

## NOTES ON MALESIAN FABACEAE (LEGUMINOSAE–PAPILIONOIDEAE)

### 11. The genus *Derris*

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#### SUMMARY

*Derris* Lour. is revised for the Flora Malesiana region. In the introduction comments are given on some characters and the seedlings of *D. trifoliata* Lour. are described. The introduction is followed by a section 'Notes on species' in which the varieties of *D. elegans* Graham ex Benth. are described, including a new one from Celebes (var. *celebica* Adema) and a new one from Malaysia, Java, Borneo, the Philippines and the Moluccas (var. *korthalsiana* (Blume ex Miq.) Adema). Several other species are discussed at some length. A key to the species of *Derris* in Malesia is presented. The paper concludes with notes on aberrant specimens and excluded species.

**Key words:** *Derris*, Malesia, new varieties, seedlings.

#### INTRODUCTION

*Derris* Lour. is a mostly SE Asian genus of c. 50 species of Millettoid Papilionoideae. One coastal species, *D. trifoliata* Lour., is widespread and also found in Africa, India, Sri Lanka, Australia and the Pacific; one species is endemic to N Australia (*D. involuta* (Sprague) Sprague). In the Flora Malesiana region 17 species are found.

In a recent paper (Adema, 2001) the relationship of *Derris*-like genera was discussed. There I concluded that *Brachypterum* (Wight & Arn.) Benth. (see Geesink, 1984) had to be reunited with *Derris* s.s. In the present paper I will discuss some characters and several species and their varieties. In *D. elegans* Graham ex Benth. two new varieties are distinguished. *Derris ferruginoides*, *D. micans*, *D. mindorensis* and *D. pubipetala* are united in one species; also united are *D. cebuensis* and *D. spanogheana*.

A key to Malesian species is offered. Notes on several aberrant specimens, and on dubious and excluded species are included.

#### *Inflorescences*

I have revised various genera of Leguminosae and in most cases the scheme for the inflorescences described by Geesink (1984) performs quite well. However, I have found an increasing number of occasions where it is very difficult to decide whether a certain inflorescence is a panicle with rather short lateral branches or a pseudoraceme with (at the base) very long brachyblasts. An example of this is *D. koolgibberah* where both panicles and pseudoracemes occur. Individual specimens may show this in a single inflorescence: at base clearly a panicle with rather short lateral branches, upwards

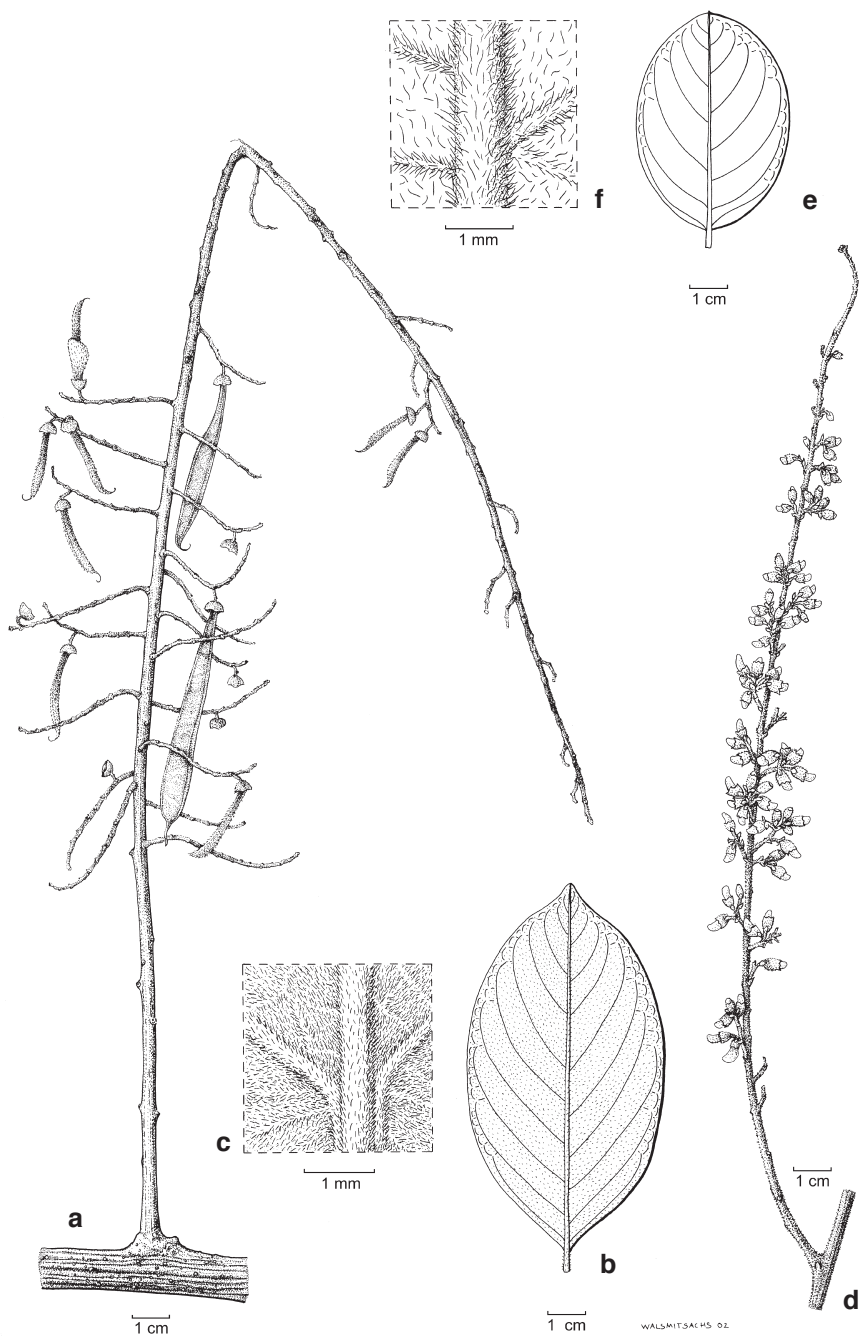


Fig. 1. Leaflets and inflorescences. a–c: *Derris koolgibberah* F.M. Bailey. a. Inflorescence with young fruits; b. leaflet from below; c. leaflet from below, detail. d–f: *D. pseudoinvoluta* (Verdc.) Adema. d. inflorescence; e. leaflet from below; f. leaflet from below, detail (a: NGF 22652; b, c: Brass 8205; d–f: NGF 15395).

these branches become shorter and shorter, finally ending in brachyblasts and the top of the inflorescence could be called a pseudoraceme (Fig. 1a). Similar cases have been described by Buijsen (1988: 240, 249 (lead 7, 9), 250, 251), Dasuki & Schot (1991: 191, 193 (lead11)) and Schot (1991: 206) for *Fordia*.

In cases like those described above there is a continuous transition from panicles to pseudoracemes.

### Stamens

In most genera of Leguminosae I have revised so far the filaments and anthers are usually glabrous. Hairy filaments and/or anthers are found in *Aganope*, *Austrosteenisia*, *Clitoria*, *Derris*, *Indigofera*, *Millettia*, *Paraderris* and *Teramnus* (Table 1). In *Millettia* all species with at least some hairs on the anthers belong to sect. *Fragiliflorae* (Adema, 2000). In *Derris* it may be a useful character to distinguish *D. koolgibberah* and *D. rubrocalyx*, which usually have hairy anthers, from *D. trifoliata*, which has glabrous anthers.

### Seedlings

Seedlings are not very often collected. In all *Derris* material I have studied only one collection of seedlings was found. This collection belongs to *D. trifoliata*.

Table 1. Hairiness of stamens.

