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REDISCOVERY OF *SYZYGIUM COURTALLENSE* (GAMBLE) ALSTON (MYRTACEAE) AND *DIOSCOREA SPICATA* ROTH(DIOSCOREACEAE) FROM THE KALAKKAD MUNDANTHURAI TIGER RESERVE IN INDIA

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During the intensive inventory in the Kalakkad-Mudanthurai Tiger Reserve of Tamil Nadu, South India, two endemic and threatened plant species were collected. The collected specimens belong to *Syzygium courtallense* (Gamble) Alston of Myrtaceae and *Dioscorea spicata* Roth of Diocoreaceae. These species are described here with detailed description, illustration, threat category applying the IUCN Red List Category criteria (IUCN, 2001) of version 3.1 and other related data to help in their identification for effective conservation in their natural habitats.

Syzygium courtallense (Gamble) Alston in Trimen, Handb. Fl. Ceylon 6 (Suppl.): 115. 1931; Henry, Vivekananthan and Nair in J. Bombay nat. Hist. Soc. 75: 688. 1978; Chithra in Nair & Henry, Fl. Tamil Nadu 1: 155. 1983; Vajravelu in Plant Conservation Bull. 4: 27. 1983; Nair and Rathakrishnan in Red Data Book of Indian Plants 1: 213. 1987; Nayar, Hot Spots Flowering Plants India, Nepal Bhutan 196. 1996. *Jambosa courtallensis* Gamble in Kew Bull. 1918: 240. 1918 & Fl. Pres. Madras 1: 335. 1957 (repr.ed.). (MYRTACEAE). **(Fig. 1).**

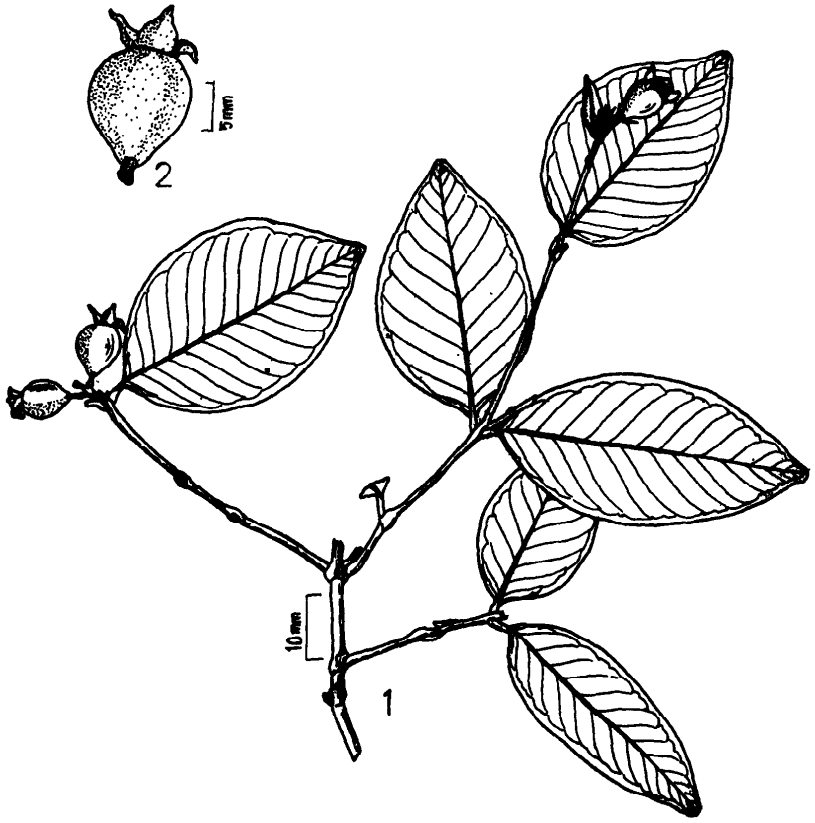


Fig. 1. *Syzygium courtallense* (Gamble) Alston : **1.** Fruiting twig; **2.** Berry.

