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THE GENUS CYNOMETRA (LEGUMINOSAE) IN CEYLON

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ABSTRACT

In Ceylon 2 species of *Cynometra* occur, the wide spread *C. iripa* of the mangroves, which was enumerated as *Cynometra ramiflora* var. *heterophylla* by Thwaites and wrongly included in *C. ramiflora* by Knaapvan Meeuwen and the new species *C. zeylanica* Kosterm., formerly thought to be the Malesian *C. ramiflora*. The latter, as defined by Prain and based on a Rumphian plate, does not occur in Ceylon. Cultivated is the Malesian *C. cauliflora* with a white- and a pink-flowered forms.

ABSTRAK

Di Ceylon terdapat 2 jenis *Cynometra*, *C. iripa* yang terdapat di liutan bakau dan seringkali dikacaukan dengan *C. ramiflora* yang tidak ada di Ceylon atau India, serta jenis baru *C. zeylanica* yang juga diduga sama dengan *C. ramiflora* dari Malesia. Selanjutnya di Ceylon dibudidayakan *C. cauliflora* dengan kultivar berbunga putih dan kultivar berbunga merah jambu.

KEY TO THE CEYLONESE CYNOMETRA

- 1. Flowers axillary or terminal
- 2. Two pairs of leaflets. Fruit deeply rugose; pericarp thick, fleshy with a blunt projection laterally. Back mangrove species 2. *C. iripa*
- 2. One pair of leaflets. Fruit smooth with thin, brittle pericarp, apically apiculate. Riverine species in the dry zone 1. *C. zeylanica*
- 1. Flowers on the trunk or on the roots. Cultivated 3. *C. cauliflora*

1. *Cynometra zeylanica* Kosterm., *spec. nov.*

Cynometra ramiflora Auct. (non Linnaeus, Acta Upsal. 79. 1741, Fl. Zeyl. 74. 1747 (ed. Amstelod. 1748) and Sp. Pl. 382. 1753, quoad cit. Hermann); Wight & Arn., Prodr. Fl. Ind. or. 293. 1834 (quoad var. a, exclud. references); Thwaites, Enum. Pl. Zeyl. 97. 1859 (exclud. references and var. *heterophylla*); Baker in Hooker f., Fl. Br. Ind. 2: 267. 1878 (quoad Ceylon); Trimen, Handb. Fl. Ceylon 2: 111. 1894

(exclud. cit. Rumphius and var. *heterophylla*); Alston in Trimen, I.e., 6 (Suppl.): 93. 1931, p.p.; Knaap van Meeuwen in Blumea 18: 23. 1970, p.p. quoad cit. Wight & Arn., Thwaites and Ceylon.

Cynometra longifolia- Trimen ex Alston I.e.

Arbor ramulis penduliformibus cum pedicellis pilosis et ramulis patentibus cum petiolis glabris, foliis constante 2-foliolatis, petiolulis nullis vel brevissimis, foliolis oblique-oblongis sensim attenuatis vel sensim subacuminatis, acumine obtusis, basi parte obtusis, parte acutis, inaequalibus, utrinque nervo mediano prominulis, costis et nervatione sat obscuris, nerviis lateralibus erecto-patentibus, marginem versus arcuato-conjunetis. Fructus subgloboso-ovoideus, vix compressis, rōn rugosis, pericarpio tenuibus, apiculus terminalibus.

TYPUS: *Kostermans 25351* (L).

Tree up to 25 m tall (usually much shorter) and 35 cm diam. Bark smooth, grey. Branchlets slender, glabrous, red brown (dried), of two kinds, one long, slender, pendulous with pilose petioles, the other patent, stiff with glabrous petioles. The pendulous ones flushing from cone-like many tiered bud scales, leaving a collar of scars. Leaves constantly 2-foliolated. Petioles 5—10 mm long, petiolules none. Foliolles chartaceous or sub-coriaceous, glabrous, oblong, oblique, 2 X 5—2 1/2 X 7—4 x 13 cm, gradually acute or sub-acuminate, base unequal, one side rounded, other (shorter) acute; both sides glossy, laxly reticulate or smooth above, midrib at the abaxial side, prominulous, lateral nerves c. 9 pairs, erect-patent, irregularly connected in double-tiered loops near the margin, denser at the leaf base.

