



# A new species of *Alphonsea* (*Annonaceae*) from Peninsular Malaysia

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## Key words

IUCN  
Malay Peninsula  
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**Abstract** *Alphonsea rugosa* sp. nov. is described from eastern Peninsular Malaysia. It is similar to *Alphonsea elliptica* but has fruits that are dry wrinkled and glabrous rather than smooth and tomentose. A conservation assessment of Vulnerable based on collections from four locations is made.

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## INTRODUCTION

In spite of Peninsular Malaysia being one of the best collected regions within the Flora Malesiana area (Middleton 2003; f. 1) there are still many novelties to be described. One such is dealt with here.

In the only published revision of *Alphonsea* Hook.f. & Thomson (*Annonaceae*), Kessler (1995) recognised 23 species in the genus, distributed from India to the Philippines. They are trees of small to medium stature characterised by saccate outer petals, miliusoid stamens (i.e. with the connective apex not shield-like and not extending over the anthers; Mols & Keßler 2003), generally multicarpellate flowers and fruits that are multi-seeded. In Peninsular Malaysia, Kessler recognised nine species (see also Turner 1996: 108).

Among specimens from this area a number of collections stood out because of quite large, black, glabrous and rugose fruits. These had generally been determined as either *Alphonsea elliptica* Hook.f. & Thomson or *A. sp.* We examined this material in comparison to specimens of the true *A. elliptica* and found that there were consistent differences in vegetative, flower and fruit morphology (Table 1) supporting the description of a new species.

Among the species of *Alphonsea*, only a few have glabrous fruits including *A. javanica* Scheff., *A. tonquinensis* Aug.DC. (Kessler 1995) and *A. borneensis* I.M.Turner (Turner 2009).

**Table 1** Summary of differences between *Alphonsea elliptica* and *A. rugosa*.

Character	<i>Alphonsea elliptica</i>	<i>Alphonsea rugosa</i>
Colour of dry twigs	Reddish brown	Pale brown or grey
Colour of dry leaves	Often grey	Brown
Upper lamina of dry leaves	Often shiny	Dull
Number of carpels	4–7	2–3
Monocarp surface	More or less smooth, hairy	Strongly wrinkled, glabrous
Stipe length (mm)	Up to 20	Up to 10

