

## Three New Species of *Scaphochlamys* (Zingiberaceae) from Peninsular Malaysia

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### Abstract

Three new species of *Scaphochlamys* are described from Peninsular Malaysia: *S. abdullahii* Y.Y.Sam & Saw, *S. cordata* Y.Y.Sam & Saw and *S. laxa* Y.Y.Sam & Saw. All three are endemic to the eastern part of Peninsular Malaysia, with *S. abdullahii* and *S. cordata* confined to only one locality each in Terengganu.

### Introduction

*Scaphochlamys* is a genus of small gingers only known from the West Malesian forest. Twenty six species are known so far and Peninsular Malaysia has the highest number of species; 19 species (Newman *et al.* 2004). In recent years, collections made from newly accessible forested area have revealed a number of new species. In this paper, we described three, *S. abdullahii*, *S. cordata* and *S. laxa*.

The description below is based on herbarium specimens and fresh material (especially important for floral parts) including plants in cultivation in the nursery of Forest Research Institute Malaysia. In most cases, the cultivated plants are similar in size to the wild population except for *S. cordata*, which tends to be smaller.

#### 1. *Scaphochlamys abdullahii* Y.Y.Sam & Saw *sp. nov.*

*Scaphochlamys longifolia* similis, foliis infra pilis dense appressis (nec costa pilosa solum) petiolo glabro (nec pilosus), bracteolis quam bracteis brevioribus (nec longiores), bracteis plus quam unifloris (nec uniflorae) differt. **Typus:** Peninsular Malaysia, Terengganu, Setiu, Ulu Setiu Forest Reserve, 17 January 2005. Sam, Aidil & Arif FRI 49130 (holo KEP; iso SAN, SING).

#### Figure 1.

Ground herb to 55 cm tall, rhizome creeping underground, cut rhizome purple, 5–6 mm diam. Leafy shoots erect, close together, one leaf per shoot, rarely 2; bladeless sheaths 3, red to brownish red, ridged