Inflorescences axillary, the reduced branchlets up to 1 cm long, bearing a perulate terminal bud, bracts caducous. Pedicels slender, c. 1 cm long, glabrous or sparsely minutely pilose. Sepals thin, ovate-oblong, c. 3 mm. Petals erect, narrowly oblong, thin, obtuse, 3—4 mm long. Stamens 10, filaments slender, glabrous, c. 8 mm long; ovary ellipsoid, densely pilose; style glabrous, tapered, 4 mm long, stigma punctiform.

The long-pedicelled smooth, rusty brown fruit subglobose-ovoid, hardly compressed laterally, up to 2 X 2 1/2 cm, anicallv aniculate, one side almost straight, grooved longitudinally, the other side convex, basal neck slender, 2 mm long; pericarp thin (1 mm), brittle, seed one. The fruit covered with flat, tiny irregularly round, thin rusty pseudo-scales, which were initially tiny warts.

Wood heavy, very dark red, the red colour dissolves in alcohol.

DISTRIBUTION: Ceylon only: riverine in the dry zone.

The best treatment of the species is — without doubt — that of Prain (*in* J. As. Soc. Beng. 66(2): 478. 1897), who correctly observed that *C. ramiflora* did not occur in India and Ceylon. *C. ramiflora* L. subsp. *genuina* Prain is strictly a Malesian species. Prain's second

subspecies, although wrongly under the specific name *C. bijuga* Span., is, with its two varieties, correctly disposed off and represents *C. iripa* Kostel.

The recent monographic treatment of the species by Knaap-van Meeuwen is a step backward. She included under the Malesian *C. ramiflora* the Ceylonese *C. zeylanica* and *C. iripa* (in part: the var. *heterophylla* Thwaites). The reference list hence refers at least to three species and is furthermore incomplete: Linnaeus Fl. Zeyl. is not mentioned, neither Trimen, Handb. Fl. Ceylon, although the Suppl. is quoted.

I am not in the position here to check the synonyms quoted by Knaap-van Meeuwen, but as she wrongly reduced var. *heterophylla* to *C. ramiflora* without having seen the type specimen, a re-check seems advisable. However, to the reference list of *C. ramiflora* should be added an interesting synonym, overlooked by Knaap-van Meeuwen: *Limonia diphijlla* Houttuyn, Nat. Hist, 2(2): 440, t, 9, f. 2. 1774; Christmann, Pflanzensyst. 1: 615, t. 9, f. 2. 1777; M. Roemer, Fam. nat. Reg. Veg. Syn. Monogr. 1: 39. 1846 (Syn. Hesper. 39); Merrill in J. Arn. Arb. 19: 345. 1938.

The *C. ramiflora* of Alston, i.e. followed partly Prain, is partly *C. zeylanica*, partly *C. ramiflora*.

I had no access to Linnaeus' original protologue in Acta Upsal., but I assume that was not or not much different from that in his Fl. Zeylanica. It is clear, that he did not see any material, but based his specific conception entirely on plates and descriptions. He apparently saw Hermann's drawing of this plant (which Trimen quoted as undeterminable) : "Occurrit inter plantas pictas Hermannii, itidem a Rumphii tradita".

In Spec. PI. the Protologue is somewhat changed (as Linnaeus, a hasty worker, often did) ; the synonym *Mains indica, fructus cucurbitaeformis monopyreno*, Raj., Hist. 1675, is (correctly) deleted, but also the remark on Hermann's drawing; as habitat India is given.

As the description consists of two words only (*ramis floriferis*), I accept Prain's suggestion to restrict *C. ramiflora* L. to the Malesian species, and exclude the Indian and Ceylonese references, the type being then: *Cynomorium sylvestre* Rumphius, Herb. Amboin. 1: tab. 63. 1741.

The vernacular name gal mendora, mentioned by Trimen, is certainly wrong and attukaddapulli refers to *C. iripa*.

The tree grows in gallery forest along streams in the dry zone, it never occurs near mangrove.

Alston correctly interpreted Trimen's note under *Crudia zeylanica* (Trimen, I.e. 113), that the fruit which Trimen had received from Uva Prov. in Jan. 1891, under the name of okura, was the fruit of *C. zeylanica*, of which the proper vernacular name is opulu.

