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# ADDITIONS TO THE MARINE FLORA OF BRAZIL IX.

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## 1 — INTRODUCTION

This paper, following the previous ones of this series (see Joly 1956, Joly and col. 1962, 1963, 1965, 1965a, 1966, 1967, 1967a), is a report of four marine algae found for the first time along the Brazilian shores. Some of these new recordes were obtained during the extensive exploration of the Brazilian coasts made possible by a grant from the John Simon Guggenheim Memorial Foundation.

These records represent an antecipation of more detailed floristics studies that are under preparation.

## 2 — DESCRIPTIONS

*Caulerpa serrulata* (Forsskal) J. Agardh, emend. Borgesen var. *pectinata* (Kützing) Taylor.

References: Borgesen 1932, p. 5; Taylor 1960, p. 145, pl. 14, fig. 5; Vickers 1903, p. 28, pl. 44c (as *Caulerpa freycinettii* var. *pectinata* J. Agardh).

Text figure 1; Plate 1, figure 1

Of this very delicate and characteristic plant some specimens were secured by fishermen when retrieving spiny lobster traps near Camocim, Ceará State, at a depth of about 48 m. The plants measured 13 cm high with a strong, cylindrical rhizome attached to the substratum by short (about 10-12 mm), cylindrical, rhizoid bearing branches. The erect flat blades show numerous strap-shaped forkings at irregular intervals; they have a short cylindrical basal portion measuring from 8 to 10 mm long. The strap-shaped segments are about 2-3 mm wide, except at the base of each dichotomy were they are wider. Some of the segments are distinctly spirally twisted at wider intervals. Both margins of the segments show very numerous, more or less regularly placed teeth ending by an acute tip. The apical portions of the segments are distinctly truncate, with or without teeth.

*Halimeda incrassata* (Ellis) Lamouroux

References: Hillis 1959, p. 365, pl. 4, figs. 1-2, pl. 5, fig. 21, pl. 6, figs. 21-24; Taylor 1960, p. 181, pl. 23, figs. 1, 4.

Text figure 2. Plate 1, figure 2

Several specimens of this *Halimeda* were secured, some at Sabiaguaba, Ceará State and others at the Cape Santo Agostinho, south of Recife, Pernambuco State. In the first locality the plants were obtained by fishermen when retrieving spiny lobster traps at a depth of ca. 34 m at Cape Santo Agostinho the plants were dredged by Biologist Marc Kempf at depths of 26,0, 33,0 and 36,5 m.

The largest plant we have measures 27 cm high, with a massive, large, basal portion. The plant has 2 or 3 stout, cylindrical segments at its base (sometimes 1 or 2 can be a little flattened) followed by a large and stout, triangularly flat segment bearing on its distal portion 2 to 4 flat segments that are the beggining of the flabelar branching, so characteristic of this species. The adult frond has a distinct fan chaped habitus formed by multibranched upper portions where branches of all orders are placed in one plane. The upper segments are distinctly smaller and more

delicate. The shape and size of the segments are variable; some are clearly lobed at its distal portion. The internodal region is formed by just one strand of fused filaments. The fused portion can be easily dected on decalcified material by the presence of numerous pores placed in one line. The surface utricles have the external walls firmly joined together and show an irregular polygonal outline. They have a diameter of about 57 micra and are about 83 micra high. The subcortical utricles are 50 x 83-85 micra and the medullary ones 57 x 285 micra.

This is the first reference of this species on continental South America.

*Ectocarpus variabilis* Vickers

References: Vickers 1908, p. 43, pl. 31; Borgesen 1920, p. 434, fig. 410; Taylor 1960, p. 202.

Plate 1, figure 3

The plants of this species were found as epiphytes of *Gracilaria debilis* (Forsskal) Borgesen, colected at Fortaleza, Ceará State. This small Ectocarpus forms low tufts up to 2 mm high. The basal portion is formed by branched creeping filaments densely placed. These produce the erect, almost unbranched free filaments. The cells are longer (30-35 micra) than broad (10-12 micra). Usually the cells at the basal portions are shorter than the upper ones.

The plants were found with plurilocular organs. These are terminally or laterally placed, sessile, formed at the lower portions or everywhere on the filaments, usually one or few on each erect filament. They have a diameter of about 24 micra being up to 63 micra long.

This is the first reference of this species on continental South America.

*Entonema parasiticum* (Sauvageau) Hamel

References: Hamel 1939, p. XXVI; Taylor 1960, p. 242; Hamel 1931, p. 56, fig. 18 B (as *Ectocarpus parasiticus* Sauvageau).