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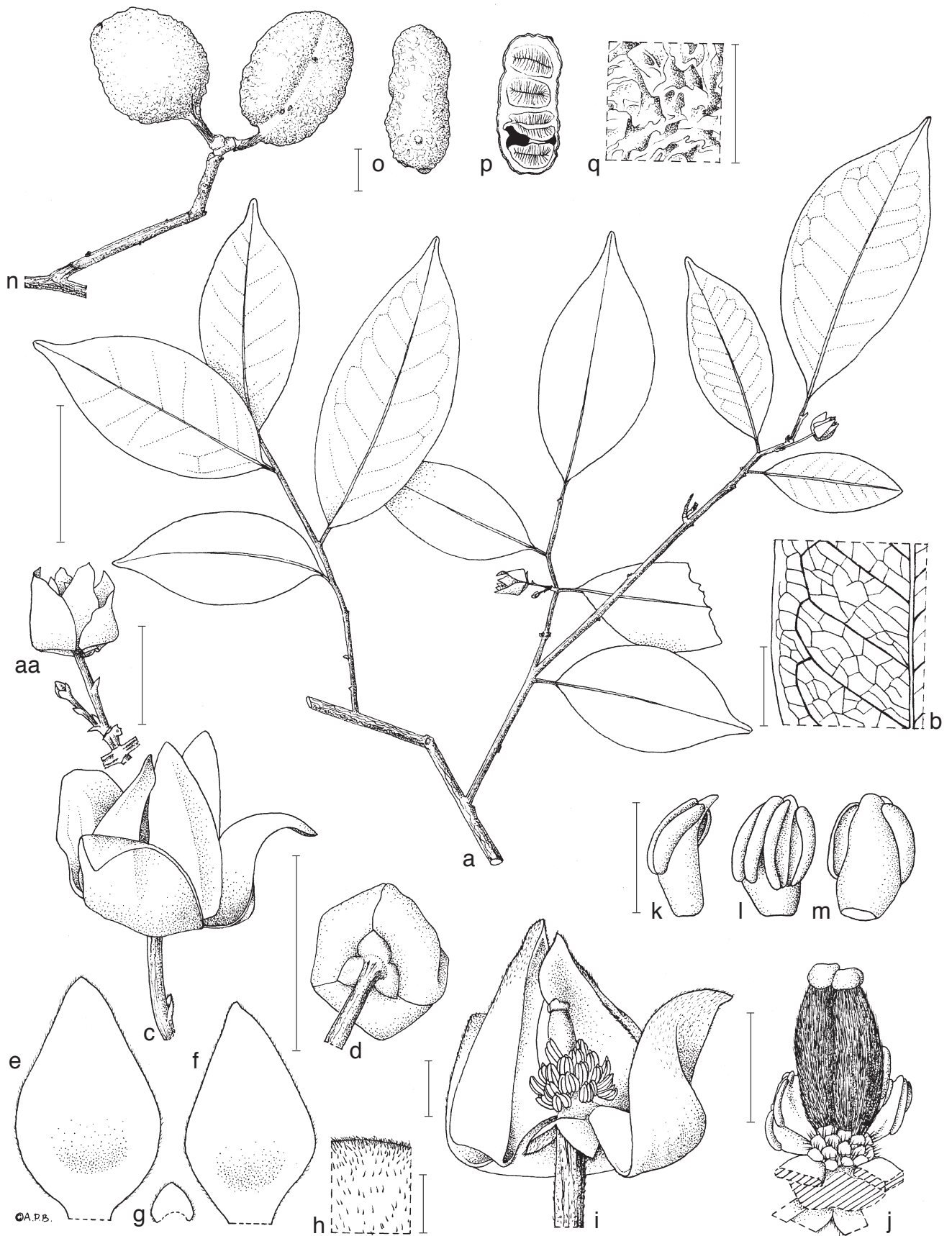
However the monocarps of the first two are smooth with stipes to only 5 mm long, whereas those of the third are verruculose. Specimens were geo-referenced using Hamidah et al. (2011), and conservation assessments follow IUCN criteria (IUCN 2012) using Geocat to estimate the Extent of Occurrence (EOO) and Area of Occupancy (AOO) (<http://geocat.kew.org>; see Bachman et al. 2011).

## *Alphonsea rugosa* I.M.Turner & Utteridge, sp. nov. — Fig. 1

Differs from *Alphonsea elliptica* Hook.f. & Thomson in its fewer carpels per flower (2–3 vs 4–7) and glabrous, rugose monocarps (vs hairy, smooth monocarps). — Type: *K.M. Kochummen FRI 2388* (holo K), Peninsular Malaysia, Trengganu, 10th mile Dungun, Bt Besi Road, Compartment 12B, Bukit Bauk Forest Reserve (N4°45' E103°21'), 18 June 1967.

**Etymology.** The specific epithet reflects the rugose appearance of the mature monocarps.

Tree to 20 m tall, 15 cm dbh. Twigs drying pale grey or brown to white, irregularly longitudinally ridged; sometimes a scattering of red-brown hairs on younger parts otherwise glabrous. Leaves chartaceous to subcoriaceous, drying brown, not shiny, midrib below generally darker, prominent, sunken above, laterals very slightly raised on both surfaces, glabrous except for a scattering of hairs on midrib below near base, blade ovate to elliptic, 5–13 by 2.5–6 cm, base acute to obtuse, apex acuminate, lateral nerves 8–12 pairs, looping within margin; petiole 3–7 mm long, 1–1.5 mm thick, drying black, wrinkled, channelled above, with scattered hairs. Inflorescences subopposite leaves, often on very short twig-like tubercles to 2 mm long. Flowering pedicel 6–15 mm long, c. 0.5 mm thick, drying black, longitudinally striate, sparsely hairy to almost glabrous, median bract tiny, c. 0.5 by 0.5 mm, hairy outside; sepals ovate, 1–1.5 by 1–1.5 mm, hairy outside, glabrous within, reflexed at anthesis; outer petals drying black, ovate lanceolate, 12 mm long, 5 mm wide, base acute, apex acute, outside sparsely red-brown hairy to almost glabrous, inside more densely hairy, inner petals slightly narrower, c. 4 mm wide, short brown hairy outside, particularly distally, more or less glabrous within; stamens many, c. 1 mm long, carpels 2–3, c. 2.5 mm long, covered with short light-brown hairs. Fruiting pedicel 3 mm wide, longitudinally ridged; monocarps 2–3, cylindrical to ellipsoidal, to 3.5 by 2.5 cm, drying black, rugose (under a lens the surface is reminiscent of



