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Three New Additions of Angiosperms from Kanyakumari Wildlife Sanctuary to the Flora of Tamil Nadu, India

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ABSTRACT: *Psidium guineense* Sw., *Syzygium syzygioides* (Miq.) Merr. & L.M. Perry and *Momordica sahyadrica* Kattuk. & V.T. Antony., are reported from Kanyakumari Wildlife Sanctuary as new additions to the flora of Tamil Nadu. Nomenclature, description, images and other relevant details of these taxa have been provided here.

Keywords: *Momordica sahyadrica. Psidium guineense, Syzygium syzygioides,* Western Ghats.

INTRODUCTION

Kanyakumari Wildlife Sanctuary (KKWLS) with an area of 402.39 km^2 is situated in the Kanyakumari district of Tamil Nadu and lies between 8°5'–8°35' N and 70°10'–77°35' E. The Sanctuary has a rich biodiversity with several microhabitats with adjacent areas of Kalakkad Mundanthurai Tiger Reserve and Neyyar Wildlife Sanctuary of Kerala State constitutes the southernmost tip of the Indian subcontinent. A total of six major forest types have been identified with 17 sub-types (ICFRE, 2013). The sanctuary is situated in the southern Western Ghats and this region harbours 62% of the endemic plants of the Western Ghats (Singh *et al*., 2015). During the floristic survey of Kanyakumari Wildlife Sanctuary in Tamil Nadu, the authors collected three specimens belonging to the genera *Psidium* L. and *Syzygium* Gaertn. of the family Myrtaceae and *Momordica* L. of the family Cucurbitaceae. After critical study with relevant literature, protologues and type specimens (Merrill & Perry 1938; Nazarudeen, 2001; Shareef, 2020; Joseph & Antony 2007), these were identified as *Psidium guineense* Sw., *Syzygium syzygioides* (Miq.) Merr. & L.M. Perry and *Momordica sahyadrica* Kattuk. & V.T. Antony. The present collection of these species from the sanctuary forms an addition to the flora of Tamil Nadu (Chithra, 1983; Shareef & Santhosh Kumar 2020; Rathakrishnan, 2020; Sinha & Dash 2020; Narasimhan & Irwin 2021).

METHODOLOGY

As part of a project to document the flora of the Kanyakumari Wildlife Sanctuary, the authors conducted botanical explorations in between April 2016 and March 2021 with 12 intensive plant exploration trips. Plants in flowering and fruiting state and different vegetation types of the sanctuary were photographed. The collected specimens were preserved immediately. The herbarium specimens were prepared following customary methods of herbarium preservation (Bridson & Forman 1991). Field observations such as habit, habitat, odour and colour of vegetative and floral parts were noted and locations were recorded using GPS. The specimens were studied in detail with pertinent literature and compared with authentic specimens housed in different regional herbaria. Duly labelled voucher specimens are deposited at Madras Herbarium (MH) for reference. The descriptions are mainly based on measurements from mature living plants, supplemented with measurements from herbarium specimens. The floral characters were described based on direct observation using a stereoscopic microscope.

RESULTS

A detailed description of each species with colour photographs is provided here for easy identification in the field (Fig. 1). Information on phenology, habitat, distribution and details of specimens examined is also given.

1. *Psidium guineense* Sw., Prodr. Veg. Ind. Occ.: 77. 1788; Sasidh., Biodiv. Doc. Kerala 6. Fl. Pl.: 175. 2004. Shrubs or small trees, up to 5 m tall; branchlets terete, pubescent when young. Leaves sub-opposite or opposite, broadly elliptic-oblong, obtuse or acute at base, entire at margins, acute or rounded at apex, 5–10.5 × 3–4.3 cm, sub-coriaceous, pellucid dotted, pubescent on both sides when young, glabrate at maturity except on midrib and veins beneath; lateral nerves 8–10 pairs, looping; petiole 0.5–1cm long. Inflorescence axillary; peduncles to 3 cm long, 1–3 flowered. Flowers white, slightly fragrant. Calyx tube adnate to the ovary, 4- or 5-lobed; lobes to 8 mm long, sericeous within, green. Petals 5, spathulate, 1–1.5 × 0.6–1 cm, white. Stamens numerous, white; filaments 1–1.2 cm long; anthers oblong, 0.1– 0.5 cm long, introrse, dehiscing longitudinally. Ovary many-celled, ovules many in each locule; style to 1.3 cm long, white;

stigma capitate. Berries globose, 2–3 cm across, pubescent, yellowish at maturity; seeds many, embedded in the creamy-yellow flesh.

