers oblong, beaked; fruits with acute apex **1.b G. gnemon var. tenerum**
 2. Climber; leaves mostly coriaceous rarely chartaceous, green turning brown or black when dry rarely staying greenish or yellowish; collars dish-like; peduncle and internode thick, the latter oblong
 4. Leaves chartaceous, greenish or yellowish when dry; fruits stalk 1-1.5 cm **2. G. tenuifolium**
 4. Leaves coriaceous, brown or black when dry; fruits sessile
 5. In fruiting stage collars with villous hairs covering the lower half of fruit **3. G. macrostachyum**

* Forest Herbarium, Royal Forest Department, Bangkok 9, Thailand.

- 5. In fruiting stage collars with velvety hairs not covering the lower half of fruit
- 6. Fruits not more than 2 by 1.2 cm, not shining; spike $\pm$ 2.5 cm long; flowers 8 to each collar, the latter 3 mm long 4. *G. microcarpum*
- 6. Fruit 2-3 by 1-1.5 cm, shining; spike 5 cm long; flowers 5-7 to each collar, the latter 5 mm long 5. *G. cuspidatum*
- 1. Inflorescence much branched; climber
- 7. Fruit sessile. Flowers 6 to each collar 6. *G. leptostachyum*
- 7. Fruit stalked
- 8. Stalk stout. Flowers 5-7 to each collar 7. *G. montanum*
- 8. Stalk linear. Flowers 6-9 to each collar 8. *G. latifolium* var. *funiculare*

KEY TO SPECIES

(based on male plant)

- 1. Inflorescence simple, rarely branched; small tree, shrub or climber
- 2. Small tree or shrub; leaves chartaceous, greenish turning yellowish when dry; inflorescence yellowish, collars flat
- 3. Small tree about 10 m high; inflorescence once or few-branched, flowers clusters up to 5 mm diam. 1.a *G. gnemon* var. *gnemon*
- 3. Shrub about 3 m high; inflorescence simple, flowers clusters up to 2 mm in diam. 1.b *G. gnemon* var. *tenerum*
- 2. Climber; leaves mostly coriaceous, rarely chartaceous, green turning brown or black, rarely staying green when dry; inflorescence not yellow; collars dish-like or tubular
- 4. Leaves chartaceous, green when dry; flowers protruded, collars dish-like 2. *G. tenuifolium*
- 4. Leaves coriaceous, brown when dry; flowers not protruded, collars tubular
- 5. Rudimentary ovary fusiform, 20-30 in each collar 4. *G. microcarpum*
- 5. Rudimentary ovary ovate, up to 10 in each collar
- 6. Spike pendulous $\pm$ 6 by 0.5 cm; leaves elliptic to oblong-elliptic, thinly coriaceous 6. *G. cuspidatum*
- 6. Spike erect up to 5 by 0.7 cm; leaves oblong to lanceolate-oblong, coriaceous 3. *G. macrostachyum*

- 1. Inflorescence much branched; climber
- 7. Flowers protruded; collars dish-like
- 8. Flowers about 20 in each collar; leaves black when dry 7. *G. montanum*
- 8. Flowers about 40 in each collar; leaves brown when dry
- 8. *G. latifolium* var. *funiculare*
- 7. Flowers not protruded; collars tubular 6. *G. leptostachyum*

1. *Gnetum gnemon* Linn

A tree easily recognized by the big scars on stem and the markedly anatomosed secondary nerves.

1.a var. *gnemon* Linn

Tree, about 10 m high; inflorescence simple or often once branched; collars remote; fruits elliptic or ovate, 2–2.5 cm long. — Fig. 12

Thailand.— PENINSULAR : Narathiwat (cultivated at Tak Bai, probably introduced from the Malay Peninsula).

Distribution.— Thailand, Malay Peninsula (Type), Java, Fiji, Solomon, New Guinea and Philippines.

Ecology.— Found only under cultivation, its natural habitat is in the evergreen forest, from the sea level up to 1000 m altitude. Flowering between January–February and fruiting between February–March.

Vernacular.— Pi-sae พิ๊ซแซ (Malay-Narathiwat).

1.b var. *tenerum* Mgf.