Species	Filaments	Anthers
<i>Aganope heptaphylla</i>	glabrous or with scattered hairs	glabrous or with some hairs at the connective
<i>Aganope thyrsiflora</i>	glabrous or with scattered hairs	glabrous or with some hairs at the connective
<i>Austrosteenisia blackii</i>	with some hairs	glabrous
<i>Clitoria laurifolia</i>	with few short glandular hairs	glabrous
<i>Derris koolgibberah</i>	glabrous or with some hairs	glabrous or with some hairs
<i>Derris rubrocalyx</i>	glabrous or with some hairs	often with some (at least one!) hairs
<i>Derris</i> 'spec. B'	glabrous or with some hairs	hairy
<i>Indigofera decora</i>	glabrous	tuft of hairs at apex and base
<i>Indigofera zollingeriana</i>	glabrous	hairy at apex
<i>Millettia ahernii</i>	glabrous	hairy at least at the base
<i>Millettia borneensis</i>	glabrous	some hairs at the base
<i>Millettia brachycarpa</i>	glabrous	some hairs at the base
<i>Millettia glabra</i>	glabrous	some hairs at the base
<i>Millettia merrillii</i>	glabrous	some hairs at the base
<i>Millettia pinnata</i>	glabrous	some hairs at the base
<i>Millettia platyphylla</i>	glabrous	hairy at base and apex
<i>Millettia tenuipes</i>	glabrous	hairy at the base
<i>Millettia velvetina</i>	glabrous	some hairs at the base
<i>Millettia xylocarpa</i>	glabrous	glabrous or some hairs at the base
<i>Paraderris elliptica</i>	rarely some hairs at free parts	glabrous or with some hairs
<i>Paraderris lianoides</i>	glabrous	glabrous or with some hairs
<i>Paraderris montana</i>	glabrous	glabrous or rarely with some hairs
<i>Paraderris oblongifolia</i>	glabrous	glabrous to slightly hairy
<i>Paraderris piscatoria</i>	glabrous	with some hairs
<i>Teramnus flexilis</i>	glabrous or with some hairs	with some hairs at the base

*Derris trifoliata* Lour.

Seedlings: *Heliciopsis* type, *Heliciopsis* subtype (De Vogel, 1979): Seed coat and fruit wall still present around cotyledons in seedlings.

First leaves (up to at least 10) unifoliate, usually alternate (very first leaves not seen), ovate to ovate-cordate, coriaceous, 15–52 by 6–25 mm, base rounded to subpeltate, apex acuminate, glabrous above and below, midrib and nerves raised above; petiole with few hairs along the margin of the groove; stipules triangular, 1 by 1 mm, ciliate. Root nodules present.

Specimen seen: *Monod de Froideville 850*, Peninsular Malaysia, Port Dickson, 22.02.1946.

Note: Six specimens are mounted on the same sheet. Five belong to *D. trifoliata*; the sixth differs in several characters.

Up to now I have only seen seedlings of *Aganope thyrsiflora* (Benth.) Polhill (*Maxwell 78-389, 81-23*). They have the same germination type as *D. trifoliata*. De Vogel (1979) also cites this type (*Heliciopsis* type, *Heliciopsis* subtype) for *Spatholobus*.

## NOTES ON SPECIES

A. *Derris elegans*

*Derris elegans* Graham ex Benth. is a very variable widespread species. The extremes look so different that they have been described several times as separate species (Bentham, 1852; Miquel, 1855; Baker, 1879; Hemsley, 1895; Schumann & Lauterbach, 1901, Pulle 1910; Kanehira & Hatusima, 1942; Thothathri, 1970). However, several attempts have been made to unite the diverse elements into one species and to accommodate the differences by describing several varieties (Prain, 1897; Verdcourt, 1978, 1979). During a training course in systematics, students at the Nationaal Herbarium Nederland at Leiden concluded that the overlap in certain characters is so large that

Table 2. Differences between the varieties of *Derris elegans* Graham ex Benth.

	var. <i>elegans</i>	var. <i>korthalsiana</i>	var. <i>celebica</i>	var. <i>gracillima</i>
indumentum lower surface leaflets	densely hirsute to velvety	scattered appressed hairs	scattered appressed hairs	scattered appressed hairs
ultrajugal part (mm)	0–24	0–29	0–7	9–50
mean	7.4	12.5	2.1	25
shape leaflets	elliptic to obovate	elliptic to obovate, rarely ovate	obovate	elliptic to obovate, rarely ovate
apex of leaflets	obtuse to rounded, emarginate or shortly, broadly acuminate	shortly, broadly acuminate, rarely rounded	obtuse to rounded	long, slender acuminate
length acumen (mm)	0, 2–3	3–13	0	5–25
distribution	Indochina, Thailand, Peninsular Malaysia, Sumatra, Borneo	Peninsular Malaysia, Sumatra, Java, Borneo, Philippines, Moluccas		New Guinea, Solomon Islands, New Hebrides

even discriminating varieties is impossible. Indeed, specimens belonging to this species have a lot in common: stipellae always present; leaves with 3 or 5 leaflets; short 2- or 3-flowered brachyblasts; small, rather hairy calyces; standard usually quite hairy; pods with a narrow wing along the upper suture and thinly hirsute valves. However, there are several constant differences in some characters in plants from Continental Asia, Celebes, New Guinea, the Solomon Islands and the New Hebrides (Table 2, Fig. 2). From Table 1 it is obvious that there are overlaps even in those characters. Comparing the characters in which the groups in *D. elegans* differ, with characters used for species delimitation in *Derris*, and keeping in mind the large overlaps in other characters, I have decided that it is better to keep all elements together in one species and deal with the differences at the varietal level.

#### KEY TO THE VARIETIES OF DERRIS ELEGANS

- 1a. Lower surface of leaflets with few widely scattered appressed hairs, seemingly glabrous. Calyx (thinly) sericeous outside. . . . . 2
- b. Lower surface of leaflets densely hirsute to  $\pm$  velvety. Calyx hirsute outside. . . . . **a. var. elegans**
- 2a. Topmost part of leaf rachis 0–50 mm long, usually longer than 9 mm. Apex of leaflets short and broad to rather long and slender acuminate, rarely rounded, acumen (0–)3–25 mm long . . . . . 3
- b. Topmost part of leaf rachis 0–7 mm long. Apex of leaflets obtuse to rounded, emarginate . . . . . **b. var. celebica**
- 3a. Topmost part of leaf rachis 9–50 mm long, mean c. 24 mm. Apex of leaflets long and slender acuminate, acumen 5–25 mm long. — New Guinea, Solomon Islands, New Hebrides . . . . . **c. var. gracillima**
- b. Topmost part of leaf rachis 0–29 mm long, mean c. 13 mm. Apex of leaflets shortly and broadly acuminate, rarely rounded, acumen (0–)3–13 mm long. — Sumatra, Peninsular Malaysia, Java, Borneo, Philippines . . . . . **d. var. korthalsiana**

**a. var. elegans** — Fig. 2c, d

*Derris vestita* Baker (1879) 242. — *Derris elegans* Graham ex Benth. var. *vestita* (Baker) Prain (1897)103; Ridl. (1922) 597; Craib (1928) 488; Verdc. (1978) 468; (1979) 320. — Type: *Maingay 608 (1633)* (holo K; iso L), Malacca.

*Derris rufula* K. Schum. & Lauterb. (1901) 361. — Lectotype (here designated): *Lauterbach 2821 ('821')* (holo K), New Guinea.

Stems and twigs usually hirsute, glabrescent. Topmost part (ultrajugal part) of *leafrachis* 0–24 mm long, mean 7.4 mm. *Leaflets*: terminal elliptic to obovate, 6.5–20 by 2.5–9 cm, index 1.6–2.8, base rounded or subpeltate, rarely cuneate, apex obtuse to rounded or shortly, broadly acuminate, acumen 2–3 mm long, rounded, above glabrous or  $\pm$  hirsute on midrib and nerves in lower part, below hirsute to velvety, often much less hairy in older leaflets, then mostly along midrib (and nerves), midrib and nerves raised above, nerves 6–10 per side, 6–29 mm apart; lateral leaflets mostly as the terminal, (broadly) ovate to elliptic, 4.5–16.5 by 3–7.5 cm, index 1.5–2.9; pulvinus 2–9 mm long, hirsute. *Calyx* brown purple, outside hirsute.