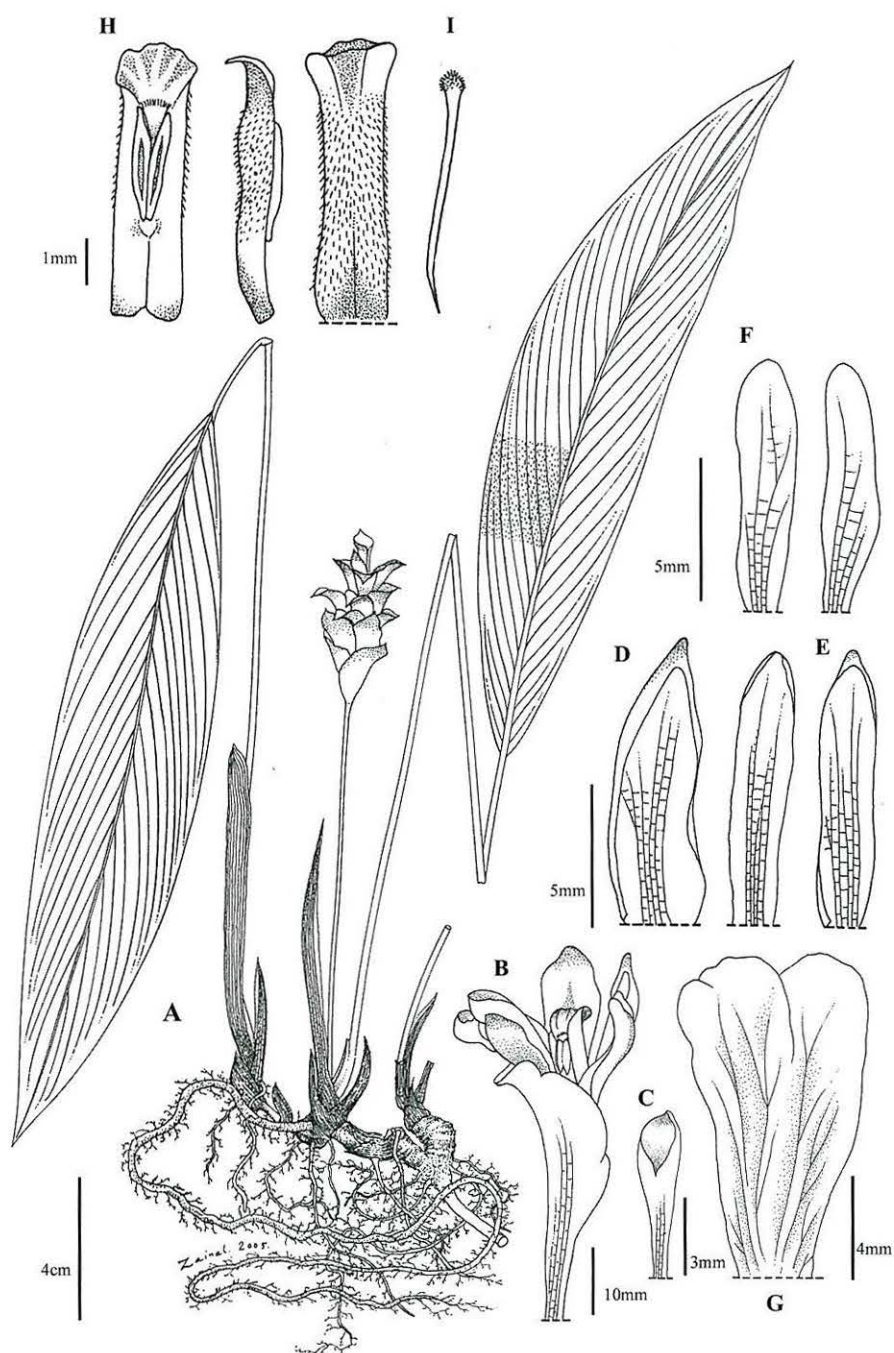
longitudinally, densely hairy especially when young, largest sheath 6–10.5 cm, drying during anthesis. *Leaf* sheath 1.5–3 cm, ligule bilobed, lobes small; petiole (5.5–)9–29 cm, round in cross section, channelled only in the terminal part, purplish brown at the base; lamina elliptic, 12–33 x 3.8–7.6 cm, unequal, apex narrowly acute, base narrowly rounded or decurrent, sometimes oblique, with densely appressed hairs on lower surface, red to purplish red when young. *Inflorescence*, 6.5–17 cm long, red when young; peduncle 4–13 cm long, covered entirely by the bladeless sheath when young; inflorescence head ovoid, 3–5.5 cm long. Bracts 8–25, spirally arranged, 19–25 x 13–20 mm, basal ones larger, spatulate, apex blunt, reflexed, margin thin and slightly wavy; rosy red when young, turning to reddish brown or green, imbricate and hiding the rachis entirely. Bracteoles shorter than the bracts, first bracteole largest, 10–16 x 5–7 mm, apex bilobed and hairy, tinged red. *Flowers* 5–6 per bract, white except for the calyx. Calyx tubular, 4–7 mm long, tinged red, apex blunt, split 2–3.5 mm on one side from apex. Corolla tube 17–25 mm. Dorsal corolla lobe lanceolate, 10–12 x 3–4 mm, apex hooded, tinged red distally. Lateral corolla lobes lanceolate, 7–10 x 2–4 mm, tip tinged pink to red. Staminodes oblong, 8.5–11 x 2–3 mm, apex blunt, slight yellowish. Labellum 13–14 x 9–11 mm, bilobed, recurved, c. 5 x 5 mm, median band yellow, both sides with purple streaks, sparsely papillose on the abaxial surface. Stamen flushed purple, covered with glandular hairs on the abaxial surface; filament c. 2 mm long; thecae 2.5–4 mm long, yellow; anther crest c. 1.5 x 2 mm, recurved. Epigynous glands 2, linear, c. 5 mm long, yellow. Ovary ellipsoid, trilocular. *Seed* ellipsoid, c. 8 x 3 mm, dark brown.