Shrub about 3 m high; inflorescence simple slender; collars remote; fruits ellipsoid to ovate, 1.5 by 1 cm. — Fig. 13

Thailand.— PENINSULAR : Chumphon, Ranong, Phang-nga and Nakhon Si Thammarat.

Distribution.— Thailand, Malay Peninsula (Type) and Borneo.

Ecology.— In evergreen forest at 50–200 m altitudes. Flowering between January–February and fruiting between February–March.

Vernacular.— Phak miang ผักมี่ยง (Phang-nga); Phak kariang ผักกะริยาง (Chumphon).

2. *Gnetum tenuifolium* Ridl.

A climber, leaves very close to *G. gnemon* but the latter is a tree species. Fig. 14

Thailand.— PENINSULAR : Ranong, Narathiwat.



Fig. 12 *Gnetum gnemon* Linn. var. *gnemon* (T. Smitinand 7115)



Fig. 13 *Gnetum gnemon* var. *tenerum* (T. Smitinand 925)



Fig. 14 *Gnetum tenuifolium* Ridl. (C. Phengklai & T. Smitinand 1219)

Distribution.— Thailand, Malay Peninsula (Type), and Sumatra.

Ecology.— In evergreen forest at 20–50 m altitudes. Fruiting between August–September. Flowering time not record.

Vernacular.— Muei nok เมื่อยนกก (Ranong).

3. *Gnetum macrostachyum* Hook. f.

Woody climber easily recognized by its hairy male and female inflorescences, even in fruiting stage.— **Fig. 15**

Thailand.— **EASTERN** : Nakhon Ratchasima, Nakhon Nayok; **NORTH-EASTERN** : Surin, Nong Khai; **SOUTH-EASTERN** : Trat, Chon Buri; **PENINSULAR** : Ranong, Surat Thani, Nakhon Si Thammarat.

Distribution.— India, Burma, Thailand, Laos, Cambodia, Malay Peninsula (Type), Sumatra, Java, Borneo and New Guinea.

Ecology.— Mostly by stream in evergreen forest at 200–900 m altitudes. Flowering between January–February and fruiting between February–March.

Vernacular.— Muei duk เมื่อยตุก (Pattani); Muei เมื่อย, Muai มวย (Trat, Nakhon Ratchasima); Muai lueat มวยเลือก (Nong Khai).

4. *Gnetum microcarpum* Bl.

A climber, leaves similar to *G. macrostachyum* but the secondary nerves straight not curved; male and female inflorescences hairy on the upper half in fruiting stage.

Thailand.— **SOUTH-EASTERN** : Chanthaburi; **PENINSULAR** : Songkhla.

Distribution.— Burma, Thailand and Malay Peninsula (Type).

Ecology.— In evergreen forest at 50–200 m altitudes. Also reported to occur in savannas or open ground. Flowering between January–February; fruiting between February–March.

Vernacular.— Muei nok เมื่อยนกก (Songkhla).

5. *Gnetum cuspidatum* Bl.

A climber easily recognized by its strongly cuspidate apex.—**Fig. 16**

Thailand.— **PENINSULAR** : Ranong, Chumphon, Nakhon Si Thammarat, Yala, Narathiwat; **NORTHERN** : Kamphaeng Phet; **SOUTH-WESTERN** : Prachuap Khiri Khan.

Distribution.— Thailand, Malay Peninsula, Sumatra (Type), Java, and Borneo.

Ecology.— In evergreen forest at 100–700 m altitudes. Flowering between July–August; fruiting during August–October.