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Trees, up to 5 m high; branchlets pale brown, subtetragonous, lenticellate, glabrous. Leaves opposite, broadly elliptic or elliptic-ovate, obtusely rounded at base, entire at margin, obtusely acute at apex, coriaceous, dark green above, pale green beneath, 3 13 × 1.5 6 cm; midrib prominent, canaliculate above, raised beneath; secondary nerves 10 - 14 pairs, looped before reaching margin; internodes 0.5 - 2.5 cm long; petioles terete, up to 0.7 cm long. Flowers in terminal corymbose cymes. Calyx tube subcylindric with annular disc, c. 2 × 1 cm; lobes 4, orbicular, c. 0.7 cm across. Petals 4, white, orbicular, spreading, c. 1.4 cm across. Stamens many, c. 3.7 cm long; anthers c. 0.3 cm across. Style linear-terete, narrowed towards above; stigma terminal. Berries subglobose, with persistent calyx lobes, c. 1.5 × 1 cm.

Fl.: February – March; *Fr.*: April onwards.

Distribution : Courtallum and Kalakkad-Mundanthurai Tiger Reserve in Tirunelveli district of Tamil Nadu, South India.

Specimen examined : India: Tamil Nadu, Kalakkad-Mundanthurai Tiger Reserve, 8° 20′- 8° 53′N and 77° 10′- 77° 35′ E, Inchikuzhi, ± 900 m, 19.8.1998, *M.B. Viswanathan & U. Manikandan* 2453 (Sri Paramakalyani Centre for Environmental Sciences).

Conservation status : The species is assigned Critically Endangered threat category (CR) of the IUCN Red list Category Criteria of version 3.1 (2001) based on the field data (VISWANATHAN, pers. observ. 1998-2002). Subcategories include, B2 = area of occupancy estimated to be less than 10 sq km; a = severely fragmented subpopulations; b (continuing decline, observed and inferred), ii. (area of occupancy), iii. (number of locations).

Habitat : This species is found in the southern tropical wet evergreen forests. Associated species include trees such as *Ardisia solanacea*, *Baccaurea courtallensis*, *Eugenia singampattiana*, *Grewia hirsuta*, *Isonandra lanceolata* forma *lanceolata*, *Metereomyrtus wynadense* and *Syzygium mundagam*, shrubs like *Clerodendrum viscosum*, *Osbeckia brachystemon* and *Polyalthia korintii*, herbs such as *Aneilema montana*, *Cyperus bulbosus*, *Disperis neilgherrensis*, *Murdannia semiteres* and *Sonerila tinnevelliensis* and straggling shrub such as *Calamus brandisii*.

Note: Gamble described *Jambosa courtallensis* (Myrtaceae) in July 1918 based on Wight collection from Courtallum in February 1836 (Peninsula Indiae Orientalis No.1054; Type from Kew!). Alston transferred it to another genus and made a combination as *Syzygium courtallense* (Gamble) Alston. Henry & al. (1978) mentioned it as one of the 224 rare and threatened flowering plants of South India. Vajravelu (1983) corroborated the statement. Nair and Rathakrishnan (1987) stated that it as an ornamental species cultivated in garden and has not been collected after type. Ashton (1981) did not include it in his revision on Myrtaceae of Sri Lanka. Nayar (1996) commented it as possibly extinct species. After 162 years, it was collected with fruits from the neighboring locality of Kalakkad-Mundanthurai Tiger Reserve in 1998. On scrutiny, it is revealed that the fruits of the species have not been reported so far and hence its report forms new information to science.

Dioscorea spicata Roth, Nov. Pl. Sp. 371.1821; Kunth, Enum. Pl. 5: 399. 1850; Hook. f., Fl. Br. India 6: 291. 1892; Trimen, Handb. Fl. Ceylon 4: 277. 1898; Kunth in Pflanzenr. 87 (iv.43): 279. 1924; Fischer in Gamble, Fl. Pres. Madras 1512.1928 & 3: 1056. 1957 (repr. ed.); Jayasuriya in Dassan., Fosberg & Clayton, Rev. Handb. Fl. Ceylon. 9: 74. Fig. 9. 1995. (DIOSCOREACEAE). **(Fig.2)**.