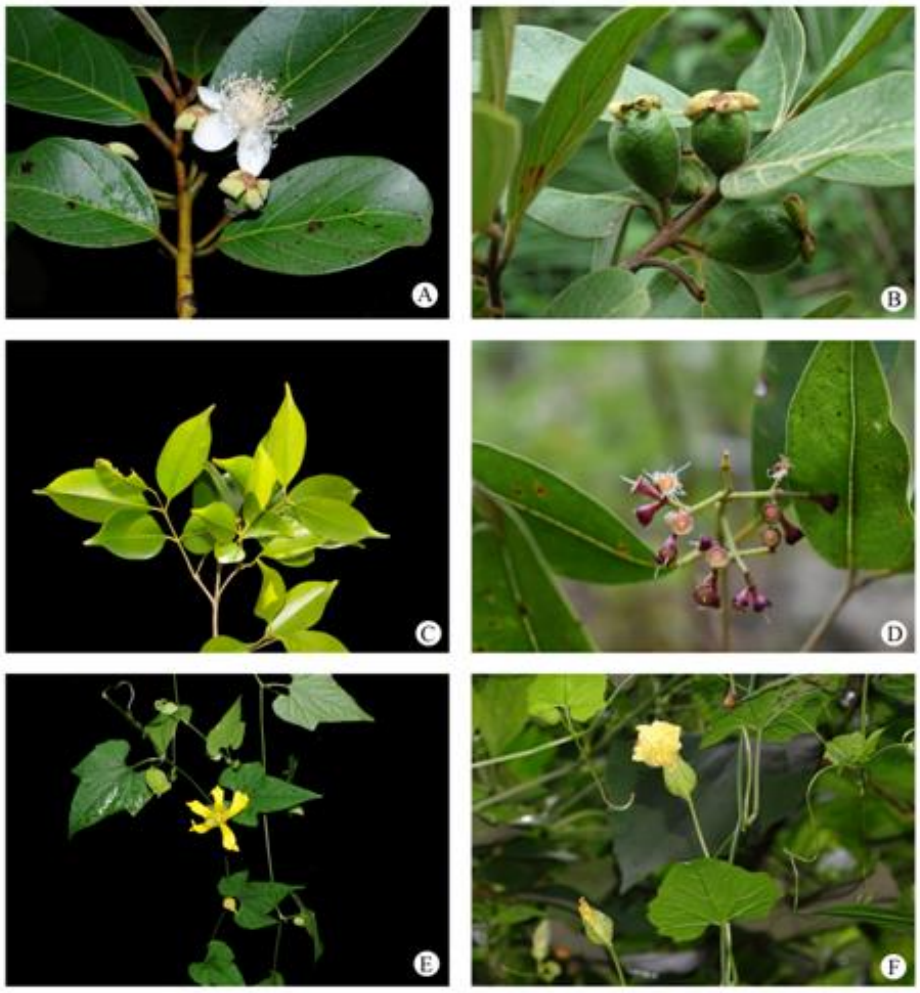

Fig. 1. A&B: *Psidium guineense* Sw., C&D: *Syzygium syzygioides* (Miq.) Merr. & L.M. Perry, E&F: *Momordica sahyadrica* Kattuk. & V.T. Antony.

Flowering: January – June; **Fruiting**: April–September
Habitat: Occasional in margins of tropical evergreen forests and tropical montane forests (shola) at an elevation of 1000 m.
Distribution: A Tropical American plant naturalised in tropical and subtropical regions (Tripura, Agartala) and also in southern Western Ghats of Kerala (Thiruvananthapuram, Kollam) and Tamil Nadu (Kanyakumari).
Specimens examined: INDIA. Tamil Nadu: Kanyakumari district, Kanyakumari Wildlife Sanctuary, Swamikuchimalai, 08°24.446' N; 77°27.171' E, 807 m, 08 July 2019, *Sujana & Vadhyar 146917* (MH)
2. *Syzygium syzygioides* (Miq.) Merr. & L.M. Perry, J. Arnold Arbor. 19: 109. 1938; *Jambosa syzygioides* Miq., Fl. Ned. Ind. 1(1): 431. 1855. *Eugenia syzygioides* (Miq.) M.R. Hend., Gard. Bull. Singapore 12: 154. 1949. *Eugenia cymosa* sensu Wight, Ill. 2: 17. 1841; Ic. 2: t. 555. 1843; Kurz, J. Asiat. Soc. Bengal 46(2): 67. 1877; Duthie in Hook.f., Fl. Brit. Ind. 2: 482. 1878; King, J. Asiat. Soc. Bengal 70(2): 100. 1901.
Trees, to 25 m tall; branches slender, sub-terete, light green when young; branches terete, pale greyish-brown, thickened at nodes at maturity. Leaves elliptic-lanceolate to ovate-elliptic, cuneate at base, slightly revolute at margins, acuminate to caudate-acuminate at apex, 4–6.5 × 2–3.5 cm, thinly coriaceous, pellucid punctate, greenish above, pale green beneath; petioles slender, 0.5–1.3 cm long, slightly depressed above; lateral veins 18–26 pairs, sub-parallel, narrowly spaced, 1–2 mm apart, indistinct above, distinct beneath; intramarginal vein 1-tiered, conspicuous, slender, c. 1 mm from margin. Inflorescence both terminal and axillary, paniculate, to 8 cm long; flowers c. 38; peduncles 1–1.5 cm long, slender. Bracts and bracteoles deltoid. Flowers sessile, white. Hypanthium campanulate, 3–4 × 2.5–3 mm, reddish outside. Calyx shallowly 4-lobed; lobes deltoid, reddish. Petals orbicular, white with a pinkish tinge, membranous, gland-dotted, calyptrate. Stamens many, unequal; anthers ovate; filaments filiform. Ovary 2-locular; ovules 19–22 per locule; style slender, to 5 mm long; stigma simple, acute. Fruits globose to subglobose, 1.1–1.5 × 1.1–1.4 cm, pericarp fleshy, purplish black at maturity, 1-seeded.
Flowering: January–April; **Fruiting**: March–June
Habitat: Evergreen forests, to 1000 m.