Plate 1, figures 4-6

This small species was collected growing uppon plants of *Gracilaria ornata* Areschoug found at Fortaleza, Ceará State. The plant has a branched, uniseriate filamentous portion growing inside the tissues of the host. These filaments originate the outer portion of the plant which is formed by short almost unbranched uniseriate erect filaments. These are usually of two kinds, longer sterile filaments with typical trichotalic growing zone and shorter ones that are plurilocular organs. The sterile filaments are from 55 up to about 75 micra high with cells measuring about 6-8 micra of diameter and about 7-10 micra long. The plurilocular organs are about 43 micra high with a diameter reaching 11 micra. The endophitic filaments that run deeply in-between the cells of the host have longer cells (13-23 x 6-7 micra).

This is the first reference of this species on continental South America.

## 3 — ACKNOWLEDGMENTS

The senior author wants to acknowledge the John Simon Guggenheim Memorial Foundation for the grant that made possible the extensive exploration of the Brazilian shores. Our thanks are also due to Mr. Marc Kempf, biologist of the "Instituto Oceanográfico da Universidade Federal de Pernambuco" for the material of *Halimeda incrassata* dredged by him at Cape Santo Agostinho, Pernambuco State.

## 4 — SUMMARY

The following species of marine algae are for the first time reported from Brazilian shores: *Caulerpa serrulata* var. *pectinata*, *Halimeda incrassata*, *Ectocarpus variabilis* and *Entonema parasiticum*.

## 5 — SUMÁRIO

Neste trabalho são referidas quatro espécies de algas marinhas pela primeira vez encontradas no Brasil, destas, três o são pela primeira vez na América do Sul continental.

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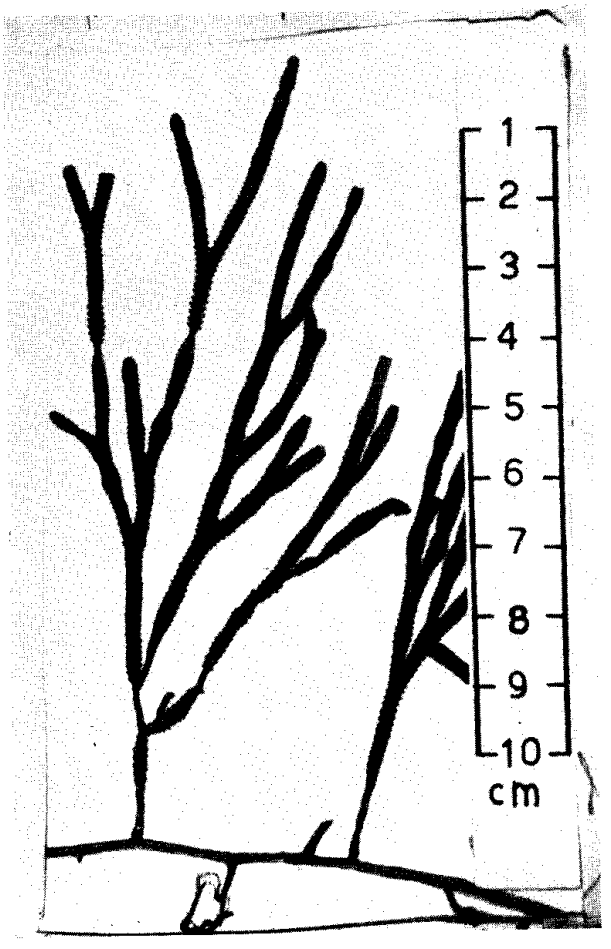
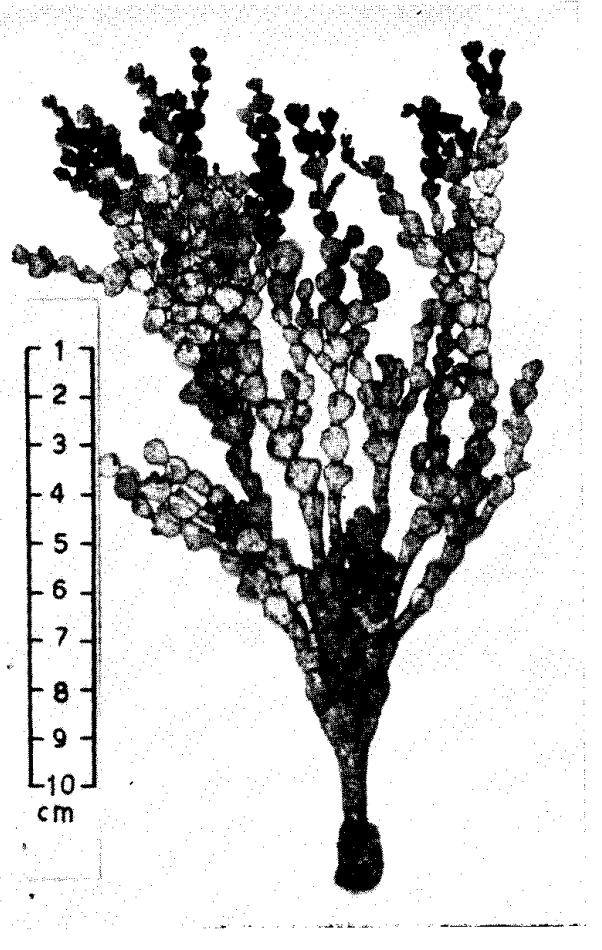