Twining herbs. Stems slender, twining to right, striated, bilobed or terete when mature, sometimes grooved, glabrous; internodes 1.5-11 cm long. Leaves simple, alternate or opposite, 5-7-ribbed, pale or dark brown when dry, coriaceous, ovate, ovate-elliptic, elliptic or elliptic-lanceolate, acute, rounded or subtruncate at base, entire or undulate at margin, acuminate or shortly cuspidate, rarely mucronate at apex, 4.7 14.1 × 1.7 6.6 cm, glabrous; midrib faintly grooved above, prominently raised beneath, glabrous; primary veins acrodromous to subcampylodromous, mostly 5, reaching up to apex, prominent; secondary veins prominent on both sides; petioles 1.1 - 4.1 × 0.5 - 2 cm, canaliculate above, distinctly blackish brown towards above and beneath, pale brown in between, slightly broadened towards both sides, often geniculate, glabrous. Inflorescence in axillary

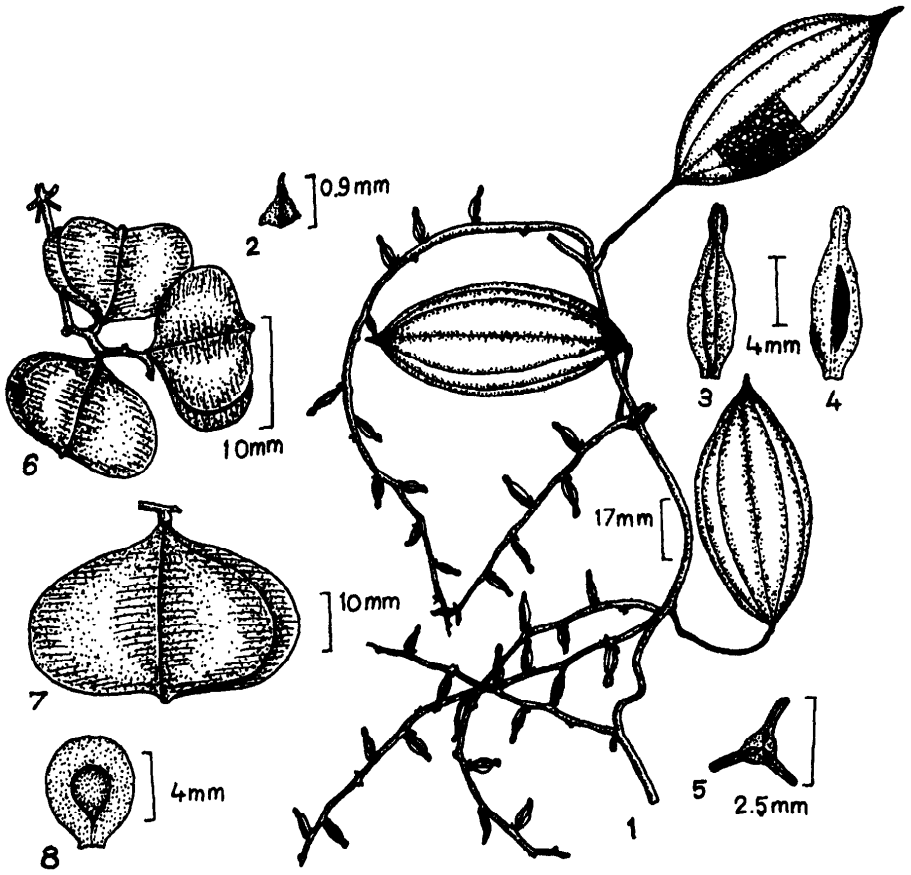


Fig.2. *Dioscorea spicata* Roth: Female plant.
1. Twig; **2.** Bract; **3.** Immature ovary (entire); **4.** L.S. of Immature ovary; **5.** C.S. of immature ovary; **6.** Winged capsules in clusters; **7.** Single capsule; 8. Seed.

