

## Studies on Some Marine Algae from Southern Japan—IV

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### Abstract

In the following papers some descriptions have been made of five species among a lot of interesting marine algal specimens collected by the writer since 1957, in the sublittoral zone of the Southwestern Islands of Japan and the Ryukyu Islands: of these five two are new species and the other two are species new to Japanese waters, and the other one is the species already reported by Dr. Okamura from Japan.

### *Rhizoclonium kernerii* Stockmayer

Text-fig. 1.

Ueber die Algengattung *Rhizoclonium* (189) p. 582; Collins, Green Algae of North America (1909) p. 329; Collins and Hervey, The Algae of Bermuda (1917) p. 43; Boergesen, Mar. Alg. of the Danish West Indies (1913) p. 20, fig. 8, Mar. Alg. from the Canary Islands (1925) p. 50, fig. 7, Some Mar. Alg. from Mauritius (1940) p. 43; Feldmann, Les Algues Marines de la Côtes des Albères (1937) p. 73, fig. 20, A-E; Dawson, Mar. Plants in the Vicinity of Nha-Trang, Viet-Nam (1954) p. 386, fig. 7, a-c; Taylor, Mar. Alg. of the Northeastern Coast of North America (1937) p. 84, Caribbean Mar. Alg. of the Allan Hancock Expedit., 1939 (1942) p. 24, Pacific Mar. Alg. Allan Hancock Exp. Galapagos Islands (1945) p. 55, Mar. Alg. of the Eastern Tropical and Subtropical Coasts of the Americas (1960) p. 75.

Japanese name. Kawaguti-midoro (nov.).

Habitat. Sonai, Yonakuni Islands (Oct., 1959); Sumiyo, Amami Islands (Sep., 1959). Growing on mangroove roots or on mud associated with *Bostrichia* sp. in brackish water.

Distribution. North America; Bermuda; Atlantic Ocean; Mexico; West Indies; Viet-Nam; Galapagos Islands; Mediterranean Sea.

Frond minute, caespitose, soft, filamentous, light yellowish green, without branching, usually up to 1 cm. in length, 12–15 $\mu$  thick, intermingled among *Bostrichia* sp. and other algae; cells cylindrical, 2–4 times as long as broad, not constricted, mostly contain one or two nuclei each; cell wall rather thin, about 2–4 $\mu$  thick.

The present species seems to be widely distributed in the southern sea of Japan and the Ryukyu Islands. According to Boergesen, most of the cells of

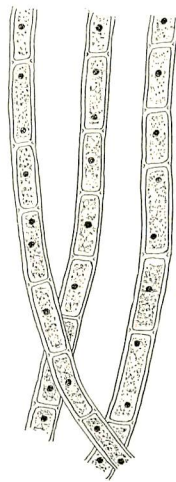


Fig. 1. *Rhizoclonium kernerii* Stockmayer  
Portions of the three filaments  
showing the nuclei.  $\times 250$ .

the frond from the Danish West Indies contain two nuclei each, and in the long ones four are often present, while in our specimens at hand, each cell usually contains one or two nuclei. This plant is here reported for the first time in Japan and in the Ryukyus.

In 1959, the writer collected at Yonakuni Island, Ryukyu Islands, many specimens of *Rhizoclonium* which is assumed by the writer to be *Rhizoclonium hookeri* Kg. which was identified by Dr. Okamura.

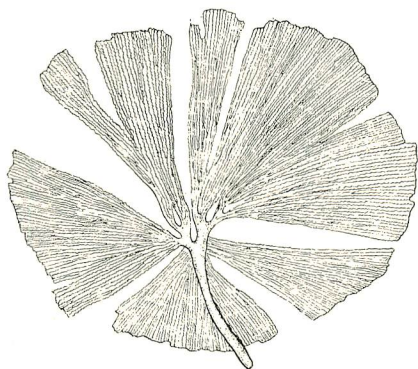


Fig. 2. *Geppella yaeyamense* spec. nov.  
Habit of a plant.  $\times 7$ .

*Geppella yaeyamense* spec. nov.

Text-figs. 2-3.