Distribution: South Asia to Malesia. Kerala (Kollam) and Tamil Nadu (Kanyakumari).

Specimens examined: INDIA. Tamil Nadu: Kanyakumari district, Kanyakumari Wildlife Sanctuary, Maramalai, 08°27.228 'N; 77°24.041' E, 593 m, 04 Feb 2019, *Sujana & Vadhyar 144624* (MH).

3. *Momordica sahyadrica* Kattuk. & V.T. Antony, Nordic J. Bot. 24: 541 (2006 publ. 2007).

Climbers, dioecious; stems quadrangular, inter-nodes to 10 cm long; tendrils unbranched, 8–15cm long; roots tuberous. Leaves ovate or broadly triangular, deeply cordate at base, undulate or coarsely crenulated at margins, acute or acuminate at apex, acumen mucronate, 3.5–8.5 × 3.5–5.5 cm, entire or 3–5 lobed; lateral veins 5–7 pairs; petioles 2–5 cm long. Male flowers axillary, solitary; pedicel 4.5–8.5 cm long; bracts cup-shaped, cordate at base, acuminate at apex, 2–3.5 × 1.8–3.2 cm. Calyx campanulate, ca. 1 ×1 cm, 5-lobed; lobes linear, undulate at margins, acute at apex, ca. 8 × 5 mm, puberulous on both surfaces, purple pigmented. Corolla 5-lobed; lobes obovate, ca. 4–4.5 × 2.8–3 cm, veins prominent, bright yellow with greenish-yellow at base. Stamens 3, inserted at mouth of calyx tube; filaments short; anthers extrorse, thecae dull black.

Flowering & **fruiting:** September–December.

Habitat: Semi-evergreen to evergreen forests.

Distribution: Kerala, Karnataka, Goa, Tamil Nadu. **Endemic**

Specimens examined: INDIA. Tamil Nadu: Kanyakumari district, Kanyakumari Wildlife Sanctuary, Swamikuchimalai, 08°24.112 'N; 77°25.249' E, 152 m, 11 Nov 2019, *Sujana & Vadhyar 140812* (MH).

DISCUSSION

The occurrence of *Psidium guineense* from India was first reported by Deb (1961) from Agarthala, afterwards Nazarudeen (2001) reported the occurrence of this species from secondary deciduous forests in Kerala. The ripened fruits of this species are eaten raw or baked, stewed or made into a paste for jam and jellies.

Syzygium syzygoides was first reported in Peninsular India from the Kollam district of Kerala Shareef (2020), which can be easily recognised from other species in the Western Ghats by the presence of slender and terete branchlets, crimson-coloured young foliage, axillary and terminal inflorescences and white flowers with reddish tinged hypanthium and petals. Ripened fruits are eaten.

While publishing the new species *Momordica sahyadrica* the authors (Joseph & Antony 2007) mentioned the distribution of the new species from Agasthyamala in Tamil Nadu to Radhanagiri in Maharashtra, but they have not cited any specimens other than collections from Kerala and Karnataka. This collection makes the confirmation of occurrence of this species from Tamil Nadu.

CONCLUSIONS

Investigation of floristic composition and associated ecological parameters are important for locating the populations, reporting range extensions and biodiversity conservation as they provide a suitable environment for wildlife and sidewise contribute to the sustainable management of unique regional specific natural resources.

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