Notes on the Systematry of Malayan Phanerogams XXV.*

Araliaceae

by

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Abstract

Two genera are reduced to synonymy, Wardenia King to Brassaiopsis Decne. & Planch., and Acanthophora Merr. to Aralia L. Critical notes on some other genera, some new combinations, and two new species, Brassaiopsis minor and Schefflera singularis, are published. A brief growth analysis of Arthropodium diversifolium sensu King is presented.

In the course of preparing the treatment of Araliaceae for Vol. 3 of the “Tree Flora of Malaya” a number of problems involving not only the recognition and delimitation of species, but also of genera, have arisen. Two undescribed species have been encountered and are published here. Equally important, the status of two hitherto monotypic genera, Wardenia King and Acanthophora Merr., has been reassessed, and it has been concluded that they should be reduced to synonymy under Brassaiopsis Decne. & Planch. and Aralia L. respectively. The largest genus of the family in Malaya, Schefflera J. R. & G. Forst., is currently being revised by D. G. Frodin of the University of Papua New Guinea. In his dissertation (Cambridge University 1971) he has taken a broad view of Schefflera, incorporating within it three genera recognized by Ridley in his Flora of the Malay Peninsula (vol. 1, 1922), Brassai Endl., Scheffleropsis Ridl., and Tupidanthus Hk. f. & Thoms. In a recent publication (1970) Philipson has reviewed the genus Gastonia and remarked on a species which occurs in Malaya, which was not in Ridley’s Flora. The genus Acanthopanax Miq. has been found to occur in Malaya, the sole Malayan species being A. malayana Henderson (Gdns Bull, Sing. 7: 105–6, pl. 23. 1933). Ridley himself described a second species of Hederopsis King some years after his Flora was published (H. major Ridl, in Kew Bull, 124. 1929). The genus Polyscias Forst. is not in Ridley’s Flora, but is represented in the Peninsula by several species found in cultivation.

Thus at present there are known to occur in Malaya ten genera of Araliaceae: Acanthopanax, Aralia, Arthropodium, Brassaiopsis, Dendropanax, Gastonia, Hederopsis, Polyscias, Schefflera, and Trevesia. If Tupidanthus is maintained as a distinct genus, as advocated by Philipson (pers. comm.), the total is eleven.

The genus Aralidium Miq. was assigned to Cornaceae in Ridley’s Flora, but placed in Araliaceae by Corner (Wayside Trees of Malaya 1: 154. 1940 & 1952). After considerable preliminary study it is deemed preferable to exclude it from Araliaceae on account of its lack of resin canals, among other characters. Whether it should rejoin Cornaceae or find some other position is a problem still under study.
Aralia L.

Ridley reported three species of *Aralia* from the Malay Peninsula, *A. thomsonii* Seem., *A. armata* (Wall. ex G. Don) Seem., and *A. ferox* Miq. Merrill (Philipp. J. Sci. 13, Cr, 316–318, 1918) showed that Philippine and Celebes specimens determined as *A. ferox* Miq. were not that species at all, and because of the climbing habit created a new genus *Acanthophora* for these plants with *A. scandens* Merr. as the sole species. Later, van Steenis (Bull. J. Bot. Buitenz. ser. 3, 17: 390, 1948) added further determinations and included the "A. ferox" of Ridley's flora, adding the genus *Acanthophora* to the known Malayan Araliaceae.

The species *Acanthophora scandens* Merr. is certainly distinct. It has recently again been collected along the Ginting Highlands Road, Pahang (Stone 12016). A study of this material and a review of the pertinent literature suggest however that the generic status for this species is highly dubious, its sole claim to it being the lianoid habit. Since most species of *Aralia* are shrubs or trees (or herbs) the liane habit does stand out. On the other hand there are many genera known which include species with this habit along-side others which are trees or shrubs, witness *Scheflera*, and outside the Araliaceae, *Derris* (Leguminosae), to name but two examples. In this view I am supported by D. G. F. Frodin (Misc. Rec. Fl. Mal. Found. III: 8, 1973).