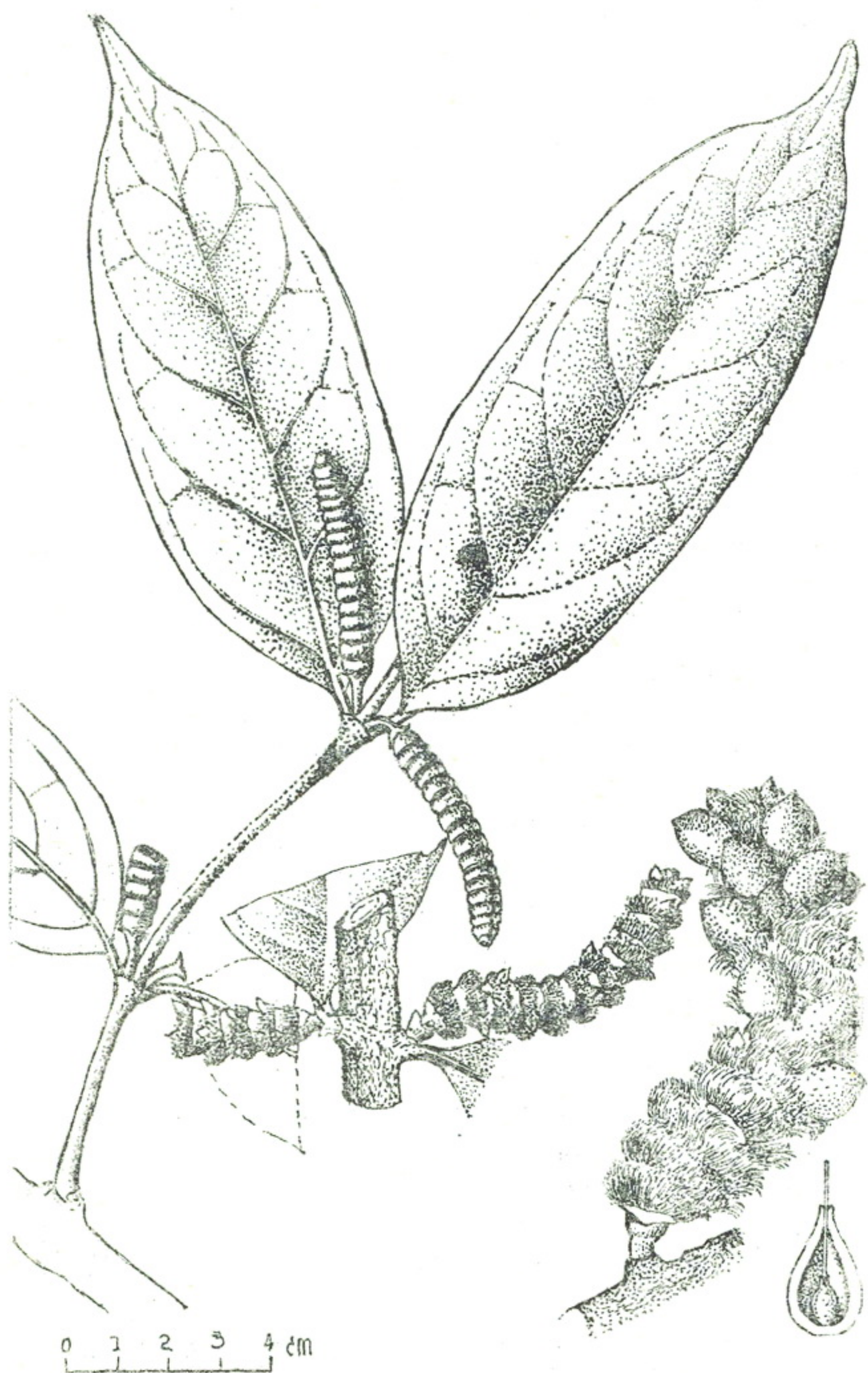


Fig. 15 *Gnetum macrostachyum* Hook.f. (C. Phengkhai 683)



Fig. 16 *Gnetum cuspidatum* Bl. (♂ T. Smitinand 749, ♀ T. Smitinand 978)
 A. Female inflorescence B. Fruits C. Male inflorescence D. Leaves

Vernacular.— Muei เมือง (Nakhon Si Thammarat); Muei dam เมืองดำ (Chumphon).

6. *Gnetum leptostachyum* Bl.

Woody climber with male and female inflorescences much branched; fruits sessile.

Thailand.— NORTHERN : Chiang Mai.

Distribution.— Thailand, Laos, Vietnam and Borneo (Type).

Ecology.— In dry evergreen forest and limestone area up to 1500 m. Flowering in April.

7. *Gnetum montanum* Mgf.

Woody climber similar to *G. leptostachyum*; fruits having stout stalks. Fig. 17

Thailand.— NORTHERN : Phetchabun, Chiang Mai, Chiang Rai, Kamphaeng Phet; NORTH-EASTERN : Loei, Si Sa Ket; SOUTH-EASTERN : Trat, Chanthaburi; SOUTH-WESTERN : Kanchanaburi; PENINSULAR : Ranong.