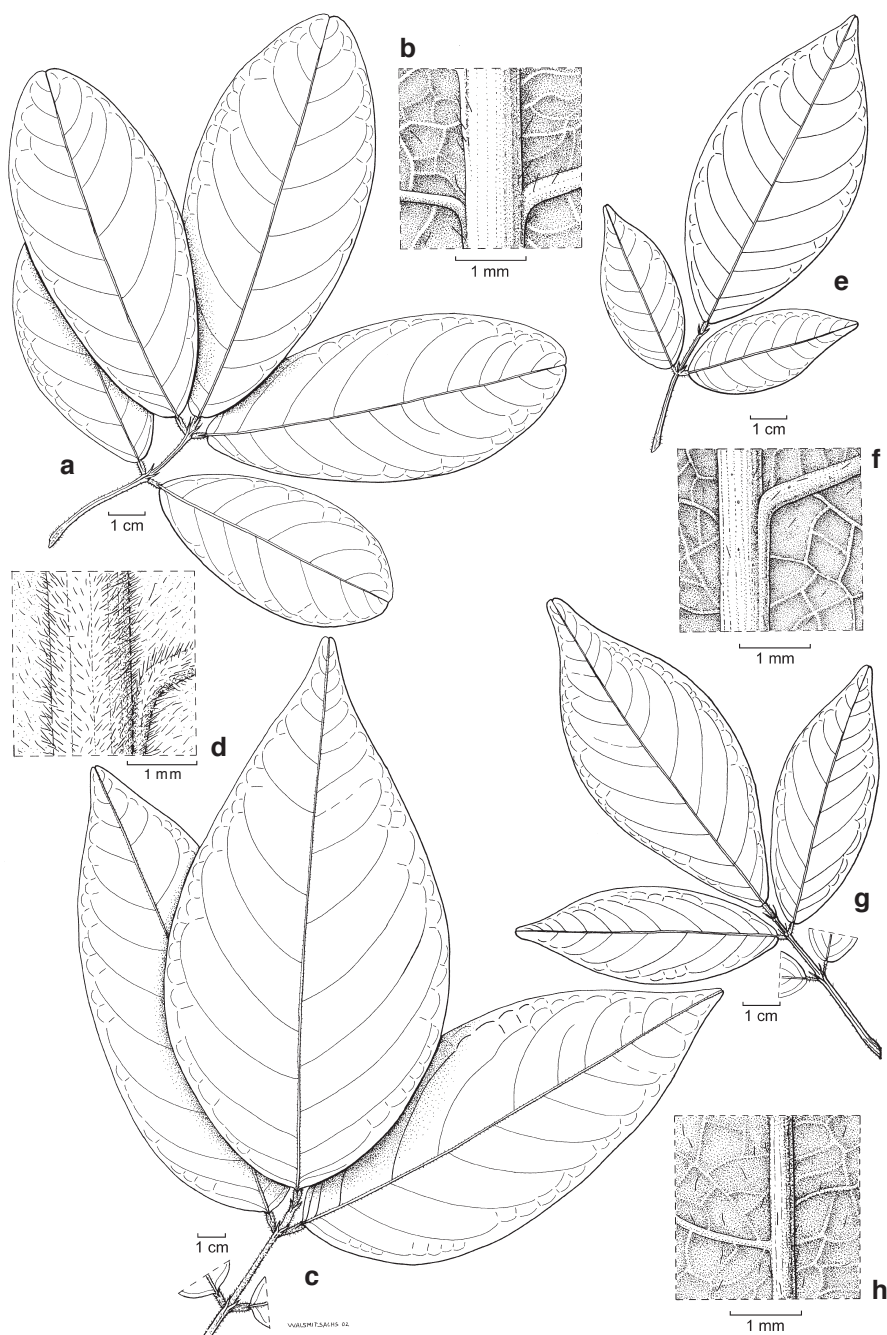


Fig. 2. *Derris elegans* Graham ex Benth. Details of leaves and lower surface of leaflets. — a, b. var. *celebica* Adema; c, d. var. *elegans*; e, f. var. *gracillima* (Hemsl.) Verdc.; g, h. var. *korthalsiana* (Blume ex Miq.) Adema (a, b: Prawiroatmodjo & Soewoko 1851; c, d: Chin & Mustafa 3305; e, f: BW 15292 (W. & M. Vink); g, h: SAN 17291 (D.T. Nicholson)).

Distribution — Burma, Andaman Islands, Indochina, Thailand; *Malesia*: Sumatra, Peninsular Malaysia, Borneo (Sabah), Papua New Guinea (W Sepik Province).

Habitat & Ecology — Primary forests along rivers. Soil: sandstone. Altitude up to 300 m. Flowering: January to March, July to September; fruiting: March, April, July, August.

**b. var. *celebica*** Adema, *var. nov.* — Fig. 2a, b

Partes axiales plerumque parce hirsutae ad glabrae, folii rachidis ultrajugo parte 0–7 mm longa (medium 2.1 mm). Foliola: terminalia (anguste) obovata raro elliptica 6–19 cm longa 3–7.5 cm lata (indice 2–3.5), basi rotundata ad cuneata, apice obtuso ad rotundato emarginato, supra glabra, infra pilis paucis sparsis appressa ad fere glabra, costa nervique supra prominentibus, nervis 6–11 in quoque latere 5–19 mm distantibus; lateralibus terminalibus plerumque similibus ellipticis ad anguste obovatis 4.5–13.5 cm longis 2–5.5 cm latis (indice 1.9–3.6), pulvino 2–6 mm longo glabro ad pilis paucis, calyx viridis vel triste rubra extus sericea. — Typus: *Forsten s.n.* (holo L), Celebes, Gorontalo.

Stems and twigs usually thinly hirsute to glabrous. Topmost part (ultrajugal part) of leaf rachis 0–7 mm long, mean 2.1 mm. Leaflets: terminal (narrowly) obovate, rarely elliptic, 6–19 by 3–7.5 cm, index 2–3.5, base rounded to cuneate, apex obtuse to rounded, emarginate, above glabrous, below with few widely scattered appressed hairs to almost glabrous, midrib and nerves raised above, nerves 6–11 per side, 5–19 mm apart; lateral leaflets mostly as the terminal, elliptic to narrowly obovate, 4.5–13.5 by 2–5.5 cm, index 1.9–3.6; pulvinus 2–6 mm long, glabrous or with few hairs. Calyx green or dull red, outside sericeous.

Distribution — *Malesia*: Celebes.

Habitat & Ecology — Primary or savannah forest. Soil: limestone, shale. Altitude up to 200 m. Flowering: August, October; fruiting: September to November.

Note — According to the label *Eyma 4094* is a shrub; *Eyma 4128* is a small tree. The latter specimen has shorter inflorescences and a second auricle (lower) at the wing petals.

**c. var. *gracillima*** (Hemsl.) Verdc. — Fig. 2e, f

*Derris elegans* Graham ex Benth. var. *gracillima* (Hemsl.) Verdc. (1978) 468; (1979) 320. — *Millettia gracillima* Hemsl. (1895) 34. — Type: *Comins 300* (holo K), Solomon Islands, San Cristobal.

*Derris cauliflora* Pulle (1910) 379. — Type: *Versteeg 1714* (holo L), Papua.

*Derris papuana* Pulle (1910) 380. — Type: *Versteeg 1754* (holo L), Papua.

*Derris moniensis* Kaneh. & Hatus. (1942) 364, f. 5. — Type: *Kanehira & Hatusima 13255* (photo seen), Papua.

*Derris salomoniensis* Thoth. (1970) 251. — Type: *Kajewski 2290* (holo A; iso E, L), Solomon Islands, Bougainville Island.

Stems and twigs thinly strigose to glabrous. Topmost part (ultrajugal part) of leaf rachis 9–50 mm long, mean 25 mm. Leaflets: terminal elliptic, rarely obovate, 11–25 by 4.5–12 cm, index 1.5–2.8, base rounded, apex long and slender acuminate, acumen 5–25 mm long, above glabrous, below with few widely scattered appressed hairs, midrib and nerves raised above, nerves 9–11 per side, 10–24 mm apart; lateral leaflets mostly as the terminal, narrowly ovate to elliptic, 7.5–20 by 2.5–10.5 cm, index 1.1–3; pulvinus 4–8 mm long, almost glabrous. Calyx brown to reddish, outside thinly sericeous.

