

and refers here to the scales of such color on the leaf sheaths.

***Pinanga fractiflexa* Hodel sp. nov.** Fig. 18-20.

Pinanga malaiana Becc. affinis sed foliis vaginis brunneolis luteis, rachillis valde fractiflexis, fructibus luteolis differt. Typus: Thailand, between Takuapa and Phanom, 600 m elev., D.R. Hodel, P. & R. Vatcharakorn 1729 (Holotypus BK).

Clustered understory palm to 5 m tall. Stems 3-5 cm diam., ringed, internodes 10-15 cm long, green with a few deciduous, brownish scales. Leaves 11, pinnate, ascending; sheaths 34 cm long, tubular, obliquely long-open apically, forming a crownshaft, greenish yellow with deciduous, smooth, reddish brown, stellate hairs 0.5 mm long, margins becoming shredded apically with small deciduous ocrea; petiole 70-100 cm long; rachis 1.8-2 m long; rachis and petiole with grayish brown scales; pinnae 8 on each side of rachis, 67-70 x 6-15 cm, falcate, acuminate, 3-6-nerved, end pair truncately praemorse. Inflorescences 2-3, infrafoliar, 25 cm long; peduncle 2-3 cm long; prophyll 24 cm long, flattened, 2-winged, with deciduous, smooth, reddish brown, stellate hairs 0.5 mm long, other bracts not seen or reduced to small, lip-like ridges; rachis 3-5 cm long; rachillae 5, these 17 cm long, drooping, strongly zig zag. Flowers in triads of center, later-opening pistillate flanked on each of two sides of earlier-opening staminate, triads 4-5 mm distant within a row, 3-4 mm between rows, distichously arranged, subtended proximally by mucronate bracteole 1 mm high, several much smaller bracteoles also present around pistillate flower, staminate flowers subtended by low, lip-like bracteole. Staminate flowers 10-15 x 7-8 mm, angular, whitish to golden-yellow; calyx 4 x 6 mm, prominently lobed, sepals connate in basal 1 mm, spreading apically, acuminate; petals 15 x 6 mm, narrowly ovate, valvate, free to base, acuminate; stamens ca. 40, 4-5 mm high, filaments very short, 0.5 mm long, anthers 4 x 0.4 mm, dorsifixed toward base. Pistillate flowers 3.5 x 4-4.5 mm, globular, whitish; calyx and corolla similar, sepals and petals imbricate to apex, bowl-shaped, broadly rounded apically with incurved, briefly mucronate tips; pistil

2.5 mm high, ovoid, stigma with 3, short lobes. Fruits 3 x 1.5 cm, ovoid, brownish yellow when soft ripe; seeds 2 x 1 cm.

Pinanga fractiflexa occurs in wet hill forest on the west side of middle peninsular Thailand. It is similar to *P. malaiana* but the latter differs in its more or less straight rachillae, purplish black fruits, and leaf sheaths with brown, rough hairs 0.4 mm long. The epithet is from the Latin *fractiflexus*, meaning zigzag, and refers here to the rachillae.

***Rhapis siamensis* Hodel sp. nov.** Fig. 21-23.

Rhapis micranthae Becc affinis sed foliis laminis segmentis breviter basaliter connatis, floribus femineis anguste ovoideis, petalis anguste ovatis, calyce membranaceo differt. Typus: Thailand, Phattalung, 20 m elev., D.R. Hodel, P. & R. Vatcharakorn 1652 (Holotypus BK).

Clustered, dioecious, understory palm forming dense clumps 3-5 x 1-2 m. Stems often covered with persistent, fibrous sheaths, 6-15 mm diam. without sheaths, 1.8-2.5 cm diam. with sheaths, ringed, internodes 1-5 cm long, yellowish green. Leaves 15-22, spreading, palmately divided; sheath 5-12 cm long, long-open, margins fibrous-netted, fibers dark brown and in 3 layers, outermost coarsest, middle and innermost finer; petiole 30-50 cm long; blade 15-28 x 25-50 cm, +/- semi-orbicular, divided 3/4 to nearly to base into (5-)8-12 segments, these (12-)18-20(-24) x 0.5-5 cm, truncately praemorse, glossy green adaxially, paler abaxially, 1-4-nerved, 12-24 nerves total per blade, transverse veinlets conspicuous, close-set, 1-2 mm distant. Inflorescences 2-3, interfoliar, spreading; staminate 40 cm long, peduncle 20 cm long, flattened, 7 mm wide; prophyll 15 cm long, attached 9 cm above base of peduncle, tubular, obliquely open apically, thin-papery, reddish brown to brown with deciduous, twisted, slender, whitish hairs 2.5-4 mm long at apex and along both slightly winged margins, peduncular bract 1, similar to prophyll, 1-6 cm long, attached 7 cm above base of prophyll and extending on to rachis 3-4 cm; rachis 1-3 cm long with 2 main branches, one with bract similar to peduncular bract and inserted 1.5 cm above branch base; rachillae 13-28, these 10-15 cm long, lower ones sometimes furcate; pistillate

inflorescence similar to staminate only to 25 cm long and with 3-7 rachillae 10-12 cm long. Staminate flowers seen in young bud, 1.5 mm high; calyx 1 mm high, cupular. Pistillate flowers in 2 spiralling rows, mostly solitary, 4-7 mm distant, placed on a pedicel 0.5 mm high, 4.5 x 1.5 mm, narrowly ovoid; calyx 1.5 x 1.5 mm, crown-like, prominently lobed, sepals connate in basal 1/2, broadly rounded apically, acute, mucronate; corolla 4.5 mm high, petals connate below and at tip initially, corolla opening by apical slits, petals valvate, later spreading apically, long-ovate, acute, +/- fleshy; calyx and corolla prominently nerved when dry; staminodes 6; pistil 2 x 1 mm, short-columnar, angular, composed of 3 separate carpels; stigma short with 3, poorly developed lobes. Fruits immature, 7.5 x 4-4.5 mm, ovoid, green; fruiting perianth an expanded, campanulate tube 3 mm

long, lobes spreading, staminodes just exceeding corolla.

Rhapis siamensis is restricted to moist and wet forest on limestone hills in middle peninsular Thailand from 20-200 m elevation. Considerable variation exists within populations. Plants growing in depressions between limestone boulders where soil and humus have accumulated are taller and more robust, and have larger leaves with more segments than plants growing a few meters away in a more exposed location with little or no soil and humus. *R. siamensis* is similar to *R. micrantha* but the latter differs in its leaf blade with segments free to the base, the globular pistillate flowers with obovate petals, and the fleshy calyx. The epithet is from the word Siam, the former name for modern-day Thailand.



Fig. 23 *Rhapis siamensis*, staminate inflorescences, Hodel et al. 1961.