**Fig. 1** *Alphonsea rugosa* I.M. Turner & Utteridge. a. Habit; aa. enlargement of inflorescence; b. leaf abaxial surface to show venation pattern; c. flower, lateral view; d. flower, ventral view; e. outer petal; f. inner petal; g. sepal (e–g hairs omitted except in profile on margins); h. indumentum on outer petal adaxial surface near margin; i. lateral view of flower with one outer and one inner petal removed (two carpels present); j. two carpels from i with several stamens removed; k. stamen (side view); l. stamen (abaxial view); m. stamen (adaxial view); n. infructescence; o. monocarp; p. LS of o; q. expanded view of monocarp surface (a–m: *Teo & Din* KL 5285; n(part)–q: *Kochummen* FRI 2388; n(part): *Chan* FRI 25190). — Scale bars: a = 5 cm; aa, c–g, n–p = 1 cm; b = 2 cm; h = 500  $\mu$ m; i, j = 2 mm; k–m = 1 mm; q = 3 mm. — Drawn by Andrew Brown.

a prune – black, shiny and strongly and irregularly wrinkled), glabrous, rough to the touch, sometimes with a longitudinal ridge or groove, apex rounded sometimes with a discernable flat-topped apiculus, stipe distinct to 10 mm long, 5 mm thick. *Seeds* many, pungent when cut.

**Distribution & Ecology** — Peninsular Malaysia (Trengganu, Pahang, Johore) in lowland forest.

*Additional specimens.* PENINSULAR MALAYSIA, Pahang, Lesong Forest Reserve, N2°45' E103°08', *Samsuri Ahmad & Ahmad Shukor SA 429* (K), 17 Feb. 1971; *Y.C. Chan FRI 16901* (K, KEP), 29 June 1972; *Y.C. Chan FRI 19833* (K), 27 June 1972; *Y.C. Chan FRI 25190* (KEP), 9 June 1979; Johore, Sungei Kayu, N1°54'56" E103°54'27", *Kiah SFN 32312* (K, KEP), 4 Mar. 1937; Hutan Simpan Semburong Keluang, 2°27'19" E103°36'40", *L.E. Teo & Din KL5285* (KEP), 27 July 2006.

**Conservation assessment** — Vulnerable B1ab(i,ii,iii,iv). *Alphonsea rugosa* is found in the eastern lowlands of the Malay Peninsula and represented by seven collections from only four localities (below the Vulnerable threshold of no more than 10 locations). The Extent of Occurrence (EOO) is 9 200 km<sup>2</sup> (after removing the area of sea included within the EOO polygon, i.e., inappropriate habitat) which is less than the Vulnerable threshold of 20 000 km<sup>2</sup>, but above the Endangered threshold. The most southern collection is *Kiah SFN 32312* from Johore made in 1937, but this location is now within converted habitat (seemingly logged or agricultural according to Google Earth imagery), and there are no contemporary collections from this region. The species is likely to be scattered throughout the remaining lowland forests in the eastern part of the Peninsula, but the extent of this habitat is decreasing, especially in the southern state of Johore (see Peh et al. 2006 and Yong 2012, for a discussion of the habitat change in this area). Because of the geographic range with a low number of locations, the size of the EOO, and the observed decline in the number of locations, we give this species a rating of VUB1ab(i,ii,iii,iv) following IUCN (2012).

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