Distribution — *Malesia*: New Guinea; Solomon Islands; New Hebrides.

Habitat & Ecology — Primary or secondary forests along rivers. Soil: sand, clay or limestone silt. Altitude up to 600 m. Flowering: June to October; fruiting: January, March, October to December.

Uses — In Bougainville used for binding in native house construction.

Note — *BW 15292* (*W. & M. Vink*) probably belongs here. According to the label this specimen is a shrub with orange brown ripe fruits.

**d. var. korthalsiana** (Blume ex Miq.) Adema, *comb. & stat. nov.* — Fig. 2g, h

*Derris korthalsiana* Blume ex Miq. (1855) 143. — Type: *Korthals s.n.* (holo L), Borneo.

Stems and twigs thinly strigose or hirsute. Topmost part (ultrajugal part) of *leaf rachis* 0–29 mm long, mean 12.5 mm. *Leaflets*: terminal elliptic to obovate, rarely ovate, 4–35 by 3–11 cm, index 1.8–2.8, base rounded, apex shortly and broadly acuminate, acumen 3–13 mm long, rounded, above glabrous, below with few widely scattered appressed hairs, midrib and nerves raised above, nerves 7–11 per side, 5–20 mm apart; lateral mostly as the terminal, elliptic to ovate, rarely narrowly obovate, 4–21.5 by 2–10.5 cm, index 1.9–2.7; pulvinus 3–8 mm, long, with few hairs. *Calyx* brownish to red, outside (thinly) sericeous.

Distribution — *Malesia*: Sumatra, Peninsular Malaysia (Kelantan, Perak), Java, Borneo, Philippines, Moluccas (Ambon, Ceram).

Habitat & Ecology — Primary or secondary forests along rivers. Soil: sand, clay, loam, limestone. Altitude up to 500 m. Flowering: January to April, August to November; fruiting: February to October.

Notes — 1. Flower colour once given as ‘magenta red’.

2. *SAN 34191* (*J. Ampura*) probably belongs here. The pods of this specimen are 2-winged: upper wing 2.5–3 mm, lower wing 1 mm wide. *Ramlanto 383* is included here. This specimen also has 2-winged pods (upper wing 2–4 mm, lower wing 1 mm wide). In all other aspects these specimens are similar to *D. elegans*.

### **B. *Derris ferruginoides*, *D. micans*, *D. mindorensis* and *D. pubipetala***

These four species are closely related and quite similar in most characters. Perkins (1904) described *D. micans* based on fruiting material and *D. mindorensis* on flowering specimens. The two species are very similar in vegetative characters. *Derris pubipetala* was described by Miquel (1855) from Java. The differences between *D. micans/mindorensis* and *D. pubipetala* are very small. *Derris ferruginoides* was described by Quisumbing (1930) for densely hairy specimens that did not fit in the description of *D. mindorensis* in having 2 or 3 instead of 3–5 ovules.

In constructing the key for the species of *Derris* these taxa were problematic, as they do not obviously differ in their characters. Also the geographical distributions of *D. pubipetala* and *D. mindorensis* overlapped considerably. Considering all characters and comparing this group of species with other *Derris* species led me to conclude that only one species is involved. The oldest name available for this taxon is: *D. pubipetala* Miq.



***Derris pubipetala* Miq.**

*Derris pubipetala* Miq. (1855) 115. — Type: *Blume s.n.* (holo U?; iso A, K, U), Java.

*Derris acuminata* Miq. (1855) 115, nom. illeg. non Benth. (1852); Backer & Bakh.f. (1964) 619. — Type: *Blume s.n.* (holo U), Java.

*Derris mindorensis* Perkins (1904) 82; Merr. (1923) 300. — Type: *Merrill 953* (holo ?; iso K), Philippines, Mindoro, Palawan.

*Derris micans* Perkins (1904) 82; Merr. (1923) 300. — Type: *Merrill 2284* (holo ?; iso K), Philippines, Luzon, Tanay.

*Derris ferruginoides* Quisumb. (1930) 324. — Type: *Clemens 7406* (holo UC?), Philippines, Luzon.

In this new circumscription the species is quite variable in its indumentum. It is also more widespread occurring in: Sumatra, Peninsular Malaysia (Perak), Borneo, Philippines (Luzon, Mindoro, Mindanao, Palawan), Celebes.

*Derris pubipetala* is in many characters very similar to the northern species *D. ferruginea* (Roxb.) Benth. The two species differ mainly in the shape of the apex of the leaflets: which is rounded or cuspidate to shortly acuminate in *D. ferruginea* and acuminate (acumen 2–10 mm long) in *D. pubipetala*; the flower colour which is white or greenish in *D. pubipetala* and purple in *D. ferruginea* (Thothathri, 1982; however, *Maxwell 89-64* from Thailand has white flowers); and in the wings of the fruits which are very unequal with the lower one almost absent to c. 1 mm wide in *D. ferruginea* and less unequal with the lower one 2–4 mm wide in *D. pubipetala*.

**C. *Derris koolgibberah* and its subspecies**

**1. *Derris koolgibberah*** F.M. Bailey (Fig. 1a–c) is a species that occurs in Australia and Papua New Guinea. Verdcourt (1978, 1979) described two subspecies: subsp. *koolgibberah* and subsp. *pseudoinvoluta* Verdc. Of the latter subspecies he suggested that a closer study might reveal it to be a valid species. In the course of my revision of *Derris* for Flora Malesiana I found that he was right and have subsequently raised that subspecies to the species level (Adema, 2001, see also below).

The Papua New Guinean material that remains in *D. koolgibberah*, is quite variable. Although represented by only eleven specimens, there are at least five ‘entities’ recognisable. These entities differ in indumentum, thickness of leaflets, and in the size of the flower parts:

- a) *Carr 16056, NGF 4196, 22652* from Madang and Central Provinces: Indumentum ± strigose; leaflets rather thin; inflorescence a panicle; flowers c. 12 mm long, longer than those of ‘B’ or ‘D’.
- b) *Darbyshire 1121, LAE 73396* from Western Highlands and Northern Provinces: Indumentum ± hirsute; leaflets rather thick; inflorescence a panicle; flowers c. 8 mm long; staminal tube and anthers with some hairs.
- c) *Brass 8205* from Western Province: Indumentum ± hirsute; leaflets rather thin, inflorescence a panicle. Known only in fruit.
- d) *Brass 29202, Hartley 10158, NGF 9961, 9978* from Morobe Province: Indumentum ± strigose; leaflets rather thin; inflorescence a pseudoraceme; flowers up to 8 mm long.

- e) *Brass* 29494 from Milne Bay Province: Indumentum ± hirsute; leaflets rather thin; base of leaflets cordate; flowers c. 8 mm long; corolla lavender; staminal tube and anthers with some hairs.

Most differences are rather small and overlaps in measurements occur. There is much more material needed to solve this problem. For the moment the species is accepted as a complex species.

## 2. *Derris pseudoinvoluta* (Verdc.) Adema — Fig. 1d–f

*Derris pseudoinvoluta* (Verdc.) Adema (2001) 11. — *Derris koolgibberah* F.M. Bailey subsp. *pseudoinvoluta* Verdc. (1978) 469; (1979) 321. — Type: NGF 15395 (Womersley) (K, L, LAE), Papua New Guinea, Lae.

*Derris pseudoinvoluta*: Leaflets woolly below. *Stipellae* present, caducous. *Ovules* 7–10.

*Derris koolgibberah*: Leaflets thinly strigose or thinly hirsute below. *Stipellae* absent. *Ovules* 10.