In any case there is a nomenclatural reason why the name *Acanthophora* Merr. 1918 cannot be used, even if the generic concept it denotes were considered worth retaining. This is the generic name *Acanthophora* Lamouroux 1813, applied to a taxon of Rhodophyceae (Red Algae). This name was obviously overlooked by Merrill, when he created what was, in fact, a later homonym.


(Not *Acanthophora* Lamouroux, 1813 (Algae)).

Distrib. — Malaya, Philippines, Celebes. In Malaya: Perak, Pahang, and Selangor. Fig. 1.

Arthrophyllum Blume

Among the Araliaceae this is one of the more clearly distinct genera, rather easily recognized by its pinnate leaves and 1-celled ovary and fruit. The species are another matter. They are poorly described, mainly because of poor inadequate collections, and badly discriminated. Most are rather difficult to distinguish. Those in the Peninsula in particular are in a state of confusion because of the too-optimistic classification by Ridley. In the Flora (I: 885) Ridley lists 8 species. These cannot be reached through the key and cannot be recognized from the descriptions which are too brief and contain errors of fact. The available specimens, including types and syntypes, even when examined, are not always decisive. Of the 8 species listed by Ridley, four seem to me reasonably clear; the others are to be considered as synonyms or as varieties of these four.

The main point of this note is to describe in some detail the basic growth pattern of the largest of the Malayan *Arthrophyllums*. This plant was called *A. diversifolium* by Clarke, King and by Corner, while Ridley called it *A. ovalifolium*. Since it never possesses bipinnate leaves, it does not correspond very well with the former. Apparently it is not the same as the latter. The nomenclature will be treated in a separate paper by W. R. Phillipson. At any rate, it is clear that throughout the lowlands of Malaya, there is a single, rather uniform tall *Arthrophyllum* species,
which often enters waste ground as a pioneer regrowth plant. Its trunk eventually branches sparsely, and the trees may reach a height of over 15 m. This is the plant referred to here in the following description.


Although Ridley’s binomial *A. congestum* applies unquestionably to this plant there seems little doubt that it is to fall into synonymy when a wider study of the group is made, and this is to be reported on by Professor Philipson in this volume.

Ridley attributed the name *A. ovalifolium* to Miquel, but the authors, as stated by Miquel, were Junghuhn and De Vriese. Miquel’s description does not seem to be a different interpretation. In describing *A. congestum* Ridley notes the flowers as with 4 petals, but examination of the type collection shows that this is wrong; the flowers, as would normally be the case, are 5-merous. There are no other characters to distinguish this from the common, arboreous lowland species which Ridley calls *A. ovalifolium*. In accepting this name for a Malayan species, the chance of error is not small, and it remains to be checked against authentic specimens. At any rate, the species intended here is the most abundant of the Malayan lowlands, at least on the west coast, and is usually, when mature, a branched tree up to 14 m tall with a trunk reaching 30 cm diameter. The leaves on the main erect (orthotropic) stems are closely spiralled; they are large, once-pinnate, reaching a length of 2 meters, with 12–14 pairs of large leaflets (Fig. 2–2). Like Ridley, I have never seen a bipinnate leaf in any *Arthrophyllum*; on this basis I have refrained from identifying our plants with *A. diversifolium* Bl. or its synonyms, though this is the name used by King in the ‘Materials’ and Corner in “WAYSIDE TREES OF MALAYA (1940)” and found on a number of herbarium specimens in SING and KEP. According to the available descriptions *A. diversifolium* has at least some bipinnate leaves. It is possible that hasty observation of our plants would suggest that they too bear bipinnate leaves, but this arises through confusion of the axillary determinate branches (which bear the flowering shoots) with leaves. These axillary branches (Fig. 2–3) are more or less plagiotropic (though not usually horizontal), and bear at their widely spaced swollen nodes opposite bipinnate but reduced leaves, or nearer the tip, whorled and even further reduced leaves; in the axils of the latter arise the short flowering shoots (Fig. 2–3 and 2–9), which themselves have 1–3 nodes with pairs of simple leaves (Fig. 2–6). The resemblance of the lateral branch to the racemes of one of the big leaves is striking, but its position and smaller number of nodes serve to identify it. Since the leaves borne on the lateral branches are much smaller, and with successively reduced numbers of nodes, they are easy to collect, and hence are found on most herbarium sheets; but they are not really representative of the plants, as besides being smaller, they are not or scarcely asymmetric, which is the usual condition of the leaflets on the lower, big leaves. Also, their number of lateral nerves may be smaller. These circumstances make identification of such fragmentary collections difficult and hesitant.

