Bulletin, Southern California Academy of Sciences

Volume 53 - - - - - - - - - Part 1, 1954

NOTES ON TROPICAL PACIFIC MARINE ALGAE[1]

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1. Some marine algae from the Gulf of Thailand

The westernmost extension of the Pacific Ocean is the Gulf of Thailand at east longitude 100°. From its extensive coasts benthic marine algae have been reported from but two localities, namely, the island of Koh Chang (Reinbold 1901) and Simaharadscha [Si Racha ?] (Martens 1866).

The writer had opportunity on March 28, 1953 to make a small collection in the vicinity of the northernmost rocky outcrop in the Gulf of Thailand located just north of the resort village of Saen Soek at north latitude 13° 20′. Of the plants from this collection listed below, those marked with an asterisk are previously unreported for Thailand. The writer's field collection numbers are cited with each to identify the specimens which are deposited in the Herbarium of the Allan Hancock Foundation.

It should be pointed out that exceptionally warm marine conditions prevail at this locality of extensive shoals and intense insolation, inshore waters reaching temperatures in excess of 37° C.

**Enteromorpha clathrata* (Roth) J. Ag. 11455, 11462, 11468.

**Chætomorpha linum* (Müll.) Kütz. 11465.

**Chætomorpha capillaris* (Kütz.) Börg. 11471.

**Codium geppii* O. C. Schmidt (determined by P. C. Silva). 11486.

Caulerpa lentillifera J. Ag. 11457.

Acetabularia major Martens. 11456. (Fig. 1)

Dictyota dichotoma (Huds.) Lamx. 11478.

**Padina tetrastromatica* Hauck. 11480. This material is much like that reported by Börgesen (1930) from Bombay, having three layers of cells in most parts and four layers only near the base.

**Acrochætium sinicolum* (Dawson) Papenf. 11478a. Growing on *Dictyota* in a manner much like the type.

**Gelidiopsis intricatus* (Ag.) Vickers. 11482.

Amphiroa fragilissima (L.) Lamx. var. 11459. In this material the nodes are very prominent but the intergenicula little swollen.

[1]Contribution number 120, from the Allan Hancock Foundation, University of Southern California.

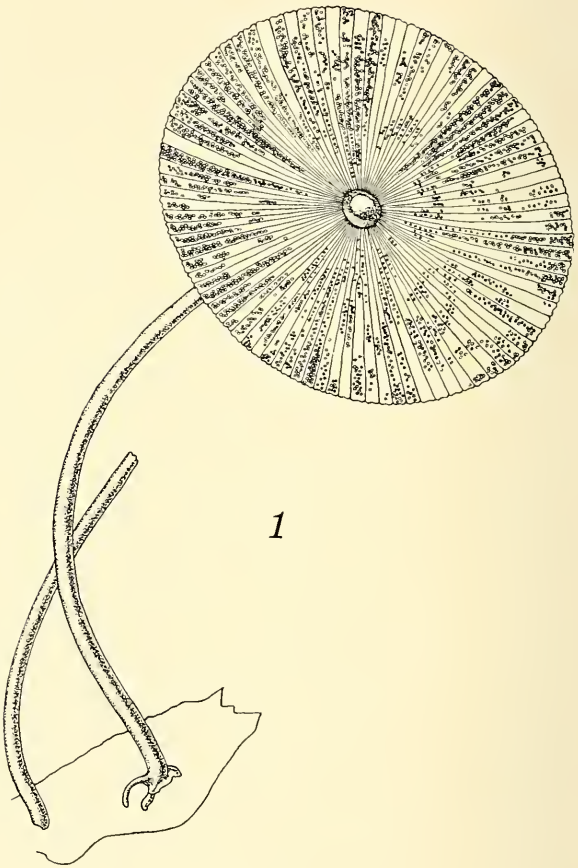

Fig. 1. *Acetabularia major* Martens. A fertile plant and part of another growing on a piece of shell, X 3.

**Jania capillacea* Harvey. 11466.

**Hypnea cervicornis* J. Ag. 11460. This material seems to correspond with specimens collected by the writer and recorded under this name from Viet Nam.

**Solieria robusta* (Grev.) Kylin. 11464. (Fig. 2)

**Gracilaria cacalia* (J. Ag.) comb. nov. (see below). 11479.

Spyridia filamentosa (Wulf.) Harvey. 11472.