Distribution.— Burma, Thailand, Laos, Cambodia and Malay Peninsula.

Ecology.— In the lower montane and evergreen forests at 50–1800 m altitudes. Flowering during February–April and fruiting during March–June.

Vernacular.— Muei เมือง (Trat); Haen muai แฮนม่วย (Loei) Muai ม่วย (Chiang Rai, Ubon Ratchathani); Ma muai มะม่วย (Chiang Mai).

8. *Gnetum latifolium* Bl.

Woody climber similar to *G. leptostachyum*; fruits having linear stalks.

var. **funiculare** (Bl.) Mgf.

Leaves brown when dry, secondary nerves distinctly anastomosed; fruits obovate.

Thailand.— NORTHERN : Nan; NORTH-EASTERN : Surin; EASTERN : Chon Buri, Trat; PENINSULAR : Phu Ket, Nakhon Si Thammarat, Satun.

Distribution.— Thailand, Malay Peninsula, Sumatra and Java (Type).

Ecology.— In evergreen forest from sea level up to 300 m altitudes.

Vernacular.— Ma muai มะม่วย (Surin).

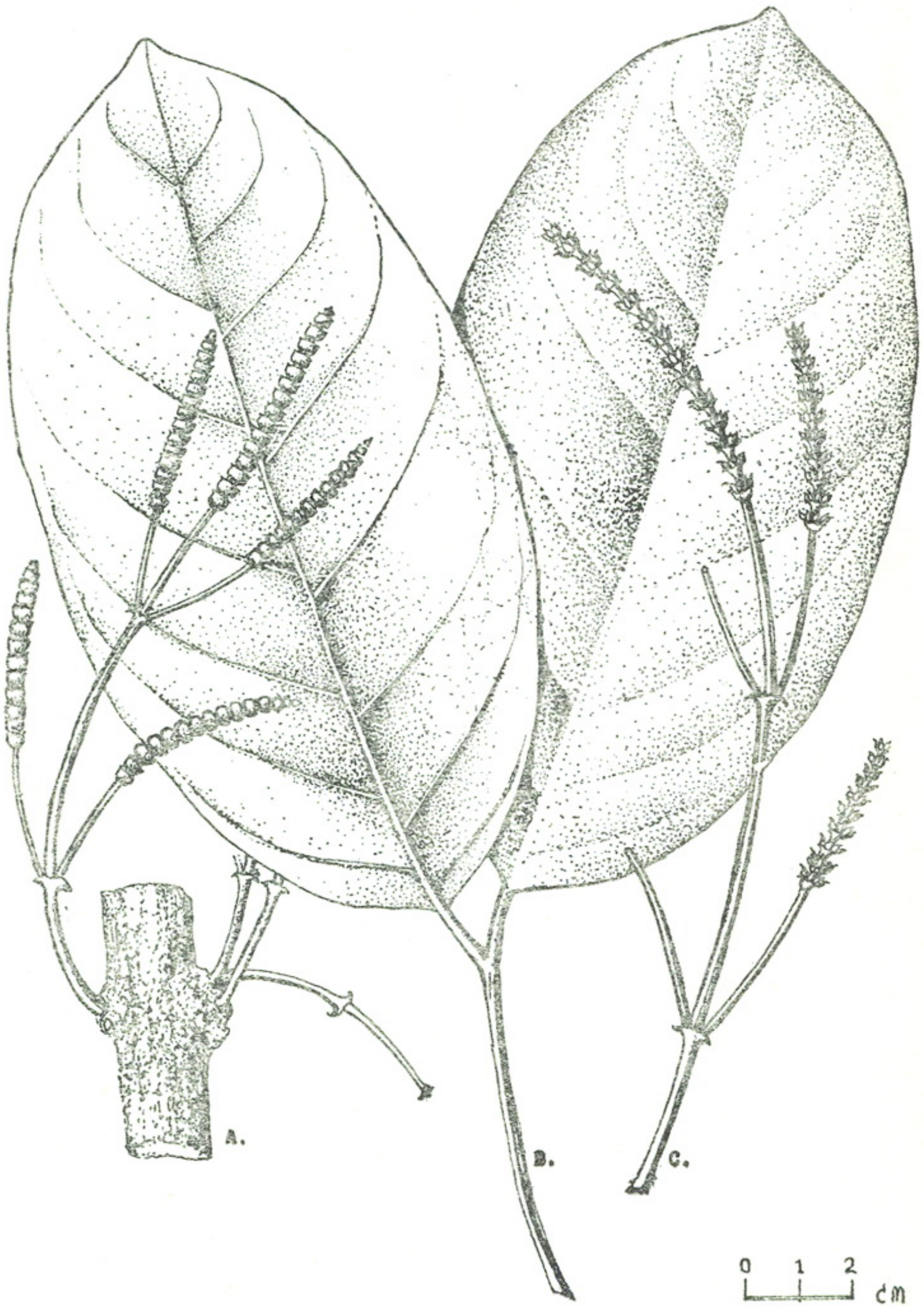


Fig. 17 *Gnetum montanum* Mgf.

A. ♂ flower (B. Sangkhachand 33)

B. leaves

C. ♀ flower (TDBS 2926)

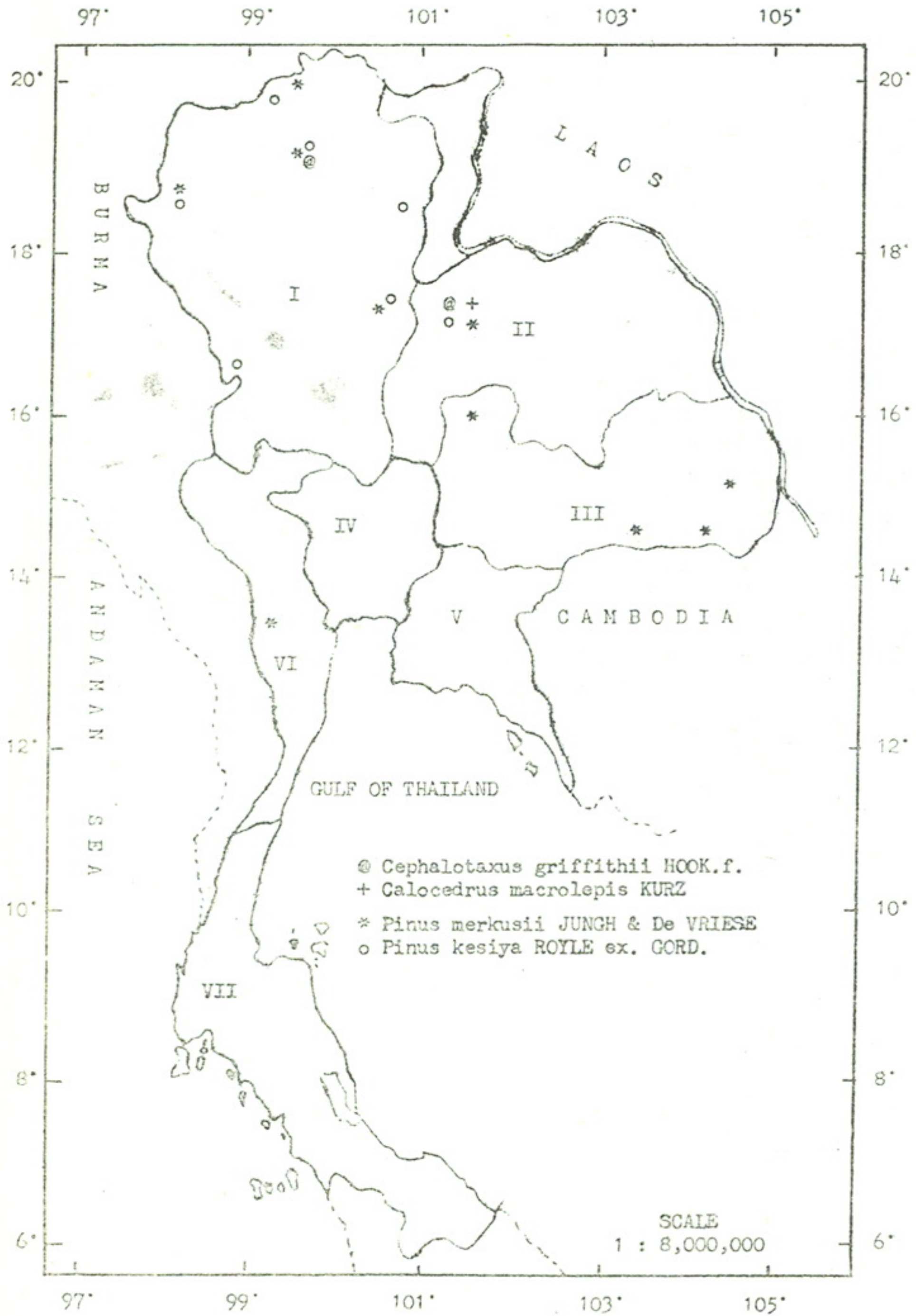


Fig. 13 Distribution of *Cephalotaxaceae*, *Cupressaceae* & *Pinaceae* in Thailand