Plants of this species generally remain unbranched until they are about 2.5 m tall; at this stage they may branch, but the branches are recapitulations of the trunk, i.e. orthotropic with spiral phylloaxy and more or less equivalent. These may grow to an equal length, then flower. Flowering is by inception of the axillary lateral branches with distichous or whorled phylloaxy, as described above; but new orthotropic shoots arise from other axils providing relays. The lateral shoots are strongly determinate in growth and reach about the same length as the big
**Fig. 2. Arthrophyllum sp. (A. diversifolium, sensu King). Aspects of its morphology.**

1: First-order shoot. 2: Pinnate leaf of first-order shoot. 3: Second-order shoot. 4: Medial leaflet from leaf of first-order shoot. 5: Medial leaflet from lowest leaf of second-order shoot. 6: Simple leaf from third-order (flowering) shoot. 7: Cross-section of leaf rachis. 8: Axillary bud. 9: Apex of first-order shoot bearing second-order shoot branches (PB) and their axillant leaves (LF) or their scars (LS). 10: Floral details. Stone 12156.
pinnate leaves of vegetative stems. Their resemblance to rachises has been mentioned above; in fact, the immediate appearance suggests that the flowering umbels arise in the axils of leaflets, but close study dispels this impression. The big lower leaves always have at least 10 nodes, but the upper leaves on the lateral branches may have as few as 1 or 2 nodes (these leaves usually immediately subtend the flowering shoots). The reversion to spiral arrangement at the apex of the lateral branch is abrupt and striking. On the flowering shoots, there are umbels in the axils of the leaves on the median nodes as well as clustered at the apex. The inflorescence, therefore, consists, strictly speaking, of a pseudumbellate cluster of simple umbels, although superficially the appearance suggests a 2- or even 3-compound umbellate structure.

The leaflets of a single leaf often have unequal laminal areas. The whole row of leaflets on one side (e.g. the "left" or "right" side) may be slightly larger than those on the other side of the rachis. However, if there is this 'overdevelopment' of the right side of a leaf, then the next higher leaf of the spiral often has its left side similarly overdeveloped, and the successive higher leaves reveal an alternation continuing this pattern.

The nodes of the leaf rachis are closer nearer the leaf apex, and the internode distance is correlated approximately with leaflet width, being about the same or slightly more than the width of the nearest leaflets. The lower internodes elongate first and most rapidly.

The stipules are short and connate into a narrow ligular rim, ciliate in the very youngest stage but soon glabrate. Internodes on the orthotropic shoots are so short that the sheathing bases of the petioles are in contact.

The fruits are about 5–6 mm long, globose to broadly ellipsoid, capped by the remnant calyx rim and the short persistent conic style.

Seedlings. Seedlings of this species are epigeal, with a pair of opposite bluntly ovate cotyledons about 1 cm long. The first several true leaves are simple, ovate-acuminate; these are eventually followed by pinnate leaves.

**Brassaiopsis** Decne. & Planch.

*Wardenia* King, syn. nov.)

The genus *Wardenia* with its single species *W. simplex* King has been found so far only in a few localities in Perak and Selangor and hitherto has been considered monotypic. F. R. I. Kepong Herbarium has several specimens of *Wardenia simplex* King, the type species of the genus cited below. These collections supplement the original from Ulu Kerling, Perak, made by Kunstler over 80 years ago.