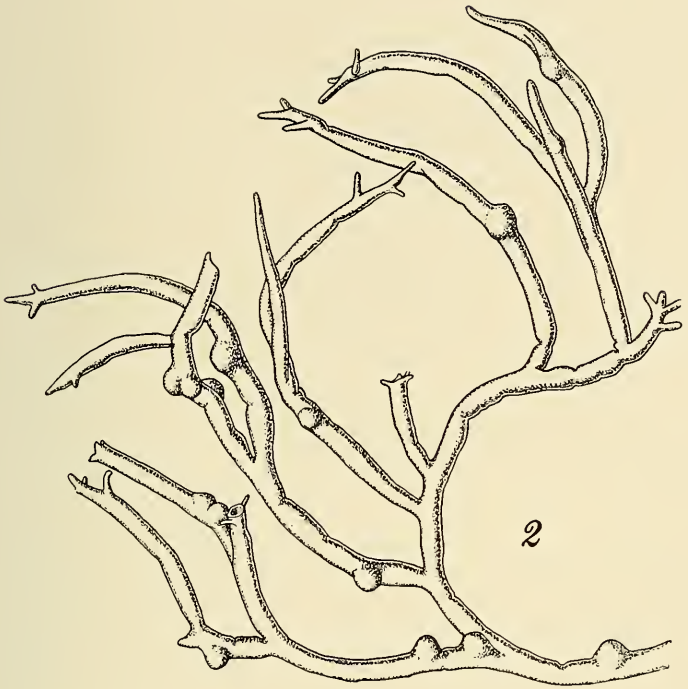

Fig. 2. *Solieria robusta* (Grev.) Kylin. Part of a cystocarpic plant, X 2.

**Ceramium serpens* Setch. & Gard. 11461. This epiphytic material is tetrasporangial and virtually identical with the type and other specimens from the Gulf of California.

**Centroceras clavulatum* (Ag.) Mont. 11474.

**Herposiphonia tenella* (Ag.) Ambronn. 11469.

**Polysiphonia subtilissima* Mont. 11484. This material is much like some specimens from Nha Trang, Viet Nam, having small trichoblasts and irregularly placed scar cells. The axes are 80-40 μ in diameter.

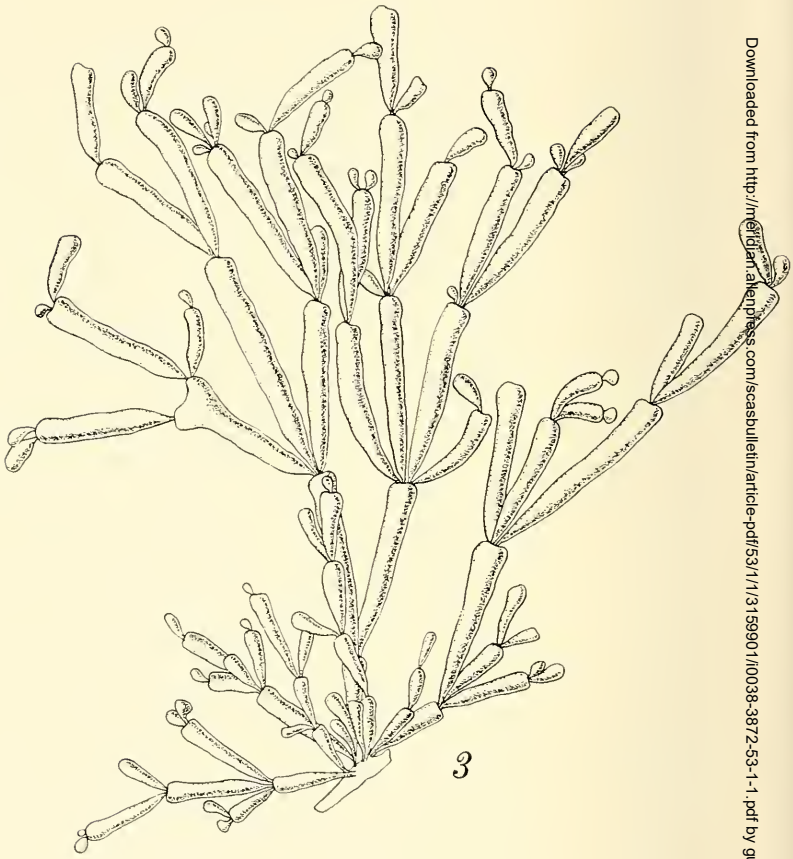

Fig. 3. *Gracilaria salicornia* (Ag.) Dawson. A topotype specimen, X 1.

Acanthophora spicifera (Vahl) Börg. 11481. Probably the same species as recorded by Reinbold under *A. orientalis* J. Ag.

Laurencia obtusa var. *divaricata* (J. Ag.) Yamada. 11463.