*Distribution:* Endemic to Peninsular Malaysia. Very rare, only recorded from Setiu District, Terengganu.

*Habitat:* Lowland forest, c. 41 m altitude. This species was found in forest fringes.

*Notes:* *Scaphochlamys abdullahii* belongs to the single-leaf group and is closest to *S. longifolia*, which has similar closely imbricating bracts and elliptic leaves. However, it differs from *S. longifolia* in having densely appressed hairs on the lower leaf surface, a glabrous petiole and it produces many flowers in the axil of each bract; *S. longifolia* has hairs on the midrib and petiole and single-flowered bracts (Holtum, 1950).

Ridley described *S. longifolia* in 1924 but its type was missing when Holtum (1950) revised the genus. The description given by Holtum was based on a specimen collected from the type locality that he thought was the same species. Although the details of the flower parts were not



**Figure 1.** *Scaphochlamys abdullahii* Y.Y.Sam & Saw. A. habit; B. floral bract with flower; C. calyx; D. dorsal corolla lobe; E. lateral corolla lobes; F. staminodes; G. labellum; H. anther front, side and back view; I. stigma. (A. from type specimen; B, C, D, E, F, G, H, I from living collection of 2002–0072).



satisfactory, other characters, e.g. leaf, inflorescence structure and floral bracts, are sufficient to differentiate *S. abdullahii* from *S. longifolia*.

*Scaphochlamys abdullahii* has a bright rosy red colour in its young inflorescence. This is distinct from other *Scaphochlamys* species that usually have dull blood-red or brownish red in their young floral bracts.

*Scaphochlamys abdullahii* is named in honour of the Prime Minister of Malaysia, Datuk Seri Abdullah Ahmad Badawi, for his strong interest in nature conservation and protection of the environment.

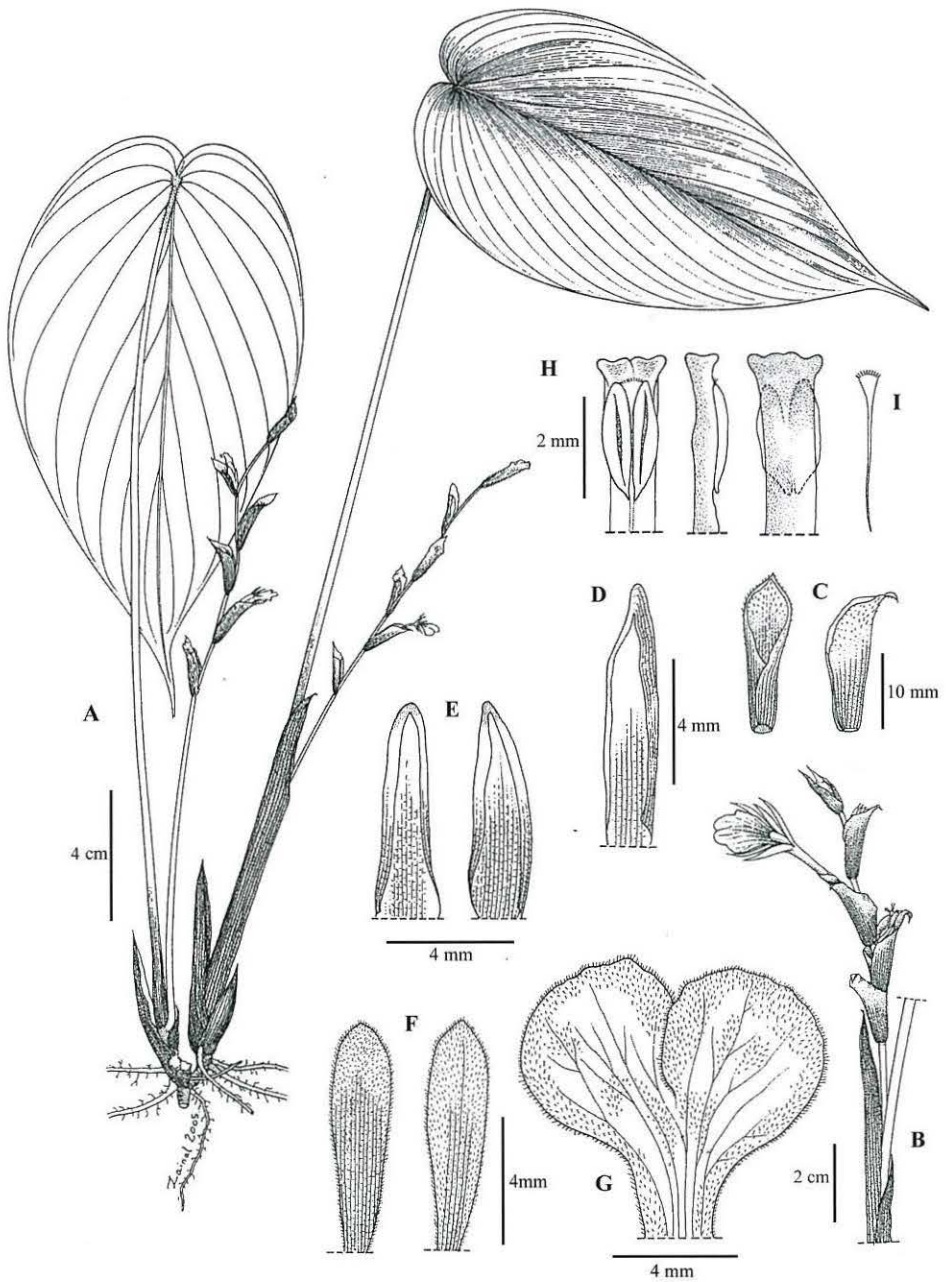
*Other specimens examined:* TERENGGANU, Setiu, Kuala Sungai Bok via Kampung Seladang, 14 Mar 1975, *Mohd. Shah & Ahmad MS 3514* (SING); Ulu Setiu Forest Reserve, 16 Aug 2001, *Khaw KSH 743* (KEP); Cultivated material 14 July 2002 *Sam FRI 47053* (KEP).