Two collections made in 1955 and 1969 in Trengganu, appear to represent a second species of this genus. It is described as a 'fleshy treelet' and differs from *W. simplex* in several obvious features, its elliptic acuminate cuneate (rather than ovate subcordate) leaves, much shorter and more slender petioles, and diminished inflorescence with little if any branching, and perhaps its longer pedicels and sparser puberulence. The material is rather incomplete; no fruits are available. The flowers are evidently past anthesis and the ovaries starting to enlarge. They clearly show a bilocular ovary, each cell with a single ovule. This conflicts with King's original generic description of *Wardenia* which calls for a unilocular ovary that develops a disseminum later, separating the seeds, but agrees with the diagnosis of *Brassaiopsis*. According to Philipson (Bot. J. Linn. Soc. 63, Suppl. 1: 90, figs. 1–6. 1970) the original observations may have been wrong as the type collection definitely has 2-locular young fruits. The floral character of "ovary 1-celled. 2-ovulate" should be treated with caution, however, as in any case it 'disappears' in the fruit phase which is more normal for Araliads, i.e. there is one seed per loculus. The ovular character may not differ therefore from the situation in
Brassaiopsis Decne. & Planch. (including Euaraliopsis Hutchinson, which is Araliopsis Kurz non Engler). It would appear that Wardenia differs from Brassaiopsis only in having simple leaves. However, simple-leaved species of Brassaiopsis have already been described. Philipson (1951)* for example describes B. castaneifolia from Burma, which has simple leaves. Thus the generic distinction does not appear to be tenable. The venation pattern in the simple-leaved species is quite easily reconciled with that of the compound or palmately lobed-leaved species.

In both B. (Wardenia) simplex and B. minor, and in B. polyacantha and B. elegans, the young parts are covered with a rufous furfuraceous indument. Microscopic examination reveals that this is made up of numerous slender brachiate to stellate hairs with a variable number of branches and considerable variation in size. These structures are more or less ephemeral and the stems, leaves, etc., become glabrescent with age. These hairs are virtually identical in all four species, though their abundance varies. They are densest on the innovations and buds of B. polyacantha.

The sheathing base of the petiole and the adnate stipules are similar in all four species. The petiole base is obliquely invaginated and the basal margins abruptly produced into a pair of lobes at a certain distance away from the base, as in shown in the accompanying figures. This pattern also shows up in the lowest inflorescence bracts, which appear to be much modified leaves with the blade and petiole reduced effectively to the sheath and ligule, although a prolongation representing the blade (and showing lateral nerves) but tightly cylindrical-subulate, may be present.

The venation patterns in the leaves of all four species is comparable; the lowest lateral nerves are always inserted on the midrib by means of an outcurved junction. They are elevated beneath. There are comparatively few, i.e. widely spaced secondaries often with subparallel intermediate nerves between them. The lowest pair of lateral nerves tends to run up at or very near the blade margin and justifies the term ‘subtriplinerved’. In the palmate-leaved species these nerves give off leaflets which are thus asymmetrical. The overall venning pattern is campodromous.

Consideration of these further characters, indument, petiole-ligule-stipules, and veining, adds weight to the decision to reduce Wardenia to Brassaiopsis.

In R. Viguier’s anatomical study of Araliaceae (1906) Brassaiopsis was included (in the ‘Shefflerinees’ p. 96) and a characterization of its petiole anatomy was presented (the species not specified). For Wardenia, Viguier apparently had no material and he was unable to compare it anatomically with other genera. (He expressed doubt that it pertained to Araliaceae and suggested that it might belong to the Cornaceae). However, such doubt is unnecessary and it is preferable to reduce Wardenia to the status of a synonym of Brassaiopsis. This is also the view of D. G. Frodin (Misc. Rec. Fl. Mal. Found. III: 8, 1973).

**KEY TO MALAYAN SPECIES OF BRASSAIOPSIS**

1. Leaves palmately lobed or divided
   2. Leaves palmately 5–9-lobed, large to very large, to 60 cm wide; small trees ........................................... B. polyacantha
   2. Leaves digitate with 3 or 5 or up to 3 leaflets, medium, to 25 cm. wide.
      3. Leaflets 3–5; inflorescence branches with terminal umbel and a few lateral ones ........................................... B. elegans
      3. Leaflets 5–9; inflorescence branches racemose-umbellate ..........
         ........................................... B. glomerulata

1. Leaves simple.

4. Leaves ovate-subcordate, to 35 cm long or more; petioles stout elongate, 15 cm long, 5 mm thick. .............. B. simplex

4. Leaves elliptic, cuneate at base, smaller, to 25 cm long; petiole to 7 cm long, 2 mm thick. ......................... B. minor

**ENUMERATION OF MALAYAN SPECIES OF BRASSAIOPSIS**


*Poore 8126* differs in having more coriaceous leaves, appressed stellate hairs, thornier petioles. It may be a different species.


