

Thalassodendron ciliatum: An Unreported Seagrass in the Philippines

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Abstract - *Thalassodendron ciliatum* (Forsk.) den Hartog is described for the first time from the Philippines. This report and a previous one from Palau, Western Caroline Islands represent the only distribution records of the species in the northern Pacific.

In 1979 and 1980, the authors visited Tidepole ($9^{\circ}22'00''$ N. Lat., $118^{\circ}02'00''$ E. Long.), Bajallanura ($9^{\circ}18'00''$ N. Lat., $117^{\circ}59'00''$ E. Long.), Double ($9^{\circ}22'00''$ N. Lat., $118^{\circ}05'00''$ E. Long.) islands and the western part of Tabon Cave, Quezon ($9^{\circ}21'00''$ N. Lat., $118^{\circ}06'00''$ E. Long.) off the western coast of Palawan, in South China Sea, Philippines (Figure 1B). Among their collections of benthic marine algae from these areas, there were included several sterile specimens of an unreported species of the seagrass, *Thalassodendron ciliatum* (Forsk.) den Hartog (Figure 2). The plants were collected by hand, from clear water at a depth of 2 meters, among dead and living corals in sandy bottom. The discovery of *T. ciliatum* from the Philippines is a new distribution record.

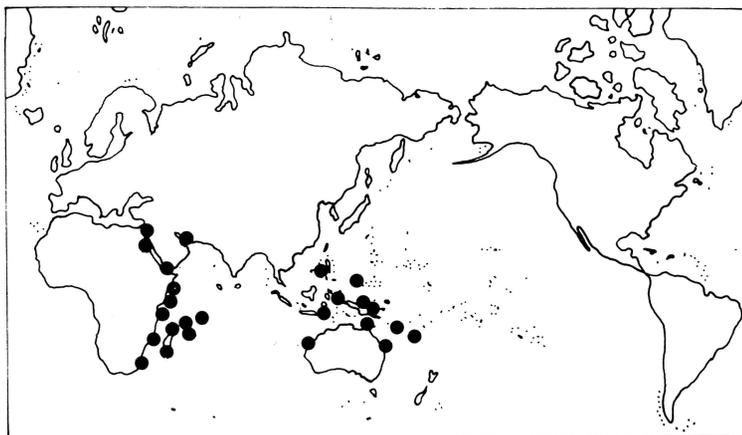
The specimens are cited according to the senior author's field number and are being deposited in the U. S. National Herbarium at Smithsonian Institution, Washington, D. C., the Silliman University Herbarium and the Philippine National Herbarium.

The senior author acknowledges the financial support of the Smithsonian Institution Fluid Research Fund for travel and research in the Philippines. The authors appreciate the assistance provided by Mr. Lawton Alcala and Mr. Joselito Dawang of Silliman University in collecting research material of marine plants at western Palawan, Philippines. We wish to thank Mr. Carlos Igloso and Mr. Joe Hernandez of the Philippine National Museum in Palawan for logistic assistance. Last but not least, we are grateful to Dr. Calvin McMillan, University of Texas at Austin, for his encouragement and critical review of this paper.

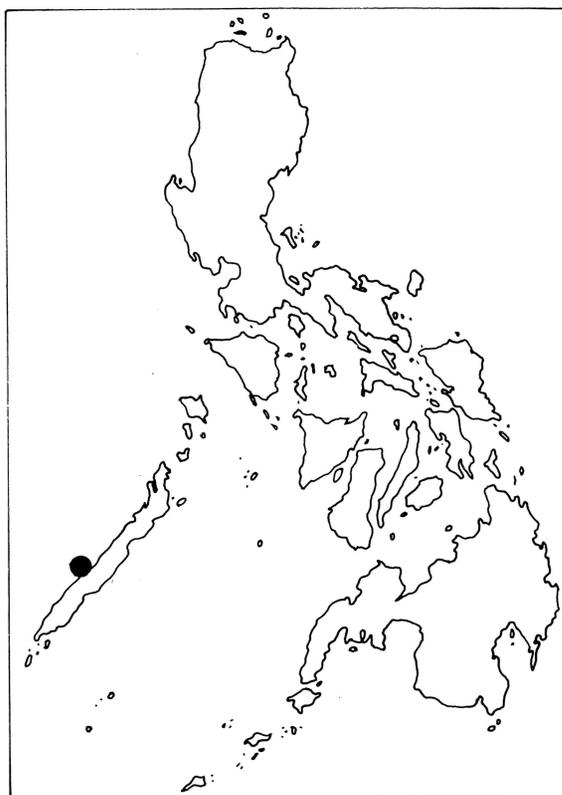
Fig. 1. Charts showing distribution of *Thalassodendron ciliatum*.