## D. *Derris polyantha*

*Derris polyantha* Perkins was described by Perkins (1904) from Luzon. Up to now it was known only from that island and only from flowering material. Recently several collections have emerged from Cebu: *Bicknell* 677, 1190, 1190b, PNH 92130. These plants are vegetatively rather similar to *D. polyantha*, and indeed invariably key out to that species. These Cebu specimens are mostly in fruit. The only flowering specimen (*Bicknell* 1190) does not vary much from the Luzon specimens. I have therefore included all these specimens in the description of *D. polyantha*. The fruits of this species can be described as follows: *Pods* ± strap-shaped, 5–7.5 by 1–2 cm, valves thinly sericeous, upper wing 2–3 mm, lower wing up to 0.5 mm wide.

## E. *Derris cebuensis*, *D. rubrocalyx*, *D. spanogheana* and *D. trifoliata*

These species are closely related and differ only slightly in some characters. All are mostly glabrous with hairs only present in young stages and in some parts of the in-

Table 3. Differences between *Derris cebuensis* Merr., *D. rubrocalyx* Verdc., *D. spanogheana* Blume ex Miq. and *D. trifoliata* Lour.

	<i>D. cebuensis</i>	<i>D. rubrocalyx</i>	<i>D. spanogheana</i>	<i>D. trifoliata</i>
number of leaflets	3–7	(3 or) 5	7	3–7
base of leaflets	cuneate to rounded	cuneate to rounded	rounded	rounded or ± cordate to subpeltate
length of brachyblasts	up to 30 mm	up to 30 mm	9–18 mm	up to 5 mm
number of flowers per brachyblast	6–8	up to 15	7–12	2 or 3 (or 5)
width upper wing	5–10 mm	2–6 mm	–	1–5 mm
width lower wing	4–7 mm	2–4 mm	–	–

florescences. Differences are found in the number of leaflets, the shape of the base of the leaflets, the length of the brachyblasts, the number of flowers per brachyblast and the wings of the fruit (Table 3).

*Derris spanogheana*, only known from the type collection, is almost identical with *D. cebuensis* differing only in the slightly higher number of flowers per brachyblast. The type specimen was collected at Timor, which fits within the distribution of *D. cebuensis* (Philippines, Celebes, Lesser Sunda Islands). The differences are too small to keep the two apart. As *D. spanogheana* is the oldest name it has priority over *D. cebuensis*. The two species are united here:

***Derris spanogheana* Blume ex Miq.**

*Derris spanogheana* Blume ex Miq. (1855) 141; Benth. (1860) 111. — Type: *Spanoghe s.n.* (holo L; iso K, L, U), Timor.

*Derris cebuensis* Merr. (1912) 273; (1923) 299. — Type: *BS 11014 (Ramos)* (holo PNH†; iso K), Philippines, Cebu.

*Derris surigaoensis* Elmer (1915) 2733. — Type: *Elmer 13493* (iso K), Philippines, Mindanao.

*Derris rubrocalyx* differs only slightly from *D. spanogheana*. Apart from the differences given in Table 3, only the indumentum (*D. rubrocalyx* somewhat more hairy) and the shape and the size of the flower parts are different. *Derris rubrocalyx* is a New Guinean endemic. For the present I think it is better to keep the species separate from *D. spanogheana*.

Also *D. trifoliata* is rather similar to *D. spanogheana*. The most important differences are found in the number of flowers per brachyblast and the wings of the pod (Table 3). *Derris trifoliata* is a widespread, mostly coastal species, rarely found more inland (up to c. 400 m). *Derris spanogheana* and *D. rubrocalyx* are inland species (up to c. 650 m).

KEY TO THE SPECIES IN MALESIA

- 1a. Trees. Stipellae present . . . . . 2
- b. Lianas. Stipellae present or absent. . . . . 4
- 2a. Leaves with 7–23 leaflets. Stipellae 0.7–3 mm long. Terminal leaflets 18–56 by 9–26 mm, apex obtuse, rounded or acute, mucronate. Brachyblasts with 3–5 flowers . . . . . 3
- b. Leaves with 19–41 leaflets. Stipellae 0.4–0.7 mm long. Terminal leaflets 14–19 by 5–9 mm, apex rounded, emarginate. Brachyblasts with 5–8 flowers. — Ovules 11 or 12 . . . . . **D. microphylla**
- 3a. Ovules 2. Seeds 1 or 2 per pod, bean-shaped, 6.5–8 by 4.5–6 by 1 cm. — Philippines. . . . . **D. cumingii**
- b. Ovules 8–11. Seeds 1–7 per pod, ellipsoid, 4–4.5 by 3–5 by 0.6–1.5 cm. — India, Burma, Thailand, Java . . . . . **D. robusta**
- 4a. Stipellae present (may be caducous). Pods 1-, rarely 2-winged (not known for *D. yappii*) . . . . . 5
- b. Stipellae absent. Pods 1- or 2-winged . . . . . 10

- 5a. Leaves with 3–9 leaflets. Leaflets glabrous or woolly, velvety, hirsute, or with scattered appressed hairs below . . . . . 6  
 b. Leaves with 9–13 leaflets. Leaflets thinly strigose below. — Ovules 8–10 . . . . .  
 . . . . . **D. scandens**
- 6a. Leaflets glabrous below. Calyx outside mostly glabrous, ciliate. Ovules (2 or 3–7) . . . . . 7  
 b. Leaflets woolly, velvety, hirsute or with scattered appressed hairs below. Calyx outside (thinly) sericeous. Ovules 2–5 or 7–10 . . . . . 8
- 7a. Base of leaflets cuneate to rounded. Brachyblasts with up to 15 flowers. Standard with some hairs. Pods 2-winged . . . . . **D. rubrocalyx**  
 b. Base of leaflets slightly cordate to (sub)peltate, rarely rounded. Brachyblasts with 2 or 3 (rarely up to 7) flowers. Standard glabrous. Pods 1-winged . **D. trifoliata**
- 8a. Leaflets velvety, hirsute or with scattered appressed hairs to almost glabrous below. Ovules 2–5 . . . . . 9  
 b. Leaflets woolly below. Ovules 7–10. — Seeds ± bean-shaped, 8–9 by 8–10 by 0.5 cm. — New Guinea . . . . . **D. pseudoinvoluta**
- 9a. Leaves with 3 or 5 leaflets. Brachyblasts with 2 or 3 flowers. Standard with some hairs to sericeous outside. — Seeds ± discoid to bean-shaped, 9–14 by 7–13 by 1–4 mm . . . . . **D. elegans**  
 b. Leaves with (3–)7 or 9 leaflets. Brachyblasts with 3–10 flowers. Standard glabrous or with few hairs at the apex . . . . . **D. yappii**
- 10a. Leaflets glabrous below. Calyx outside mostly glabrous, ciliate at the margin 11  
 b. Leaflets with scattered appressed hairs to strigose or hirsute, rarely glabrous below. Calyx outside (thinly) sericeous or hirsute . . . . . 13
- 11a. Base of leaflets cuneate to rounded. Brachyblasts with 6–15 flowers. Pods 2-winged . . . . . 12  
 b. Base of leaflets rounded to ± cordate or subpeltate. Brachyblasts with 2 or 3(–7) flowers. Pods 1-winged . . . . . **D. trifoliata**
- 12a. Brachyblasts up to 20 mm long, with 6–8 flowers. Standard outside glabrous or with few hairs at the apex. Pods mostly glabrous, with some hairs at the base, upper wing 5–10 mm, lower wing 4–7 mm wide . . . . . **D. spanogheana**  
 b. Brachyblasts up to 30 mm long, with up to 15 flowers. Standard outside sericeous at apex or up to halfway down the blade. Pods sericeous at base and apex, upper wing 2–6 mm, lower wing 2–4 mm wide . . . . . **D. rubrocalyx**
- 13a. Calyx inside glabrous. Ovules 8–10. Pods 1-winged<sup>1)</sup> . . . . . 14  
 b. Calyx inside with few hairs to sericeous along margins, rarely glabrous. Ovules 2–5. Pods 2-winged, rarely 1-winged . . . . . 16
- 14a. Apex of leaflets obtuse to rounded, sometimes acuminate, acumen 2–8 mm long. Brachyblasts 4–11 mm long. Flowers white to cream or pink. Pods (thinly) sericeous . . . . . 15  
 b. Apex of leaflets acuminate, acumen 3–15 mm long. Brachyblasts up to 5 mm long. Flowers blue or violet. Pods with some scattered hairs to thinly strigose. — Leaves with 5–11 leaflets, terminal leaflets 5–9.5 by 3–4.5 cm . . . . .  
 . . . . . **D. submontana**

1) Flowers not known for *D. zambalense*.