This species may be recognized by its stature, for it becomes a tree up to 10 m tall; by its distinct (petiolulate) leaflets; and by the long inflorescence branches bearing umbellules of about 25–35 flowers.

3. *B. simplex* (King) B. C. Stone, **comb. nov.** *Wardenia simplex* King, Mat. Fl. Mal. Pen. in J. As Soc. Bengal 67: 60. 1898; Ridley, Fl. Mal. Pen. 1: 887. 1922. — Fig. 3.


5. *Brassaiopsis minor* B. C. Stone, **sp. nov.** — Fig. 5.

Arbuscula, ramulis 5 mm diametro. Folia simplices ellipticae marginibus in partem mediam distalem serratis; petiolo 6–8 cm longo c. 1.5–2 mm diametro basi breviter vaginantio; lamina tenue coriaceo basi subtriangulovio nervis c. 6–8
Fig. 3. *Brassaiopsis simplex* (King) Stone. (*Wardenia simplex* King). Leaf, inflorescence, floral details, stipule detail, pubescence. FRI-12741.
Fig. 4. *Brassaiopsis elegans* Ridl. Leaf, inflorescence, floral details. Stone 9578.
Fig. 5. *Brassaiopsis minor* Stone. Leaf, stipules, bracts (left: dorsal, right: ventral), inflorescence, and floral details (*B¹*: the lowest inflorescence bract with a stipular-ligulate base). Type collection.
Fig. 6. Comparison of *Schefflera singularis* Stone with two *Dendropanax* species.

A: *Schefflera singularis*, leaf and floral details, type collection.

B: *Dendropanax maingayi* King, leaf and floral details, *KEP* 66583. and fruit, *Poore* 1072.

paribus, usque ad 25 x 12 cm, apicem versus abrupte acuminato, basi cuneato. Inflorescentia terminalis, brevis, 4-5 cm longis, bracteatis, pauci-vel non-ramosis, umbellatis; bracteolis deltoideis c. 1-1.5 mm longis rufo-puberuloento-ciliolatis; pedicellis c. 15 mm longis; calyce 5-dentato; ovario rotundato-lobulado, depresso, biloculare, stylis binis unitis columna 1 mm longo formantebus. Loculi ovarii 2, uniovulati.

Holotype: MALAY PENINSULA: TRENGGANU, Gunong Pahang, Ulu Brang, camp 3, humid deep valley on granite; alt. 3500 ft., fleshy treelet, flowers white; 21.9.1969, Whitemore FRI-12741 (KEP).

Additional spec. examined: TRENGGANU: 34th mile, Kuala Trengganu, Besut Rd., lowland forest, (W. side), woody 2' high, 8.9.1955, J. Sinclair & Kiah SF-40775 (SING).

This is another simple-leaved species of Brassaiopsis. Originally I had considered it as a new Wardenia. The flowers show clearly that the ovary is bilocular and there is a single ovule in each loculus. The slender shorter petioles, elliptic-cuneate leaves and shorter inflorescence quickly distinguish this from B. simplex.

**Hederopsis King**

Type species: *Hederopsis maingayi* King, Hk. Fl. Brit. Ind. 2: 739. 1898.

Originally described from rather inadequate material, this genus (endemic in Malaya and apparently Sumatra, monotypic) has in the last few years been collected rather widely and is in fact locally common in a few localities. It has been suggested by Frodin that the genus could be merged with *Macropanax* Miq. which appears to differ only in its usually 2-3-locular ovary, this structure in Hederopsis being normally 5-6-locular. The difference is a slight one, but King's genus can be retained for the time being until a broader-based comparison can be made. The leaves are palmate-digitate, often with 5 leaflets, or with 3, or even 4, and sometimes (on flowering branches) reduced to 1 leaflet. The slender petioles may reach a length of 56 cm, and the terminal leaflet (always slightly longer than the laterals) a length of 31 cm and a width of 12 cm. The margins are dentate with small rather distant teeth. The petiololes may reach a length of 15 cm (again shorter on the lateral leaflets). — Fig. 7.