## 2. *Scaphochlamys cordata* Y.Y.Sam & Saw *sp. nov.*

*Scaphochlamys atroviridi* similissima, folii basi cordata (nec cuneata ad decurrenti), petiolo longiore (31–55.5 vs. 6–10 cm longus), inflorescentia longiore (21.5–25.3 vs. 5–10 cm longa) differt. Typus: Peninsular Malaysia, Terengganu, Dungun, Jengai Forest Reserve, 17 October 2002. *Sam & Mustapa FRI 47155* (holo KEP; iso E, SAN).

### Figure 2.

Ground herb, rhizome creeping on ground surface. Leafy shoots ascending, close together, one leaf per shoot; bladeless sheaths 4, reddish brown, apex mucronulate, largest sheath 11–17 cm. *Leaf* sheath 1.5–2 cm long, ligule bilobed, lobes small, c. 1 mm; petiole slender, 31–55.5 cm long, round in cross section; lamina cordate, 15.5–28.5 x 8.2–14.7 cm, slightly asymmetric, apex acuminate, base strongly cordate, some with auricles overlapping; secondary veins 8–10 pairs, first 6 pairs always originate from the base, prominently raised on the upper leaf surface; leaf below densely hairy proximally, brownish red when young. *Inflorescence* slender, 21.5–25.3 cm long, red when young; peduncle 10–17.8 cm long, hidden within bladeless sheath when young; rachis 5.5–8.5 cm. Bracts spirally arranged, 4–10, lax, 1.5–2 cm apart, red when young, turning to green, spatulate, 15–22 x 5.5–12 mm when flattened, hairy towards the apex on both surfaces, distally reflexed. Bracteoles shorter than the bracts, narrowly lanceolate, 6–11 x 1–3 mm with inflexed margin, apex pointed, hairy throughout, first bracteole largest, enclosing subsequent bracteoles and flowers. *Flowers* more than 15 per bract, small, white except for the calyx. Calyx tubular, 7.5–9 x 1.5–2 mm, red, hairy, split 2.5–4 mm down on one side from apex. Corolla tube 11–14 mm. Dorsal corolla lobe lanceolate with strongly inflexed margin, 6–8.5 x 1.5–2 cm, apex hooded, pinkish distally, papillose on the abaxial