A. Geographical distribution.

B. Philippine distribution.



A



B

Division ANTHOPHYTA
Class MONOCOTYLEDONEAE
Order HELOBIAE
Family POTAMOGETONACEAE

Thalassodendron ciliatum (Forsk.) den Hartog

Figs. 2A-C

Zostera ciliata Forsk., 1775: 157.

Thalassodendron ciliatum (Forsk.) den Hartog, 1970: 186, figs. 52a-j.

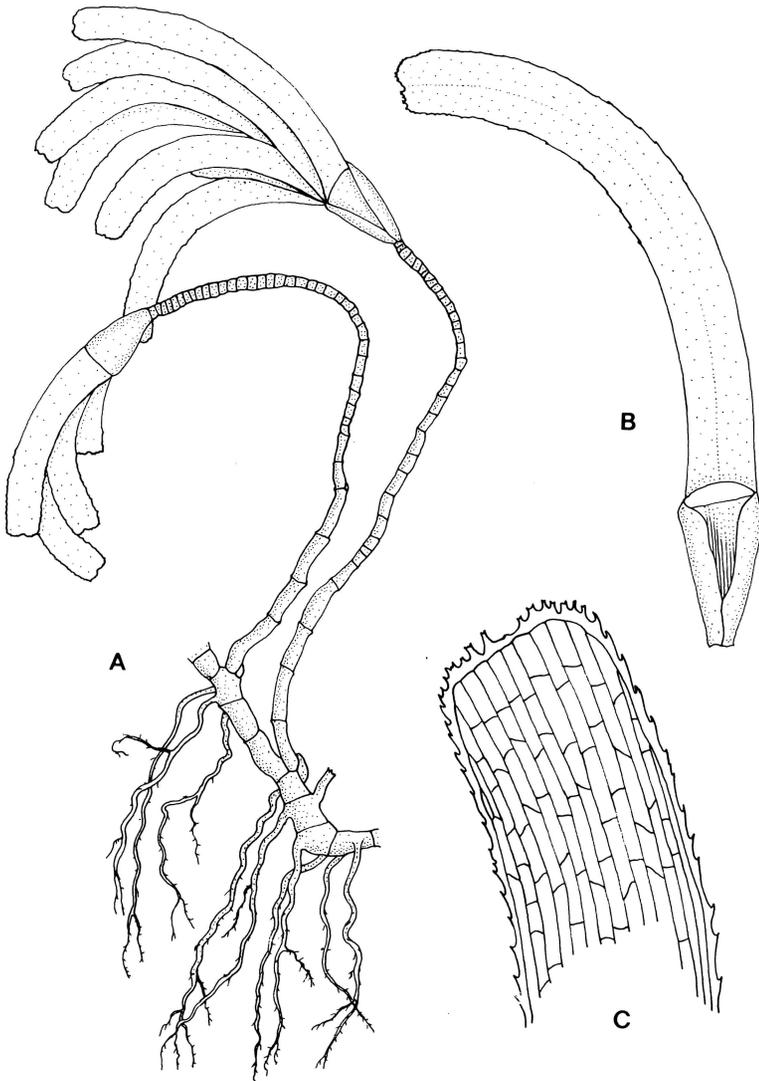
CHARACTERISTICS: Plant moderately large, occasionally branched once, reaching a height of 45 cm. Rhizome thick, up to 5 mm in diameter; internodes 3-10 mm long; tough and wiry roots laxly branched, no more than 1.5 mm in diameter, 1-6 produced on internode. Two stems produced at every fourth internode; one fully developed, long and erect with numerous leaf scars and another, usually an undeveloped stem-bud. Upper part of erect stem compressed, but the basal portion terete. Leaf blades usually 6, linear, falcate, narrowed towards the base, up to 10 mm wide and 13 cm long; leaf tips rounded, denticulate; apical teeth bi-trifurcate; upper half of leaf margin with irregular serrations, becoming distant and few towards the base; lower half of leaf margin almost entire. Leaf nerves 12-18, connected by few oblique cross-veins. Leaf sheaths obtuse, up to 12 mm wide and 20 mm long, with obtuse auriculae and ligula.

