

THE SEA-GRASSES OF KRUSADI ISLAND IN THE GULF OF MANAAR, INDIA

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Sea-grasses are a small group of marine angiosperms remarkable in their habit, occurrence in restricted areas and morphological features. Collections of sea-grasses are being made since 1964 from Ennore, Kovalam, Tuticorin and Krusadi Island (Tamil Nadu) for detailed study. This account deals with Krusadi Island.

Krusadi Island being located in between Palk Bay and the Gulf of Manaar forms an ideal centre for marine biological investigations. Krusadi Island which is about 2.5 km long and about 0.4 km at its broadest part is situated in the Gulf of Manaar approximately between 9° 14'-9° 15' N and 79° 10.5'-79° 14.5' E, south of Rameswaram, is a part of the Ramanathapuram District of Tamil Nadu, India.

The interesting phanerogamic vegetation of this area has been reported by Chandrasekaran *et al.* (1946). They included five species of sea-grasses. Chacko *et al.* (1955), recorded three genera and six species. Subsequently Rao, Aggarwal and Mukherjee (1963) recorded five species.

Sauvageau (1890-91) who studied the morphology of leaves of many sea-grasses and other aquatic plants found that many of these vegetative characters can be used as criteria to distinguish the species. The rare occurrence of flowers in some of the marine angiosperms has also been revealed by Taylor (1928), and Phillips (1960). Hartog (1964) remarked that in sea-grasses the vegetative characters are more

reliable and important for identification. Out of 234 shoots of *Cymodocea serrulata* observed by Kirkman (1975) only nine had male flowers and none was with female flowers.

In preparing the following key, critical studies were made on the specimens represented in Madras Herbarium (MH) along with our collections now deposited in the Post Graduate Centre of Madras University, Coimbatore. The locality for all is Krusadi Island.

Cymodocea rotundata Aschers. & Sch. in Sitzle. Ges. Naturf. Fr. Berl. 84. 1870; Fischer in Gamble, Fl. Pres. Madras 3 : 1117. 1957 (repr. ed.) [Cymodoceaceae].

Submerged herbs with creeping rhizomes. Internodes 2.0-3.5 cm long. Roots 2 at each node. Leaves 10-15 × 0.2-0.3 cm, alternate, linear, entire, glabrous, obtuse at apex, 8-11-nerved, sheathing at the base. Sheaths stipular, cylindric, 2.0-3.5 cm long, transparent, 10-14-nerved.

Specimens examined : Vegetative, 24.9.1948, Parthasarathy, S. V. and Daniel, D. s. n. (Acc. No. 88137).

Cymodocea serrulata (R. Br.) Aschers. & Magn. in Sitzle, Ges. Naturf. Fr. Berl. 84 : 1970. *Caulina serrulata* R. Br. Prodr. 339. 1810. [Cymodoceaceae].

Submerged herbs with creeping rhizomes. Internodes 2.0-2.5 cm long. Roots 1-2 at each node. Leaves 20-25 × 0.8-1.0 cm., alternate,

ARTIFICIAL KEY

- 1a. Leaves terete .. *Syringodium isoetifolium* 7
- 1b Leaves not terete.
- 2a. Leaves filiform .. *Ruppia maritima* 6
- 2b. Leaves not filiform.
- 3a. Leaves narrowly linear, ribbon shaped.
- 4a. Rhizome covered with persistent black fibrous strands; leaves 30-90 cm long .. *Enhalus acoroides* 3
- 4b. Rhizome not covered with fibrous strands; leaves up to 20 cm long.
- 5a. Leaves 2-3 mm wide, entire at apex; leaf-scars forming closed rings .. *Cymodocea rotundata* 1
- 5b. Leaves 5-7 mm wide, minutely toothed at apex; leaf-scars forming open rings .. *Cymodocea serrulata* 2
- 3b. Leaves not as above.
- 6a. Leaves elliptic-oblong to oblanceolate, margins entire .. *Halophila ovalis* 4
- 6b. Leaves linear to oblong-elliptic, margins serrulate .. *Halophila stipulacea* 5

distichous, linear flat, obtuse and denticulate at apex, 15-20-nerved, sheathing at base. Sheaths 3.0-3.5 cm long, pinkish, stipular, 2 auriculate, transparent, 18-20-nerved.

Specimens examined : Vegetative, 3.2.1978, Rajeshwari, M. and Lakshmanan, K. K. 8; vegetative 26.9.1946, Gopal Rao, T. s. n. (Acc. No. 93046).