**Figure 2.** *Scaphochlamys cordata* Y.Y.Sam & Saw. A. habit; B. inflorescence; C. bract front and side view; D. dorsal corolla lobe; E. lateral corolla lobes; F. staminodes; G. labellum; H. anther front, side and back view; I. stigma. (A from type specimen; B, C from living material of 2004-0728; D, E, F G, H, I from FRI 49135).

surface; lateral corolla lobes lanceolate with strongly inflexed margin, 5–7 x 1–2 mm, pinkish distally, papillose on the abaxial surface. Staminalodes oblong, 3–7.5 x 1–2 mm, apex rounded, papillose on the adaxial surface. Labellum 7–10 x 5–9.8 mm, bilobed, lobes overlapping, cleft c. 4 mm from distal end, median band faintly yellow, purple blotches at both sides. Stamen 3.5–4.5 mm, tinged purple; filament short, c. 1 mm long; thecae c. 2.5 mm long, anther crest short, less than 1 x 1.5 mm. Stigma small, cup-shaped, yellowish, papillose.

*Distribution:* Endemic to Peninsular Malaysia; only known from Jengai Forest Reserve in Terengganu.

*Habitat:* Lowland dipterocarp forest, at 80–140 m altitude. The species is observed to favour ridges.

Notes: *Scaphochlamys cordata* belongs to the single leaf group with very lax floral bracts in the inflorescence. This species is similar to *S. atroviridis* but differs in the leaf shape and apex, petiole and inflorescence length, size of floral bracts and labellum (Table 1).

Table 1. **Diagnostic characters to distinguish *Scaphochlamys cordata* and *S. atroviridis***

Characters	<i>S. cordata</i>	<i>S. atroviridis</i>
Leaf shape	cordate	elliptic with cuneate to decurrent base
Leaf apex	acuminate	rounded
Petiole length (cm)	31–55.5	6–10
Inflorescence length (cm)	21.5–25.3	5–10
Size of floral bracts (mm)	15–22 x 5.5–12	30–35 x 15
Size of labellum (mm)	7–10 x 5–9.8	18 x 15