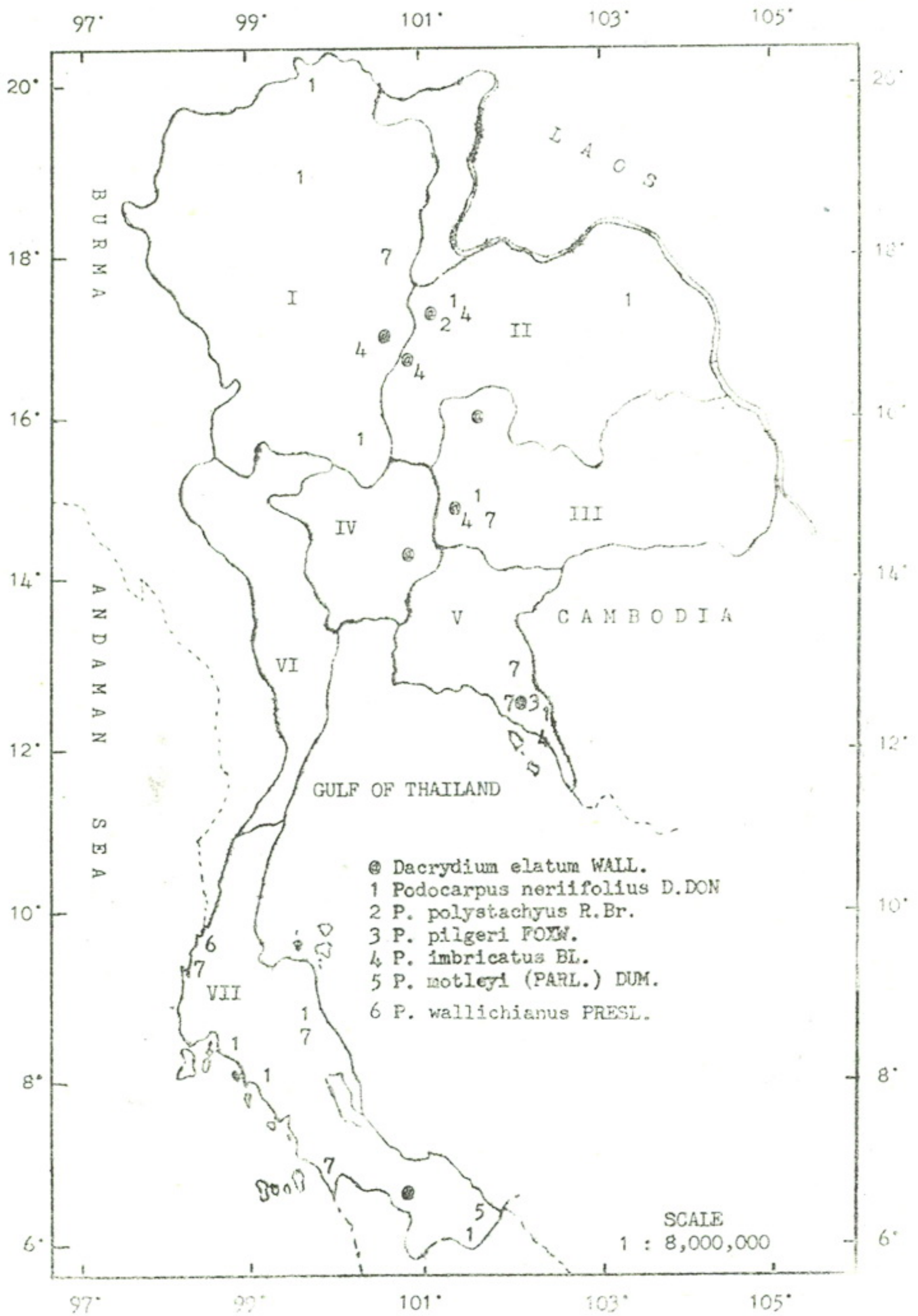


Fig. 19 Distribution of Podocarpaceae in Thailand

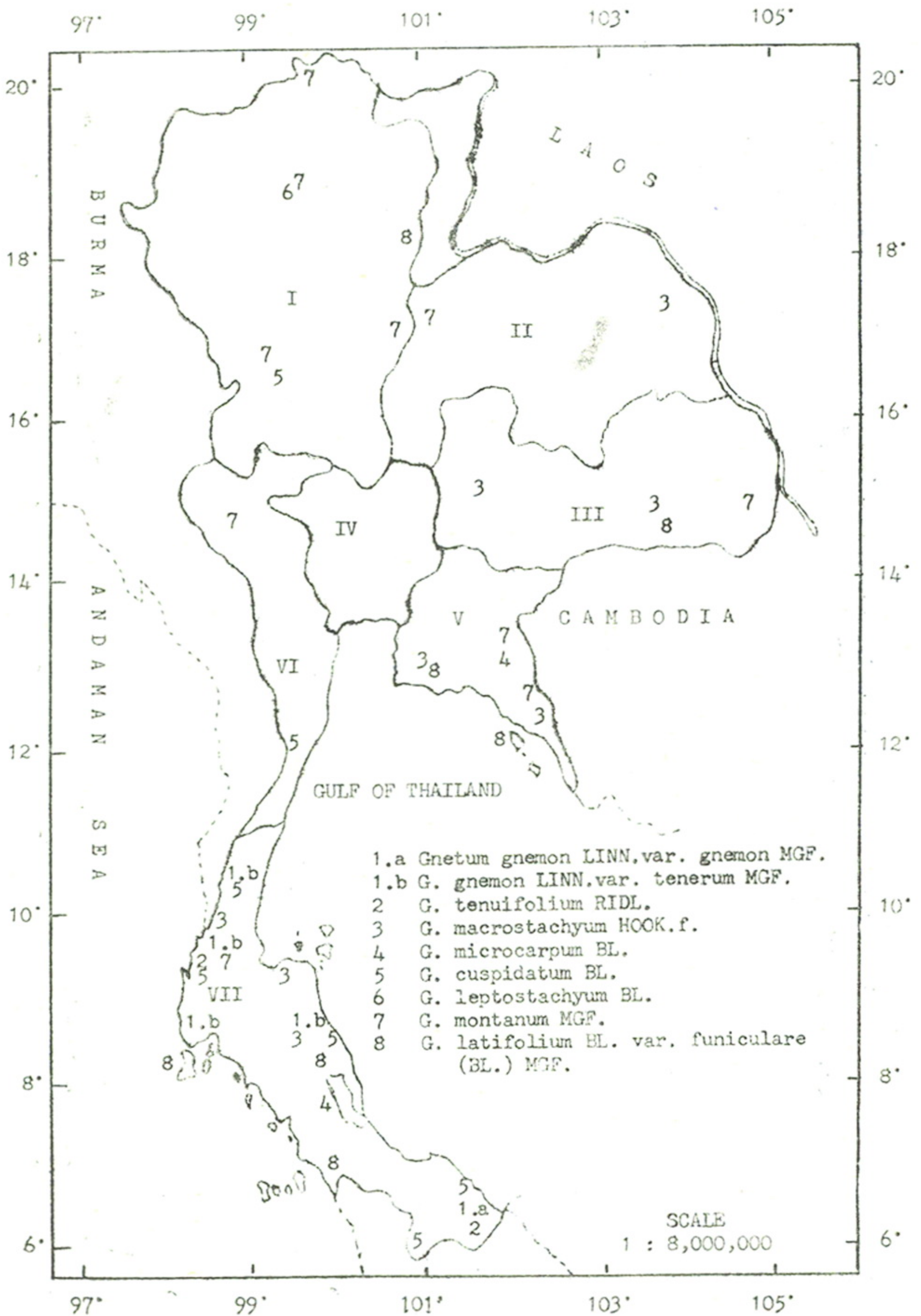


Fig. 20 Distribution of Gnetaceae in Thailand

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