NATURAL HISTORY: *Thalassodendron ciliatum* occurs in sheltered and semi-exposed localities, in the upper sublittoral zone. Philippine materials examined were sterile and found in small patches in pure stand among dead and living corals in clear water. Male and female flowers were observed during August in Kenya and January in Mozambique; in Tanzania, male flowers were found in August (den Hartog, 1970). Algal epiphytes found growing on Philippine specimens of *T. ciliatum* include *Codium arabicum* Kuetzing, *Spongocladia dichotoma* Zanardini, *Giffordia rallsiae* (Vickers) Taylor, *Sphacelaria furcigera* Kuetzing, *Padina* sp., *Dictyota* sp., *Amphiroa rigida* Lamouroux, *Jania adherens* Lamouroux, *Polysiphonia mollis* Hooker and Harvey, *Hypnea valentiae* (Turner) Montagne, *Ceramium mazatlanense* Dawson and *Champia parvula* (C. Agardh) Harvey. The latter two algal taxa were present on both leaves and stems, while the rest were observed

only on the stem.

Fig. 2. *Thalassodendron ciliatum*.

- A. Habit of plant, x 0.6. B. A leaf with ligula and sheath, x1.4.
- C. Apical portion of a leaf showing denticulate tip, irregularly serrate margin and nerves connected by cross-veins, x4.6.



SPECIMENS STUDIED: PAL-79-4, northwestern portion of Bajallanura Island, sandy bottom with dead corals, 24 July 1979; PAL-79-7, eastern side of Tidepole Island, rocky area with dead and living corals, 26 July 1979; PAL-79-9, western side of Double Island, sandy bottom with dead and living corals, 26 July 1979; PAL-80-1, western portion of Tabon Cave, Quezon, sandy bottom with dead and living corals, 5 May 1980.

RANGE OF DISTRIBUTION: : *Thalassodendron ciliatum* is widely distributed in the western Indian Ocean, including the Red Sea. It occurs in Egypt, Sudan, French Somaliland, Somalia, Kenya, Tanzania, Mozambique, South Africa, Madagascar, Chagos Archipelago, Seychelles, Amirante Islands, Aldabra Islands, Comoro Islands, Mauritius, Saudi Arabia, Yemen, Iran, Cargados Carajos, Indonesia, Solomon Islands and Queensland. These distribution locations were taken from den Hartog (1970). Additional distribution records after 1970 include Palau, Western Caroline Islands (Tsuda, Fosberg and Sachet, 1977), Diego Garcia (Drew, 1980), Exmouth Gulf, Western Australia (Cambridge, 1981) and Sorong, New Guinea (Johnstone, 1982).

REMARKS: McMillan (1981, 1983) points out that *Thalassodendron ciliatum* may often be confused with "long-stemmed" *Cymodocea serrulata*. The leaf tip of the latter is serrate or spinulose and without magnification, appears rounded or blunt, while in the former it is denticulate, with bi-trifurcate teeth and because of the absence of teeth at the median-tip, the outline appears emarginate as described by den Hartog (1970). The roots of *T. ciliatum* are tough and with wiry branchlets, usually 1-5 produced on the internode. In *C. serrulata*, there are usually 2-3 roots at each node which are tenuous with fewer and more or less straight branchlets. The internodes on rhizomes of *C. serrulata* are much longer than those found on *T. ciliatum*. Compared to Philippine specimens of *C. serrulata*, the undeveloped stem-bud of the local *T. ciliatum* is a unique characteristic.

It is interesting to note that the occurrence of *T. ciliatum* in Palawan, Philippines and Palau, Micronesia represents the only locations in the northern Pacific. The geographical distribution of this species appears to be disjunct. Whether or not this disjunction is a true one, that is, caused by environmental factors and not merely for lack of collections, merits further investigation.

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