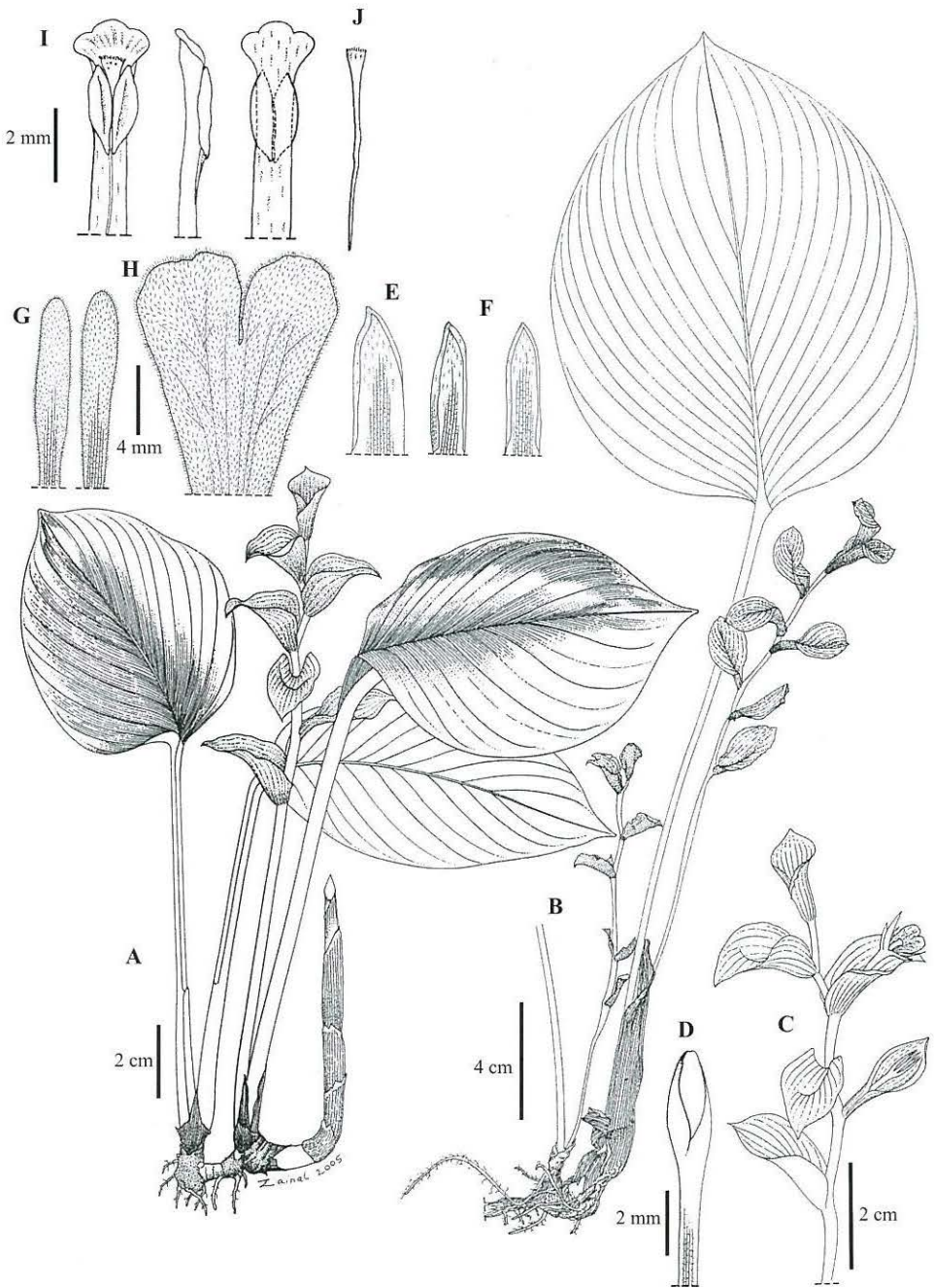
This species is named for its distinctly cordate leaves.

*Other specimens examined:* TERENGGANU, Dungun, Jengai Forest Reserve, 9 Mar 2005, *Sam FRI 49135* (KEP). Cultivated material 23 Aug 2000 *Saw FRI 44306* (KEP).

3. *Scaphochlamys laxa* Y.Y.Sam & Saw *sp. nov.*

*Scaphochlamide cordata* similis, petiolo longiore (31–36 vs. 13–29 cm





**Figure 3.** *Scaphochlamys laxa* Y.Y.Sam & Saw. A, B habit; C. inflorescence; D. calyx; E. dorsal corolla lobe; F. lateral corolla lobes; G. staminodes; H. labellum; I. anther front, side and back view; J. stigma. (A, C from living material of 2004-0718; B, D, E, F, G, H, I, J from type specimen).

longus), foliis late ellipticis vel ovatis (nec cordata), labello maiore (11.5–22 vs. 7–8 cm longum, 10–20 vs. 5–6 cm latum) distinguenda. **Typus:** Peninsular Malaysia, Terengganu, Dungun, Jengai Foest Reserve, 9 March 2005. *Sam & Apok FRI 49136* (holo KEP; iso SAN, SING).