The thin-skinned, brittle, smooth pericarp of the rounded fruit is unique in Ceylon *Cynometra*, all others have laterally compressed, rugose leathery thick-skinned fruit. *C. travancorica* has also thin-skinned fruit, but its leaflets are different.

Uva Prov., Bibile Distr, between Nilgala and Pattipul-Aa, Jan. 1888, fl., sine coll. (PDA); *ibid.*, ster., sine coll. (PDA); *ibid.*, ster., Febr. 1856, *C.P. 3604* (PDA); *ibid.*, Mile 3 Bibile-Nilgala Road, stream edge, young fr., *Waas 656* (PDA); July, fr., *Kostermans 28578* (AAU, G, L, PDA); Polonaruwa Distr., Alutoya-Kaudulla road to Cantaley, ster., *Jayasuriya 1822* (PDA); between Muppene and Indigaswelle, March, young fr., *Silva 180* (PDA); Veragamtota, ster., *Alston 1672* (PDA); Nammanitiya, Polonaruwa, ster., *Balakrishnan 601* (PDA); S.W. of Trincomalee, along Uma Oya, March, fl., *Kostermans s.v.* (L); along Mahaweli R., ster., *Kostermans s.n.* (L); Devulane forest, side road Amparc- Mahiyangane road, near stream, July, fr., *Kostermans 25351* (G, K, L, PDA, US); Galbokka R., between Uraniya on Bibile road and Ekiriyakumbara, Apr., young fr., *Jayasuriya 1,929* (PDA); July, fr., *Kostermans 28579* (AAU, G, L, PDA).

2. CYNOMETRA IRIPA Kostel.

Cynometra iripa Kosteletzky, Allg. med.-pharm. PL A: 1341. 1835; Knaap-van Meeuwen in *Blumea* 18: 21, f. 1-D. 1970. — [*Iripa* Rheede van Drakesteyn, Plort. Ind. Malabar. 4: G6, t. 31. 1673] — Typus: Tab. 31, Rheede.

Cynometra ramiflora L. var. *hcterophylla* Thwaites, Enum. Pl. Zeyl. 97. 1859; Beddome, Pl. Sylv. t. 315. 1872; Baker in Hooker f., Fl. Brit. Ind. 2: 267. 1878 (as a syn. of *C. ramiflora*); Trimen, Handb. Fl. Ceylon 2: 111. 1894; Alston in Trimen Hand. Fl. Ceylon 6 (Suppl.) 94. 1931 (as a syn. of *C. bijuga*); Knaap-van Meeuwen, I.e. (as a syn. of *C. ramiflora*). — *Cynometra ramiflora* L. ssp. *bijuga* var. *hcterophyUa* Prain in J. As Soc. Beng. 66(2): 198, 478. 1897; Knaap-van Meeuwen, I.e. — Typus: *C.P. 1500* (PDA), Trincomalee 1846 and Caltura (Kalutara), *Gardner s.n.*, anno 1846 (PDA).

C. ramiflora L. var. *mimosoides* Baker in Hooker f., Fl. Brit. Ind. I.e. 267. — *C. ramiflora* L. ssp. *bijuga* var. *mimosoides* Prain, I.e. 478. — *Cynometra mimosoides* Wallich, Cat. 5817 ex Prain, I.e. 478; Gamble, Fl. Madras 13. 1919; Knaap-van Meeuwen, I.e. — Typus: *Wallich 5817 A* (BO, CAL, G, K).

Cynometra ramiflora var. b Wight & Arn., Prodr. 293. 1834.

Tree 3-8 m tall, usually with short bole and dense, spreading crown, or bush. Bark smooth, grey. Branchlets stiff, hard, glabrous with tiny round pale lenticels. Leaves with 2 pairs of folioles, the upper pair much larger. Leaflets glabrous, chartaceous to sub-coriaceous,

obliquely obovate-oblong to oblong (lower pair), 3 X 7—4 X 9 (upper pair) and 2 X 0.8—2 1/2 X 6 cm (lower pair), obtuse or very obscurely shortly broadly acuminate, base contracted into the very short (or none) petiolule, one side of the lamina c. 2 mm longer than the other side; above smooth, rather dull, midrib and the obscure thin lateral nerves slightly prominulous, below laxly reticulate, more glossy, midrib prominulous, the 6—10 pairs of thin, erect-patent lateral nerves (with intermediate shorter ones) arcuate near the margin and connected, hardly differentiated from reticulation. Rachis angular, glabrous, rather slender, 1 1/2—3 cm long.