- 15a. Leaves with 5–9 leaflets, terminal leaflets 12–17 by 7–10.5 cm. Pedicels 1.5–3.5 mm long. Standard with 2 small basal callosities. Wing of pod 2–3 mm wide . . . . . **D. koolgibberah**
- b. Leaves with 9–13 leaflets, terminal leaflets 4–8.5 by 1–3.7 cm. Pedicels 5.5–9 mm long. Standard without callosities. Wing of pod 1–2 mm wide **D. scandens**
- 16a. Apex of leaflets acuminate, acumen 2–12 mm long. Standard outside with some hairs at the apex to sericeous . . . . . 17
- b. Apex of leaflets obtuse to rounded, emarginate, rarely acuminate, acumen 5–6 mm long. Standard outside glabrous or with some hairs. — Upper wing of pods 2–3 mm, lower wing up to 0.5 mm wide . . . . . **D. polyantha**
- 17a. Leaflets not glaucous below. Brachyblasts with 5–7 flowers. Pods with few hairs to sericeous or velvety . . . . . 18
- b. Leaflets usually glaucous below. Brachyblasts with 2 or 3 flowers. Pods glabrous. — Pods 2-winged, upper wing 3–4 mm, lower wing 2 mm wide . . . . . **D. maingayana**
- 18a<sup>2</sup>. Leaves with 7–11 leaflets. Leaflets sericeous below. Brachyblasts up to 3 mm long. Calyx outside sericeous. Pods 1-winged, wing 1–2 mm wide . . . . . **D. philippinensis**
- b. Leaves with 5–9 leaflets. Leaflets hirsute below. Brachyblasts 2–30 mm long. Calyx outside hirsute. Pods 2-winged, upper wing (3–)6–10 mm, lower wing 2–4 mm wide . . . . . **D. pubipetala**

## NOTES ON SPECIMENS

1. *Kep 17075 (E.J.S.)*, Peninsular Malaysia, Selangor, Batu Caves, 26.12.1932.  
Climber. Leaflets similar to those of *D. rubrocalyx*, *D. spanogheana* and *D. trifoliolata*. Pods have two wide wings .
2. *Larsen & Larsen 32828*, Thailand, Peninsular, Naratiwat, Sungei Kolok, Nihan Waeng, 2.3.1974.  
According to the label a tree. The leaves, trifoliolate with stipellae, are quite similar to those of *D. elegans*.
3. *Lae 77222 (J.S. Womersley)*, Papua New Guinea, N Solomon Prov., Kieta subprov., below Bako on N side of Jaba River, 10.12.1981.  
A liana with a large pseudopanicule. The ovary is hairy inside along the lower suture; ovules 3. This specimen differs in several aspects from all New Guinean *Derris*-species. Pods are needed for a final decision.
4. *PNH 9228 (R.B. Fox)*, Philippines, Polilio Island, Karlagan, 1.3.1949.  
This remarkable specimen looks different from all *Derris*-species in its rather large, thin leaflets and its very long pseudoracemes (33–48 cm long). In several aspects similar to *D. scandens*, however, the leaflets and flowers are larger and the number of ovules is lower (3–5 instead of 8–10).

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2) *Derris zambalense* may key out here. This species is known only in fruit: Pods 2-winged, upper wing 2–3 mm, lower wing 1 mm wide.

5. *Derris* spec. B, Verdc. (1979) 327. Papua New Guinea: *Regalado & Takeuchi 1487*, E Sepik Prov., Ambunti Subprov., Waskuk Hills, around Langu and Garuka Villages, 5.7.1995; *Takeuchi & Regalado 10280*, E Sepik Prov., Ambunti Subprov., Waskuk Hills, ridge near Langu, 5.7.1995; *NGF 49977*, Morobe Prov., Lae Subprov., Leron River near bridge, 3.5.1977; *LAE 77105*, Milne Bay Prov., Alotau Subprov., Karoi River above Gurney airport, 12.3.1984; *Hartley 10205*, Morobe Prov., Markham River valley near Nadzab, 23.5.1962.

These specimens are similar in several aspects to *D. koolgibberah* and *D. rubrocalyx*. Particularly in the shape and size of the leaflets and in the hairiness of the anthers. In other characters they are different from or intermediate between *D. koolgibberah* and *D. rubrocalyx*. Leaflets: in 'Spec. B' ratio length/width (1.4–)1.6–3.5, lower surface glabrous to thinly sericeous; in *D. koolgibberah*: ratio 1.1–2.1, lower surface thinly to densely sericeous; in *D. rubrocalyx*: ratio 1.3–2, lower surface glabrous. Standard at most thickened at base without distinct callosities in *Derris* spec. B and *D. rubrocalyx*, with small basal callosities in *D. koolgibberah*. 'Spec. B' has 2–8 ovules, *D. koolgibberah* 10 and *D. rubrocalyx* 3–5.

*Derris trifoliata*, which in some aspects is quite similar to *D. koolgibberah* and *D. rubrocalyx*, differs from 'Spec. B' in the base of the leaflets, calyx characters and anthers (glabrous in *D. trifoliata*).

All specimens of 'Spec. B' are in flower and fruits are needed for a correct placing.

6. *Derry 1223*, Malaysia.

This specimen with large pods with rather wide wings (pods 9–11 by 3.5–4 cm, upper wing c. 8 mm, lower wing c. 4 mm wide) is in some characters similar to *D. amoena*. The plant differs from that species in being more hairy, in its smaller flowers and large wide winged pods. In Thailand, Laos, Cambodia and Vietnam several species with similar pods have been described, however, the knowledge of these species is at present insufficient to make a good comparison.

7. *PNH 80401 (M.C. Conklin & Buwaya)*, Philippines, Luzon, Mt Prov., Bayninan, Banaue, 31.3.1963.

A rather hairy specimen with leaves with 3 or 5 leaflets, apex of leaflets obtuse to rounded, emarginate, ovary with 4 ovules. In some aspects similar to *D. polyantha* which has usually more leaflets (5–9) per leaf.

8. *Coode 5877*, Celebes, N coast of Luwuk Peninsula, Pagimana area, inland from Lobu, W of Pagimana, 10.10.1989.

This specimen is in several aspects quite similar to *D. polyantha* from the Philippines and Lesser Sunda Islands. It differs from that species mostly in the shape of the leaflets: in *Coode 5877* narrowly obovate, in *D. polyantha* (narrowly) elliptic.

9. *De Vriese & Teijsmann s.n.*, Java, 1859–1860; *Zollinger 3816* (without locality).

These specimens are similar in several aspects to *D. pubipetala* and *D. scandens*. It differs from the first species in the calyx which is rather inconspicuously lobed and glabrous inside, in the indumentum of the wing petals which have hairy auricles, and

in the hairy anthers. From the second one it differs in the size of the flowers and the hairy anthers. Hairy anthers occur in *D. koolgibberah* and *D. rubrocalyx*, both from New Guinea (see also above, 5).

10. *Schmutz* 2169, 2856, Lesser Sunda Islands, Flores.

In many aspects rather similar to *D. pubipetala*. These Schmutz-specimens differ from that species in the size of the stipules, bracts and flower parts, in the apex of the leaflets (obtuse to rounded instead of acuminate) and in its indumentum (rather dense on all parts, more or less velutinous instead of hirsute). The shape of the apex of the leaflets is similar to that of *D. polyantha*. Adding these specimens to either *D. polyantha* or *D. pubipetala* will obscure the differences between these two species.

#### DUBIOUS SPECIES

*Derris affinis* Benth. (1852) 252. — Type: *Wall. Cat.* 5879, Penang.

Up to now I have not seen the type specimen. It is impossible to place this species.

*Derris oligosperma* K. Schum. & Lauterb. (1901) 361; Verdc. (1979) 323. — Type: *Lauterbach 1170* (K, fragments), Papua New Guinea, Gogolfuss.