2. *Gracilaria salicornia* (C. Ag.) comb. nov.
Fig. 3

The genus *Corallopsis* was described by Greville (1830) and based on the external morphological characters of a plant collected by Chamisso, on the voyage of the Russian exploration ship *Rurik*. The type species had been described and illustrated by C. Agardh (1820) under the name *Sphærococcus salicornia*. The Chamisso specimen was said to have come from Unalaska and has generally been so cited although several authors have pointed out that it was probably mislabeled and its origin uncertain. According to Ruprecht (1851, p. 318) Chamisso himself was not sure of the locality at which he obtained the specimen.

While collecting in the Philippines in April 1953 the writer secured specimens from the base of a sea wall along the harbor of Manila which are in absolute agreement with the Agardh illustration of the type specimens of *Corallopsis salicornia*. An examination of the log of the *Rurik* subsequently revealed that Chamisso and his party spent six weeks at the harbor of Manila from December 17, 1817 to January 29, 1818, immediately following their long voyage from Unalaska by way of Hawaii and Guam. This circumstance seems to leave little doubt that the specimen in question actually came from Manila harbor, and that the writer's collection (11546) is topotypic.

Examination of cystocarps in these specimens has revealed that they are in full agreement with those of the genus *Gracilaria* as understood by Dawson (1949), having the characteristic, protruding, domoid, ostiolate form, the large-celled gonimoblast placenta, and the accessory nutritive filaments extending from gonimoblast to pericarp.

Although the constrictions of the pendant branches are extreme for the genus *Gracilaria*, they seem to constitute insufficient reason for generic segregation, particularly in view of the progressive approach to this condition exhibited by the development of *Gracilaria crassa* Harvey, ex J. Agardh (= *Corallopsis opuntia* J. Ag.). Accordingly, the name *Corallopsis Greville* (1830, p. liii) is reduced under *Gracilaria* Greville (1830, p. liv).

Examination of cystocarpic material of several species heretofore referred to *Corallopsis* is now called for to determine their relationships with *Gracilaria*. Several have already been reduced or referred to other genera. *Corallopsis sagræana* Mont., for example, is *Laurencia corallopsis* (Mont.) Howe; *Corallopsis concrescens* Reinbold has been referred by Börgesen to *Corallopsis opuntia* J. Ag. which is the same as *Gracilaria crassa* J. Ag.; *Corallopsis excavata* Setch. & Gard. is *Lomentaria catenata* Harv.

Corallopsis cacalia J. Agardh (1852, p. 583 [483 by error]) is a species morphologically intermediate between *C. salicornia* and *C. opuntia* with regard to its unconstricted, branched axes, but strongly constricted branchlets (Börgesen 1934, p. 8, fig. 6). Among the specimens cited above from the Gulf of Thailand are

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Fig. 4. *Dermonema frappieri* (Mont. & Millard.) Börg. A pressed specimen from Mazatlán, Mexico, X 1.1.

some small plants of *C. cacalia* whose cystocarps show the characteristic nutritive filaments of *Gracilaria* and give justification for their transfer to that genus as *Gracilaria cacalia* (J. Ag.) comb. nov.

3. *Dermonema frappieri* (Mont. & Millard.) Börg.
Fig. 4

Börgesen (1942) has shown that the *Gymnophlæa gracilis* described by Martens (1866) from Galle, Ceylon and usually treated in more recent literature as *Dermonema gracilis* (Mart.) Schmitz is identical with the earlier *Cladosiphon frappieri* of Montagne and Millardet (1862) from Réunion. This plant has been reported from several other localities of the Indian Ocean and the far western tropical Pacific: Mauritius (Börgesen 1942), south India (Börgesen 1937), Hong Kong (Tseng 1945), Formosa (Okamura 1931), New Guinea (Weber van Bosse 1921). The writer has found it recently at Nha Trang Bay, Viet Nam growing on a nearly submerged rock which is constantly wave-beaten and washed over by surge. Börgesen reports it from the same kind of habitat at Mauritius, while Tseng's Hong Kong plants came also from "exposed rocks."

In a recent collection from exposed, surf-beaten rocks at Mazatlán, Sinaloa, Mexico (Dawson 10818, June 7, 1952) the

writer has found specimens which are indistinguishable from those of Viet Nam. He has found still other examples of this species in similar surfy intertidal habitats in the Revillagigedo Archipelago, at Isla San Benedicto (Nov. 17, 1953) and at Isla Socorro (Nov. 19, 1953). All of these indicate that *Dermonema frappieri* has a much wider Indo-Pacific distribution than was shown by the earlier records, but that it is apparently confined to a rather narrow ecological niche in which quite severe agitation together with long periods of exposure to the air under the influence of frequent wetting by surf and spray are major requirements.

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