The spirally disposed leaves have a rather short sheathing base about 1 cm long or less; when very young the margins are ciliate with pale brown multisepitate hairs, which are often laterally adnate in flat 'bundles'. The juvenile stems are similarly rather densely hairy, but the hairs are ephemeral and all mature and submature shoots are glabrous. The base of the inner surface of the sheath shows a purplish spot adjacent to the axillary bud. The bud is compressed, purplish, pubescent, and bears 2 imbricate minute prophylls (which are more or less deltoid when flattened); these are equivalent to the leaf-sheath and show the ciliate margin and, often, a more or less produced apical elongation sometimes bearing three tiny lobes (suppressed leaflets). The outer face is usually rather pubescent. Similar prophylls occur on the terminal shoot in the uppermost region during renewed growth following the resting period, which is evident from the succession of several long internodes followed by a short series of very crowded internodes on the main branches and leafy shoots.

Individual plants of this species become attractive small trees with a rounded crown, the trunk sometimes exceeding 90 cm girth, often fluted at base, giving off a few main branches; the whole tree may reach 15-20 m height.

In Ulu Langat (Selangor) above the Reservoir (Ponsoon) there are several of these trees, copiously fruiting in January-February 1975. The fruits are sub-globose and still green when ripe.
Fig. 7. *Hederopsis maingayi* King. Leaf and floral details, and fruit.
Spec. examined: MALAY PENINSULA: KEDAH: Ulu Muda Forest Reserve, Compartments 115 & 116, 1500 ft. alt., a tree 40 ft. high, girth 24"., bole fluted, with small buttresses, bark rugose, lenticellate, inner bark thick brown, with watery exudate, wood white, fruits green. 21.1.1969, Y. C. Chan FRI-6782 (KEP).

PERAK: Bintang Hijau F. R., secondary forest, tree 50 ft. tall, 26". girth, flowers pale yellow, faintly aromatic, cut bark smelling of resin, bole slightly fluted, 22.11.1966, Rahim Ismail KEP-980531 (KEP).


SELANGOR: Ulu Langat, 2 miles from Kg. Injin Satu, tree 50 ft. high, 17.4.1963, Abdul Samat 196 (KIU).

— Ulu Langat Forest Reserve, tree 30 ft. high. 9.3.1966 Whitmore FRI-106 (KEP).


— Ulu Langat above NEB works, stream valley, tree 10 m x 35 cm, fruits green, 7.2.1975, M. M. J. van Balgooy & B. C. Stone 2249 (KLU etc.).

PAHANG: Ulu Tembeling, lowlands, 28.5.1931, Henderson SF. 24550 (SING).

— Ulu Gali, Raub, 27.9.1929, Kalong KEP-20274 (KEP).


Schefflera J. R. & G. Forst.

Schefflera singularis B. C. Stone, sp. nov. — Fig. 6A.