racemes, 1 3 in each clusters, 0.8 8.1 cm long. Flowers sessile, monoecious. Male flowers sessile; bracts deltoid, entire at margin, acute or acuminate at apex, c. 1 × 0.9 mm, glabrous. Tepals 6, in 2 series, mostly similar; outer ones 3, c. 1.9 × 1 mm, oblong-ovate, obliquely rounded at base, entire at margin, obtuse at apex, glabrous; inner ones 3, c.1.6 × 1 mm, ovate-suborbicular, rounded at base, entire at margin, mucronate at apex, glabrous. Stamens 6, free, c. 0.8 × 0.4 mm; filaments c. 0.3 × 0.2 mm, broad at base, tapering towards apex, glabrous; anthers dithecous, oblong, dorsifixed, c. 0.5 × 0.4 mm, dehiscence longitudinally. Female flowers sessile; bracts deltoid, entire at margin, acuminate at apex, c. 0.9 × 0.7 mm, glabrous. Ovary ovate, c. 10 × 2.8 mm, glabrous. Capsules loculicidal, broadly 3-winged, broader than long, cordate at base, entire at margin, retuse at apex or minutely apiculate, 2.9 3.2 × 4.5 4.8 cm, minutely regular striations along broadwise, glabrous, shining, dehiscent when dry. Seeds 6, 2 in each locules, c. 0.7 × 0.5 cm, brown, suborbicular, broadly winged, membraneous, wings broader at apex than at base.

Fl. : March – May; September – November. *Fr.* : April – June; October – December.

Distribution : Kalakkad-Mundanthurai Tiger Reserve in Tirunelveli district of Tamil Nadu, South India and Sri Lanka.

Specimens examined : Ceylon, Galle dist., *s. loc.*, October 1861, *C. P. Thwaites* 2871 (isolectotype NY!); India: Tamil Nadu, Kalakkad-Mundanthurai Tiger Reserve, 8° 20′- 8° 53′N and 77° 10′- 77° 35′ E, Kannikatti, 6.6.1899, *C. A. Barber* 387 (MH!); *ibid:* 10.6.1899, *C. A. Barber* 475 (MH!); *ibid:* Kakachi, 1200 m, 20 April 1999, *M.B. Viswanathan & U. Manikandan* 3927; *ibid:* Nondimangkadu, 1100 m, 29.04.2000, *M.B. Viswanathan & U. Manikandan* 6227 (Sri Paramakalyani Centre for Environmental Sciences).

Conservation status : Based on the field data (Viswanathan & Manikandan pers. observ. 1999, 2000), this species is assigned Vulnerable with subcategories of B1 (area of occurrence estimated to be less than

2000 sq km), b (continuing decline, observed and inferred) basing, ii (area of occupancy) and iv (number of locations) under the IUCN Red list categories Criteria version 3.1 (2001).

Habitat : This species is found in the southern tropical wet evergreen forests associated with trees such as *Antidesma menasu*, *Apollonia arnotii*, *Cinnamomum filipedicillatum*, *Goniothalamus wightii*, *Isonandra lanceolata* forma *lanceolata*, *Meiogyne pannosa*, *Memecylon subcordatum*, *Nageia wallichiana*, *Schefflera rostrata* var. *micrantha* and *Symplocos wynadense*, shrubs like *Ixora malabarica*, *Phyllanthus baillonianus*, *Sarcandra chloranthoides* and *Sauropus androgynus*, subshrubs such as *Chassalia curviflora* var. *ophioxyloides* and *Psychotria bisulcata*. Herbs include *Acrotrema arnottianum*, *Blumea lanceolaria*, *Elatostema lineolatum* var. *setosum*, *Impatiens verticillata*, *Leptostachya wallichii*, *Neurocalyx calycinus*, *Peperomia dindugulensis* and *P. tetraphylla*, climbers such as *Cyclea peltata*, *Piper mullesua* and *Sonerila tinnevelliensis*, epiphytes such as *Medinilla beddomei* and orchids such as *Bulbophyllum fischeri* and *Peristylus aristatus*.

Notes : Barber collected it from the Kalakkad - Mundanthurai Tiger Reserve in Tamil Nadu in 1899. Fischer (1928) reported it both from the Kalakkad -Mundanthurai Tiger Reserve in Tamil Nadu and Travancore hills in Kerala. Jayasuriya (1995) reported it from Sri Lanka. Thereafter, it has not been reported from India so far. Hence, the present collection forms rediscovery of the species from the type locality after about seven decades.

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