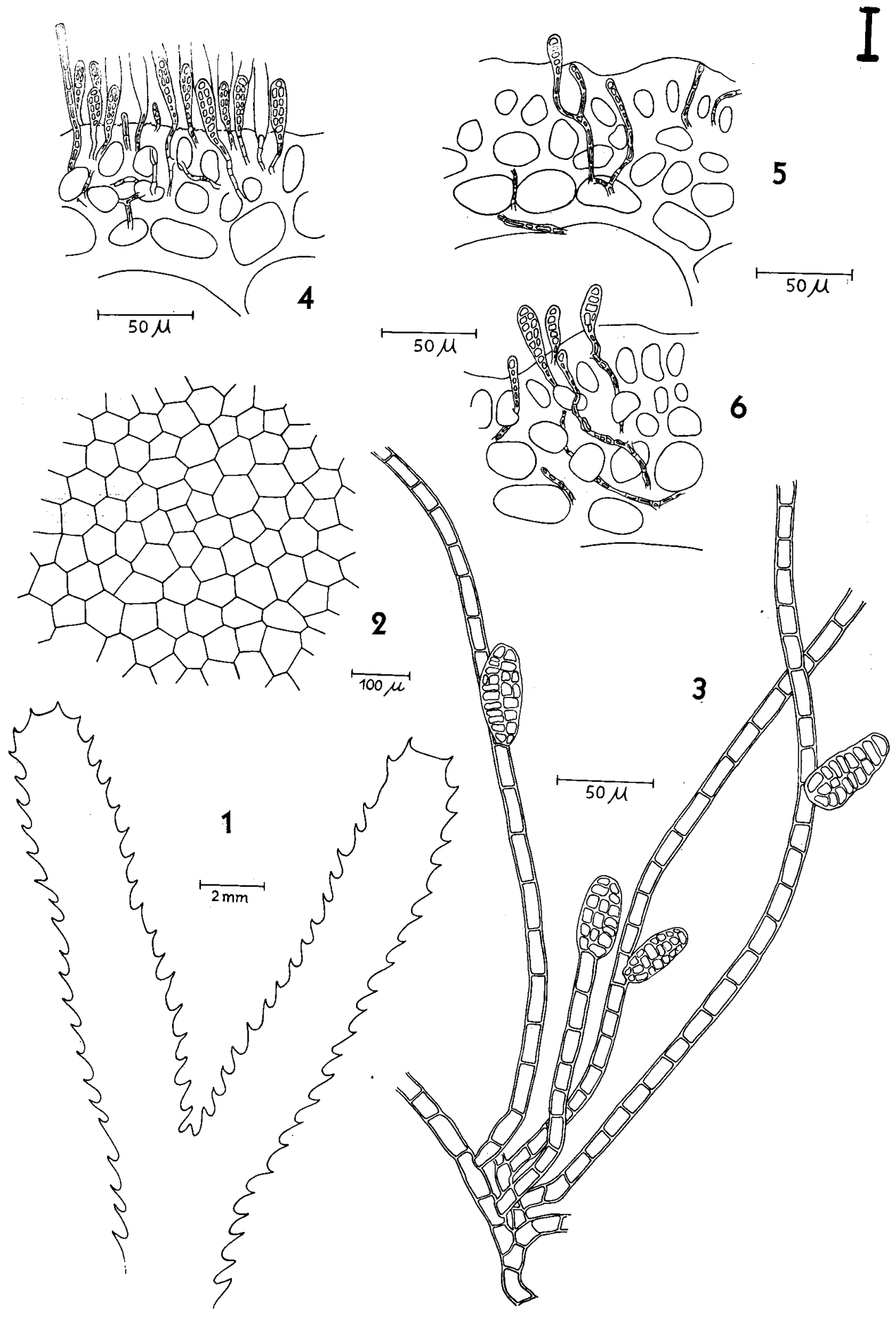

Text figure 1 — *Caulerpa serrulata*, part of a plant.




Text figure 2 — *Halimeda incrassata*, a plant from Cape Santo Agostinho, Pernambuco State.

PLATE I

Figure 1 — *Caulerpa serrulata* — Detail of an upper branch. Figure 2 — *Halimeda incrassata* — Front view of the external utricles (decalcified). Figure 3 — *Ectocarpus variabilis* — Filaments dissected from a tuft with lateral, as well as terminal, plurilocular organs. Figures 4-6 — *Entonema parasiticum* — Part of three cross sections of the host showing endophitic filaments, plurilocular organs and one short sterile filament; note that several plurilocular organs are replacing old, emptied ones, suggesting that these structures are produced successively at the same places. All drawings from formalin preserved material.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