Enhalus acoroides (L. f.) Rich. ex Royle, Illust. 453. 1840; Fischer in Gamble, Fl. Pres. Madras 3 : 1305. 1937 (repr. ed.). *Stratiotes acoroides* L. f. Suppl. 268. 1781. [Hydrocharitaceae].

Submerged herbs with creeping rhizomes. Rhizomes 1.0-1.5 cm thick, roots unbranched, 15-22 cm long, densely covered by persistent,

black fibrous strands of the decayed leaves. Leaves 65-80 × 1.5-1.8 cm, narrowly linear, ribbon shaped; apex obtuse, often distorted, enclosed in threes in a basal sheath; sheaths 20-25 × 2.5 cm white, stipular, 25-30-nerved.

Specimens examined : In flowers and fruits, 3.2.1978, Rajeshwari, M. and Lakshmanan, K. K. 10; in flowers, 25.9.1944, Parthasarathy, S. V. and Daniel, D. s. n. (Acc. No. 88139); in vegetative condition, 26.9.1946, Gopal Rao T. s. n. (Acc. No. 93045).

Halophila ovalis (R. Br.) Hook. f. Fl. Tasm. 2 : 45. 1858. *Caulinia ovalis* R. Br. Prodr. 1 : 339. 1810. *Halophila ovata* Aschers. Sitz. Ber. Ges. Naturf. Freunde. 1868 : 3. 1868, non Gaud.; Fischer in Gamble, Fl. Pres.

Madras 3 : 979. 1957 (repr. ed.) [Hydrocharitaceae].

Submerged herbs with slender creeping rhizomes. Internodes 1-4 cm long, roots usually one at each node, unbranched, scales transparent, faintly keeled. Leaves $1.0-3.5 \times 0.5-1.0$ cm in pairs at each node from the hyaline scale, elliptic oblong to oblanceolate, glabrous, membranous, lateral nerves 10-15 pairs. Petioles 0.5-5.0 cm long.

Specimens examined : In flowers, 3.2.1978, Rajeshwari, M. and Lakshmanan, K. K. 12; in flowers, 24.2.1959, Krishnamurthy, V. 7946.

Halophila stipulacea (Forsk.) Aschers. Bot. Zeit. 25 : 94. 1867; Hartog in Fl. Males. Ser. I. 5 : 411. 1957. *Zostera stipulaceae* Forsk. Fl. Aeg.-Arab. 158. 1775. *Halophila balfourii* Soler. Beih. Bot. Centralbl. 30, 1 : 47. 1913; Fischer in Gamble, Fl. Pres. Madras 3 : 1305. 1957 (repr. ed.) [Hydrocharitaceae].

Submerged herbs with slender creeping rhizomes. Internodes 1-2 cm long. Roots usually one at each node. Leaves $3.6 \times 0.25-0.8$ cm long, linear to oblong elliptic, green, serrulate, glabrous. Petioles 0.5-1.5 cm long.

Note : This specimen has been included on the authority of Chacko *et al.* (1955) and Hartog (1957). The authors could not collect any specimen and it is not represented in MH.

Ruppia maritima L. Sp. Pl. 127. 1753; Fischer in Gamble, Fl. Pres. Madras 3 : 1116. 1957 (repr. ed.) [Ruppiaceae].

Submerged herbs with slender creeping rhizomes. Internodes 2-4 cm long. Roots 2-4 at each nodes. Leaves 4-12 cm long, alternate, filiform, sheathing at the base. Sheaths 1.5-3.0 cm stipular, transparent, 8-14-nerved.

Specimens examined : Vegetative, 3.2. 1978, Rajeshwari, M. and Lakshmanan, K. K.

10; vegetative, 11.5.1949, Daniel, D. and Saktharam Rao, T. 93755.

Syringodium isoetifolium (Aschers.) Dandy. in J. Bot. London 77 : 116. 1939. *Cymodocea isoetifolia* Aschers. in Sitzle Ges. Naturf. Fr. Berl. 3. 1867; Fischer in Gamble, Fl. Pres. Madras 3 : 1117. 1957 (repr. ed.) [Cymodoceaceae].

Submerged herbs with creeping rhizomes. Internodes 1.5-3.0 cm long. Roots 2-4 at each node. Leaves 15-29 cm long, alternate, terete, distichous, toothed at apex, sheathing at the base. Sheath $3.5-4.0 \times 0.4-0.6$ cm, stipular, auriculate, white, transparent, 7-10-nerved minutely toothed at tip.

Specimens examined : Vegetative, 2.2.1978, Rajeshwari, M. and Lakshmanan, K. K. 9; in flowers, 26.9.1946, Gopal Rao, T. s. n. (Acc. No. 93046).

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