The fragments at Kew (1 leaflet, parts of a pod) are quite similar to the leaflets and pods of *D. koolgibberah* Verdc. and *D. submontana* Verdc. A more complete duplicate will show that one of these names has to be replaced by *D. oligosperma*.

*Derris pubinervis* (Span.) Benth. (1860) 197. — *Dalbergia pubinervis* Span. (1841) 197. — Type: *Spanoghe s.n.*, Timor, Koepang (n.v.).

Described by Spanoghe with diadelphous stamens. The specimen has not been traced in L. Probably it does not belong to a *Derris* species.

*Millettia rufa* Backer (1945) 511; Backer & Bakh.f. (1964) 596. — *Dorgelo 1770* (L), Java, Kediri, baai van Popoh.

The fragments of the type specimen in L are insufficient for an identification. My earlier suggestion that it may be a *Derris* species (Adema, 2000) cannot be supported.

*Pterocarpus frutescens* Blanco (1837) 562. — *Galedupa frutescens* Blanco (1845) 391; (1879) 354, t. 232.

According to Merrill (1918: 185, 186) this should be either *Derris trifoliata* (sub *Pterocarpus frutescens*, p. 185) or *D. scandens* (sub *Galedupa frutescens*, p. 186). His Species Blancoana 535, however, belongs to *D. cumingii*. Blanco's description and plate can be identified either as *D. cumingii* or as *D. scandens*. *Pterocarpus/Galedupa frutescens* is described by Blanco as a tree with stipellae at the base of the petiolules which points to *D. cumingii*. However, in a note in the third edition of the Flora Filipinas, Blanco wrote: 'Frutescens scandens'. The leaflets are described as emarginate at apex which points to *D. scandens*. This species sometimes has stipellae. The fruit, indumentum and number of leaflets may be correct for both *D. cumingii* and *D. scandens*.

## EXCLUDED SPECIES

- Derris amherstiana* Thoth. (1976) 59. — Type: *J.H. Lace 4723* (holo CAL), Burma, Amherst distr., Thaungyin Valley, Ta'ok Chaung, 18.3.1904. = **Spatholobus acuminatus** Benth. See Ridder-Numan & Wiriadinata (1985, in Identification list).
- Derris atrovioleacea* Elmer (1913) 1798. — Type: *Elmer 13105* (A, BO, GH, K, L, U), Philippines, Palawan, Puerto Princesa, Mt Pulgar. = **Kunstleria forbesii** Prain. See Ridder-Numan & Kornet (1994) 471.
- Derris bonatiana* Pamp. (1910) 8. — Lectotype (Van der Maesen, 1985): *Ducloux 377* (holo FI n.v.), China, Yunnan-sen, source of the Pe-Long-Tan River, 8 May 1904. = **Pueraria peduncularis** (Graham ex Benth.) Benth. See Van der Maesen (1985).
- Derris canarensis* (Dalzell) Baker (1879) 246. — *Pongamia canarensis* Dalzell (1850) 37. — Neotype (Thothathri, 1982): *Ritchie 1720* (holo CAL), India, Kanara, Mysore, Kassaleh. = **Paraderris canarensis** (Dalzell) Adema. See Adema (2003).
- Derris canescens* Elmer (1919) 3087. — Type: *Elmer 17883* (holo ?; iso CAL, L), Philippines, Luzon, Prov. Laguna, Los Baños, Mt Maquiling, 6.7.1917 = **Dalbergia canescens** (Elmer) Merr. See Merrill (1923).
- Derris caudata* Backer (1945) 513. — Type: *Backer 7061* (BO n.v.), Java, Bantam, Menés, on river bank. = **Paraderris montana** (Benth.) Adema. See Adema (2003).
- Derris cuneifolia* Benth. (1852) 253. — Lectotype (Thothathri, 1982): *Wall Cat. 5887* (holo CAL; iso K), Nepal, Nookate. = **Paraderris cuneifolia** (Benth.) Geesink. See Geesink (1984), Adema (2003).
- Derris cuneifolia* Benth. var. *longipedicellata* Thoth. (1961) 191; (1982) 15. — Type: *Ribu 760* (holo CAL), India, Sikkim, Sivoke. = **Paraderris cuneifolia** (Benth.) Geesink. See Adema (2003).
- Derris cuneifolia* Benth. forma *assamica* Thoth. (1961) 192; (1982) 15. — Type: *U. Kanjilal 4835* (holo CAL), Assam, Cachar, Bishnupur. = **Paraderris cuneifolia** (Benth.) Geesink. See Adema (2003).
- Derris danauensis* Backer (1945) 513. — Type: *Van Steenis 10539* (BO n.v., L), Java, Rawa Danau, on hoema's (fields), alt. c. 120 m. = **Paraderris montana** (Benth.) Adema. See Adema (2003).
- Derris diadelphous* (Blanco) Merr. (1910) 103. — *Pterocarpus diadelphous* Blanco (1837) 563. — Neotype: *Merrill Species Blancoana 344*, Philippines, Palawan. = **Aganope heptaphylla** (L.) Polhill.
- Derris discolor* Benth. (1860) 111. — Type: *J.D. Hooker s.n.* (holo K; iso K), Sikkim, Terai, lower hills. = **Paraderris cuneifolia** (Benth.) Geesink. See Adema (2003).
- Derris elliptica* (Wall.) Benth. (1860). — *Pongamia elliptica* Wall. (1832) 20, t. 237. — Type: *Wall. Cat. 5881A* (iso CAL, fragments), Hort. Calcutta (originally from Ambon). = **Paraderris elliptica** (Wall.) Adema. See Adema (2003).



- Derris elliptica* (Wall.) Benth. var. *chittagongensis* Thoth. (1961) 195. — Type: *Baldal Khan 450 (C)* (holo CAL; iso CAL), India, Chittagong, Kodla, 30 mi from Chittagong. = **Paraderris elliptica** (Wall.) Adema var. **chittagongensis** (Thoth.) Adema. See Adema (2003).
- Derris elliptica* (Wall.) Benth. var. *glaucophylla* (Miq.) Kaneh. & Hatus. (1942) 364. — *Pongamia volubilis* Zoll. & Moritzi var. *glaucophylla* Miq. (1855) 149. — Lectotype (Adema, 2003): *Anonymous s.n.* (holo L, NHN-L 908.114-971), Java. = **Paraderris elliptica** (Wall.) Adema. See Adema (2003).
- Derris floribunda* (Miq.) Benth. (1860) 105. — *Aganope floribunda* Miq. (1855) 151. — Lectotype?: = **Aganope thyriflora** (Benth.) Polhill. See Polhill (1971).
- Derris glauca* Merr. & Chun (1935) 246. — Type: *F.C. How 70860* (n.v.), China, Hainan. = **Paraderris cuneifolia** (Benth.) Geesink. See Adema (2003).
- Derris hainanensis* Hayata (1913) 77. — Type: *K. Katsumada s.n.* (n.v.), China, Hainan, 1911. = **Paraderris hainanensis** (Hayata) Adema. See Adema (2003).
- Derris hancei* Hemsl. (1905) t. 8008 (after *D. alborubra* Hemsl.). — Type: *Sampson s.n.* (n.v.), China, Canton, along river. = **Paraderris cuneifolia** (Benth.) Geesink. See Adema (2003).
- Derris heptaphylla* (L.) Merr. (1917) 273; Burkill (1935); Backer & Bakh.f. (1964) 616. — *Sophora heptaphylla* L. (1753) 373. — Type: *Hermann s.n.* (BM), Ceylon. = **Aganope heptaphylla** (L.) Polhill. See Polhill (1971).
- Derris indica* (Lam.) Bennet (1972) 303. — *Galedupa indica* Lam. (1788) 594. — Type: *Sonnerat s.n.* (Herb. Lamarck?), India. = **Millettia pinnata** (L.) Panigrahi.
- Derris indica* (Lam.) Bennet var. *xerocarpa* (Hassk.) Bennet (1972) 303. — *Pongamia glabra* Vent. var. *xerocarpa* (Hassk.) Prain (1897) 95. — Type: *Anonymous*, Java, Bantam, 1841 (n.v.). = **Millettia pinnata** (L.) Panigrahi.
- Derris javanica* Miq. (1855) 143. — Type: *Horsfield s.n. (Leg. 29)* (K), Java. = **Clitoria ternatea** L.
- Derris lacei* Dunn (1914) 208. — Lectotype (Adema, 2003): *Lace 6115* (holo K; iso CAL), Burma, Maymyo, Plateau, 12.3.1913. = **Paraderris lacei** (Dunn) Adema. See Adema (2003).
- Derris laotica* Gagnep. (1911) 348. — Type: *Magnien, Gourgand & Châtillon s.n.* (lectoholo P (Phan Kê Lôc & Vidal, 2001); iso K, fragments), Cambodia, Bhâklon. = **Paraderris laotica** (Gagnep.) Adema. See Adema (2003).
- Derris laotica* Gagnep. var. *virens* Gagnep. (1911) 348. — Lectotype (Phan Kê Lôc & Vidal, 2001): *Godefroi 686* (P n.v.), Cambodia, Siem Reap. = **Paraderris laotica** (Gagnep.) Adema. See Adema (2003).