Flowers in corymbiform, axillary pseudo-racemes, starting from tiered glabrous, glossy, orbicular to oblong small bud scales, forming a globose cone. Pseudo-racemes up to 5 mm long, few flowered. Pedicels slender, 8 mm long. Flowers after anthesis with flattened, apiculate ovary with few, thin, long, wavy hairs.

Fruit ellipsoid, laterally flattened, 2 x 3 cm, very strongly rugose (like brains, with smooth ridges and very deep narrow fissures), at the lateral side with a very pronounced projection (like a thick, stubby nose), up to 6 mm long, often starting from a triangular base; over the dorsal side, over the obtuse apex and as far as the "nose" at the other side is a deep, narrow fissure.

DISTRIBUTION: Back of mangrove forest, in the *Heritiera littoralis* zone, low alt., rare in Ceylon, all over Malesia and N. Australia.

ECOLOGY: Needs fresh water.

The holo-type of *C. ramiflora* var. *heterophylla* in Peradeniya consists of one sheet, *C.P. 1500*, which has one branch with flowers after anthesis and two branches with young fruit, showing the typical brain pattern and the lateral nose. It bears in pencil the localities: Trincomalee and Venharen (?) Bay, 1846. The latter one is apparently the Gardner specimen from Galle, cited by Thwaites. As it is impossible to find out the exact localities of the three branches, I have left them together as the holo-type.

I had the opportunity to collect the species myself on Sober island. An enormous variety of leaf size was found on the same tree, hence the Puttalam specimen with very small leaves cannot be considered a different species since the fruit is exactly the same.

There are constantly 2 pairs of leaflets, in case only one pair is found, this is due to abortion, which can be seen. The fruit of iripa was perhaps already described by Clusius (*Exoticorum* 2, Cap. 25) but not very correctly.

Trincomalee and Venharen (?) Bay, anno 1846, fls. after anthesis and young fr., *C.P. 1500* (PDA); Trincomalee Bay, Sober Island, March 1892, young fr., *H.*

Nevill s.v. (PDA); *ibid.*, March, young- fr. and fallen ripe fr., *Kostermans 2S309* (AAU, G, L, PDA); Lagoon on road to Chenkaladi from Batticaloa, ster., *Balakrishnan 359* (PDA); Puttalam (W. Coast), March 1881, fr., *Ferguson. 64* (L, PDA).

3. CYNOMETRA CAULIFLORA L.

Linnaeus *in Act, Soc. Sci. Upsal.* 382. 1741; **Pl. Zeyl.** 166. 1747; *Spec. Pl.* 382. 1753; Gaertner, **Fruet.** 2: 350, t. 156. 1791; A.P. DC, *Prodr.* 2: 509. 1825; Wight & Am., *Prodr.* 293. 1843; Baker *in Hooker f.*, *Pl. Brit. Ind.* 2: 268. 1878; Prain *in J. As. Soc. Beng.* 66(2): 479. 1897; Trimen, *Handb. Fl. Ceylon* 2: 112. 1894; **Knaap-van Meeuwen in Blumea** 18: 2C 1970.

A cultivated species in Ceylon, originating from Malesia. There are two forms, one with pink flowers and light red ovary, the other with white flowers and greenish white ovary. The flowers are on small burs on the lower part of the trunk or on the insertion of the numerous spreading roots, very rarely on thicker branches, but never axillary. They are perhaps pollinated by ants, which are always present and bring white lice on the fruit.

In Ceylon it has still the Malay name *namnam*. It is edible, but of inferior quality, slightly acid and only appreciated by children and animals.

It must have been introduced before the middle of the 18th century as Linnaeus mentioned it in his *Flora Zeylanica* of 1747.

Nevill s.v. (PDA); *ibid.*, March, young- fr. and fallen ripe fr., *Kostermans 28309* (AAU, G, L, PDA); Lagoon on road to Chenkaladi from Batticaloa, ster., *Balakrishnan 359* (PDA); Puttalam (W. Coast), March 1881, fr., *Ferguson. 64* (L, PDA).

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