Liana glabra innovationibus inflorescentiaque excepto, pilibus perminutis stellato-quinque-brachiatis; ramis usque ad 1 cm diametro teretibus cortice griseo; ramulis foliaceis usque ad 6 mm diametro in sicco longitudinaliter canaliculato-ruguloso; foliis simplicibus elliptico-ovatis marginibus valde sed anguste revolutis apice obtusis vel minute apiculatis vel rotundatis vel retusis, basi cuneatis, rigide percorriaceis costa in canaliculo costali utrinque leviter elevato, nervis invisibilis; petiolo 5–20 mm longo. 1.5–5 mm crasso in sicco ruguloso basi ligulato ligulo 5 mm longo marginato; lamina 2–12 cm longo 1.5–6 cm lato apiculo 0.5–2.5 mm longo vel nullo; nervis lateralisbus c. 5–7 paribus sed omnino obscuris, nervis basalisbus marginam formamantibus. Inflorescentia terminalis bisumbellatis (composito-umbellatis) usque ad 3 cm longis axibus griseo-albide furfuraceis demum glabrescentibus bracteis deltoideis c. 4 mm longis bracteolis c. 1–2 mm longis scarioso-ciliato-marginatis. Umbellae c. 5–10-floriferae, pedicellis c. 4 x 0.8 mm, calyce obconico 3 x 3 mm margine obscuriter 5-dentato minutissime ciliolato, petalis 5 deltoideis 2 x 1.8 mm intus obscuriter carinatis apicibus unguiculatis, staminibus 5 filamentis albidis c. 1 mm longis antheris submedifixibus ovatis 1 mm longis erectis, disco leviter elevato, stylo pedio late conico truncato vix 1 mm alto 2 mm lato, stigmatibus 5 obscuris radiatis ad apicem stylopedii sessilibus. Fructus immaturus glabratus obconico-turbinato-hemiglobosus 5 x 4 mm calyce undulato alte-marginatus stylopedio centrale 1 mm alto.

Holotype: MALAYA: PAHANG, Gunung Ulu Kali, summit area, 5000-5800 ft. alt., elfin forest with Dacrydium, big shrub with thick brittle leaves pale tawny-greenish beneath, 23.7.1967, B. C. Stone 7175 (KLU).

This very distinct endemic species so far has been collected only on the summit area of the mountain Gunung Ulu Kali, in the Ginting Highlands of Pahang, on the Selangor border. At first it was considered to be a new species of Dendropanax but after much discussion and hesitation it is here described as a Schefflera. In nearly all features this species agrees with the formal definition of a Dendropanax, but differs in having a perceptible though limited ligular process at the base of the petiole, similar to that in at least most Scheffleras. In addition the exceedingly coriaceous leaf, with virtually invisible venation, appeared inconsistent with the condition in Dendropanax, which at least in the Malaysian species, is characterized by rather evident and subtrinerved leaves, as may be seen in D. mainayi and lancifolius, illustrated in Fig. 6 B and 6 C. Schefflera singularis, as shown in Fig. 6 A, not only has invisible nerves and evident stipular ligule, but a more oboval laminar shape than the two species of Dendropanax. Nonetheless, in floral characters there is almost no difference between the new Schefflera and the two Malayan Dendropanax species, as the figures cited also display.

Within Schefflera the vast majority of species possess compound leaves with trifoliate or palmate leaflet arrangements. Rarely, as in Schefflera lanceolata Ridl., simple leaves occur, though even in this species older branches may show trifoliate leaves. Another such example is Schefflera simplicifolia Merr. of the Philippines. Among Malesian species I know of no other similar cases, though they may occur. Thus Schefflera singularis stands apart from nearly all other Malayan Scheffleras by its simple leaves.

Another difference lies in the form of the inflorescence, which in Schefflera is usually a compound umbel, i.e. an umbel of umbels or umbellules, while in Dendropanax the umbel is often simple; but there are also species of Dendropanax with compound umbels.

The genus Schefflera includes species which are climbers, others which are shrubs or trees, the latter often epiphytic. Dendropanax species are apparently mostly shrubs or trees. Schefflera singularis is a high-climbing woody liana.

A comparison of generic diagnoses in such standard works as various floras, treatise* on the Chinese Araliaceae (Sargentia 2. 1942), and Vol. 2 of Hutchinson’s “Genera of Flowering Plants” (1967), does not appear to reveal any completely dependable differential features to distinguish Schefflera from Dendropanax except perhaps the presence of a developed stipular ligule. The degree of connation or separation of the style-tips seems to be highly variable within Schefflera and not a diagnostic character.

In the light of these facts it is evident that further work is necessary to clarify the distinction between Dendropanax and the small number of Schefflera species with predominantly simple leaves. One may in fact question whether Dendropanax lancifolius Ridl. is not itself misplaced in Dendropanax. (In passing it may be noted that the generic name Dendropanax, although treated as neuter by the original authors, has usually been considered masculine in gender, and thus the epithet is spelled here lancifolius rather than lancifolium as it appears in Ridley’s Flora).

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