- Derris leytensis* Merr. (1914) 361. — Type: *Wenzel 841*, Philippines, Leyte, Buenavista, near Jaro, 5.6.1914. = **Spatholobus littoralis** Hassk. See Ridder-Numan & Wiriadinata (1985).
- Derris lianoides* Elmer (1907) 228. — Type: *Elmer 7443* (holo PNH?; iso CAL, K), Philippines, Luzon, Prov. Taybas, Luchon. = **Paraderris lianoides** (Elmer) Adema. See Adema (2003).
- Derris lushaiensis* Thoth. (1972) 104. — Type: *Gage 23D (A)* (holo CAL), India. = **Paraderris lushaiensis** (Thoth.) Adema. See Adema (2003).
- Derris macroloba* Miq. (1860) 297. — Type: *Teijsmann s.n. (H.B. 4216)* (holo U?), Sumatra, Lampong. = **Aganope heptaphylla** (L.) Polhill.
- Derris macrophylla* (Miq.) Benth. (1860) 114. — *Aganope macrophylla* Miq. (1855) 152. — Type: *Blume s.n.* (holo L), Java. = **Aganope thyrsoflora** (Benth.) Polhill. See Polhill (1971).
- Derris malaccensis* (Benth.) Prain (1897) 107. — *Derris cuneifolia* Benth. var. *malaccensis* Benth. (1860) 112. — *Paraderris malaccensis* (Benth.) Adema (2001) 11. — Type: *Griffith 1774* (holo K; iso CAL), Malaysia, Malacca. = **Paraderris montana** (Benth.) Adema. See Adema (2003).
- Derris malaccensis* (Benth.) Prain var. *aptera* Prain (1897) 108. — Lectotype (Adema, 2003): *King's collector 4518* (holo K; iso A, CAL), Malaysia, Perak. = **Paraderris montana** (Benth.) Adema. See Adema (2003).
- Derris malaccensis* (Benth.) Prain var. *millettioides* Prain (1897) 108. — Type: *King's collector 10696* (iso CAL), Malaysia, Perak, 8.1886. = **Paraderris montana** (Benth.) Adema. See Adema (2003).
- Derris montana* Benth. (1852) 253; (1860) 113. — Type: *Junghuhn s.n.* (BO? n.v.), Java, Dieng. = **Paraderris montana** (Benth.) Adema. See Adema (2003).
- Derris oblonga* Benth. (1860) 112. — Syntypes: *Stocks s.n.*, India, Concan; *Gardner 476*, Ceylon; *Walker s.n.*, Ceylon; *Thwaites 1493*, Ceylon. = **Paraderris canarensis** (Dalzell) Adema. See Adema (2003).
- Derris oblongifolia* Merr. (1912) 82. — Type: *Vanoverberg 280* (n.v.), Philippines, Luzon, Subprov. Bauco, Bontoc. = **Paraderris oblongifolia** (Merr.) Adema. See Adema (2003).
- Derris pachycarpa* Merr. (1922) 312. — Type: *BS 1250 (M. Ramos)* (holo ?; iso K), Borneo, Sabah, Batu Lima, near Sandakan, 9.12.1920. = **Paraderris montana** (Benth.) Adema. See Adema (2003).
- Derris palawanensis* Elmer (1913) 1800. — Type: *Elmer 13063* (holo ?; iso K, L, U), Philippines, Palawan, Puerto Princesa, Mt Pulgar, 4.1911. = **Spatholobus macropterus** Miq. See Ridder-Numan & Wiriadinata (1985) 178.

*Derris pyrrothyrsa* Miq. (1860) 299. — Type: *Teijsmann s.n.* (holo U; iso L), Sumatra. = **Aganope thyrsoflora** (Benth.) Polhill. See Adema (2003)

*Derris sinuata* Benth. ex Thwaites (1859) 93; Benth. (1860) 113; Prain (1897) 98; K. Heyne (1916) 307; Ridl. (1922) 594. — Syntypes: *Thwaites 1491* (K), Ceylon, Caltura District; *Gardner s.n.* (K), Ceylon, Batticalao. = **Aganope heptaphylla** (L.) Polhill. See Polhill (1971).

*Derris subalternifolia* Elmer (1913) 1801. — *Dalbergia subalternifolia* (Elmer) Merr. (1915) 14. — Type: *Elmer 12965* (holo ?), Philippines, Palawan, Puerto Princessa, Mt Pulgar, 4.1911. = **Dalbergia rostrata** Hassk. See Sunarno & Ohashi (1996).

*Derris subavenis* Miq. (1860) 299. — Type: *Teijsmann s.n.* (holo U; iso L), Sumatra. = **Aganope thyrsoflora** (Benth.) Polhill. See Polhill (1971).

*Derris thyrsoflora* (Benth.) Benth. (1860) 114; Merr. (1910) 103; Ridl. (1922) 594; Merr. (1923) 301; Craib (1928) 493; Burkill (1935) 791; Backer & Bakh.f. (1964) 618. — *Millettia thyrsoflora* Benth. (1852) 249; Miq. (1855) 156. — Lectotype (Phan Kê Lôc & Vidal, 2001): *Griffith 1776* (holo K; iso CAL, LE, P), Malacca. = **Aganope thyrsoflora** (Benth.) Polhill. See Polhill (1971).

Phan Kê Lôc & Vidal (2001) cite the locality of *Griffith 1776* as ‘Birmanie et Péninsule malaise’. However, *Griffith 1776* was collected at Malacca, Peninsular Malaysia. The Kew Herbarium is probably the proper place of the (holo)lectotype instead of Paris.

*Derris truncata* Craib (1927) 385. — Type: *Kerr 8898* (holo K), Thailand, Pitsanaloh, Nakawn, Tai. = **Paraderris cuneifolia** (Benth.) Geesink. See Adema (2003).

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## IDENTIFICATION LIST

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|-----------------------------|-----------------------------|
| <i>Derris</i>               | 7. <i>D. polyantha</i>      |
| 1. <i>D. cumingii</i>       | 8. <i>D. pseudoinvoluta</i> |
| 2. <i>D. elegans</i>        | 9. <i>D. pubipetala</i>     |
| a. var. <i>elegans</i>      | 10. <i>D. robusta</i>       |
| b. var. <i>celebica</i>     | 11. <i>D. rubrocalyx</i>    |
| c. var. <i>gracillima</i>   | 12. <i>D. scandens</i>      |
| d. var. <i>korthalsiana</i> | 13. <i>D. spanogheana</i>   |
| 3. <i>D. koolgibberah</i>   | 14. <i>D. submontana</i>    |
| 4. <i>D. maingayana</i>     | 15. <i>D. trifoliata</i>    |
| 5. <i>D. microphylla</i>    | 16. <i>D. yappii</i>        |
| 6. <i>D. philippinensis</i> | 17. <i>D. spec.</i>         |

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