**Figure 3.**

Rhizomatous herb; rhizome running horizontally on the ground, fleshy. Leafy shoots erect, 30–40 cm tall, red when young; one leaf per shoot, 1–3 cm apart (sometimes much closer and appearing as a two-leaved shoot when under stress or in cultivation); bladeless sheaths 3, red, ridged longitudinally, largest 7–13.5 cm. *Leaf* sheath 3.8–4.5 cm, ligule bilobed, lobes not obvious; petiole 13–36 cm long, grooved in cross section, red when young; lamina broadly elliptic or ovate, 13–22 x 10.5–14 cm, apex cuspidate, base slightly decurrent on the petiole, never cuneate, margin ciliate; secondary veins slightly raised on the upper surface, dark green, some with white bands in between midrib and leaf margin; leaf underneath pale green, red when young. *Inflorescence* 15–33 cm long; peduncle 9–12 cm, red when young; rachis 2.5–11 cm. Bracts spirally arranged, (2–4–)5–10, lax, 0.4–2 cm apart, dark green, spatulate, broadly elliptic when flattened, 1.7–2.5 x 0.8–1.6 cm, apex acute, distally reflexed, margin hairy when young. Bracteoles smaller than the bracts, 5–7 x 4.5–6 mm, hairy towards apex, first bracteole enclosing subsequent bracteoles and flowers. *Flowers* more than 20 per bract, white except for the calyx. Calyx tubular, 6–7 x c. 2 mm, apex bilobed, tinged red, split 3–4 mm down on one side from apex. Corolla tube 13–17 mm long. Dorsal corolla lobe lanceolate, 8–13 x 3–4 mm with inflexed margin, apex hooded and pointed, faintly yellow. Lateral lobes narrowly lanceolate with incurved margin, 7–11 x 2–3 mm, apex also hooded and pointed. Lateral staminodes oblong, apex blunt, 9–11.5 x 1–3 mm, papillose on the adaxial surface, faintly yellow towards the apex. Labellum hairy, 11.5–22 x 10–20 mm, bilobed, papillose on the upper surface, lobes 5.5–7 x 6–7 mm, cleft c. 6 mm from distal end, crisped, median band yellow with purple streaks at both sides. Filament 2.5–3 mm, some with purple blotches; thecae 2–2.5 mm long; anther crest 0.5–1 x 2.5–3 mm, apex trilobed, strongly recurved. Stigma c. 1 mm wide, cup-shaped, covered with brown papillae. Epigynous glands 2, linear, c. 4 mm, yellow. Ovary c. 2 mm long, trilocular.

*Distribution:* Endemic to Peninsular Malaysia. Found on the Timur Range of Pahang and Terengganu.

*Habitat:* The species is found on undulating land and slopes of lowland dipterocarp forest, from 65 to 130 m a.s.l., where it grows in abundance



under heavy forest shade.

*Notes:* *Scaphochlamys laxa* is unique in having a very broadly elliptic or ovate lamina, unlike other *Scaphochlamys* species. *S. laxa* is similar to *S. cordata* but is distinguished by its shorter petiole (13–29 vs. 31–36 cm), grooved in cross section (round in *S. cordata*) and broadly elliptic or ovate leaves. The other differences include the larger flowers and the trilobed and reflexed anther crest of *S. laxa*.

The name '*laxa*' refers to the bracts that are very lax on the rachis.

*Other specimens examined:* TERENGGANU, Dungun, Jengai Forest Reserve, 17 Oct 2002, *Sam & Mustapa FRI 47152* (KEP); Pasir Raja Selatan Forest Reserve, 7 June 2004, *Markandan FRI 49179* (KEP). PAHANG, Jerantut, Gunung Aais Forest Reserve, Sungai Lurut, 5 Jul 2004, *Sam FRI 49057* (KEP).

### Acknowledgements

We wish to thank the Director-General of FRIM for his constant support in plant research studies; M. Markandan, D. Mustapa, K. Apok and A. Angan for field assistance; S. H. Khaw for providing her collection. We also like to thank Dr. J.F. Veldkamp for the Latin diagnosis. M. Zainal and M.N. Aidil illustrated the plates. This study is supported by the Timber Levy Fund under the Flora Malaysiana Centre Project 1: Domestication of Herbaceous Plants for Horticultural Introduction.

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