Thallus pusillus, viridis non in-crustatus, cyathiformis, ad 2mm. altus et ultra, stipitatus; stipes monosiphonius, tenuis, ca.  $700\mu$  longis et ca.  $150\mu$  diam., superne in frondem leniter transiens; frons monostomatica, 1.5 mm. alta et 1.5-2 mm. lata, filamentis dichotome divisis; filamenta frondis ca.  $20-50\mu$ , prope dichotomiis ad  $45\mu$  lata, superne paulo tenuioria ca.  $20\mu$  lata, ad marginem leviter undulata vel dentata; colore viridescens. Planta

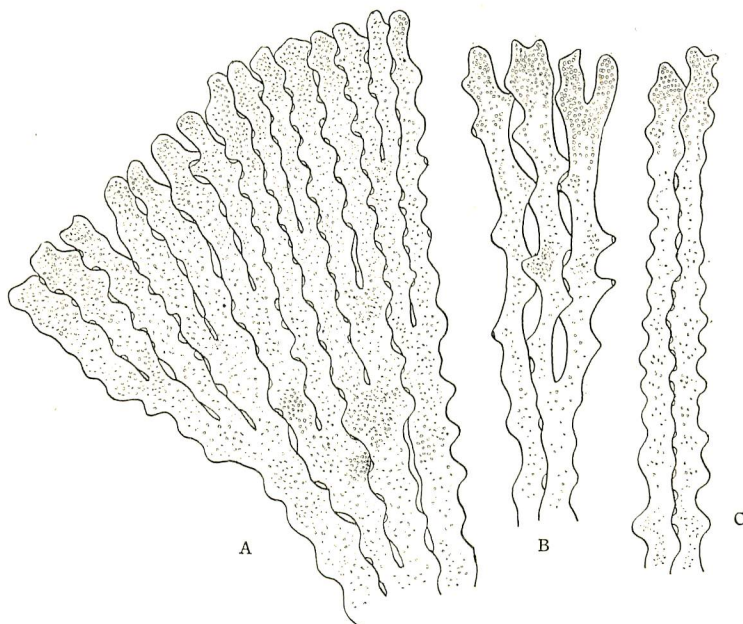


Fig. 3. *Geppella yaeyamense* spec. nov.

- A-B. Parts of the thallus near the edges, showing the branched filaments.  $\times 50$ .  
C. Part of the thallus near the edge, showing the unbranched filaments.  $\times 50$ .



typica in loco dicto Funauke, Iriomotejima, Ryukyu Islands, legit Tanaka, no. 19631, 2 Nov., 1959.

Japanese name. Himeichomodoki.

Habitat. Funauke, Iriomotejima, Ryukyu Islands. Dredged from 20 meter's depth on the coral bottom.

Frond minute to 2 mm. tall, pale green, uncalcified, cyathiformis, stipitate; stipe monosiphonous, slender, about  $700\mu$  long and about  $150\mu$  in diam., furcating into a member of filaments upwards and forming a cyathiform portion of the thallus; flabellate-like cyathiform of the frond, monostromatic, 1.5 mm. high and 0.5–2 mm. broad; filaments of the flabellate-like portion regularly dichotomous, and regularly arranged forming a monostromatic plane, rarely annular attachments between filaments, about  $20\text{--}50\mu$  thick, and below the dichotomis up to  $45\mu$  thick, tapering a little upwards to about  $20\mu$ ; undulate or dentate at the margin, densely connected to each other.

The present new species is the smallest one among the genus *Geppella*. Genus *Geppella* was established by Boergesen in 1940, and hitherto about three species have been known, namely, *Geppella mortensenii* Boergesen, *G. decussata* Dawson, and *G. echnocaulos* Cribb. Among these three, in general habits, the present species is most similar to *G. mortensenii*, but in the structure of the cyathiform of the frond, this differs from it.

In the family *Codiaceae*, genus *Geppella* to be nearest to genus *Udotea*. However, in genus *Geppella*, the frond is always uncalcified and has characteristic annular attachment of the branches, but this is not true in the case of the genus *Udotea*.

### *Chondria repens* Boergesen

Text-fig. 4.

Mar. Alg. from the Easter Island (1924) p. 299, figs. 40–41; Dawson, Mar. Plants in the Vicinity of Nha-Trang, Viet-Nam (1954) p. 460, fig. 62, d–e Illustrated key to the genus of Pacific Central American Benthic Algae (1962) p. 213, fig. 118.

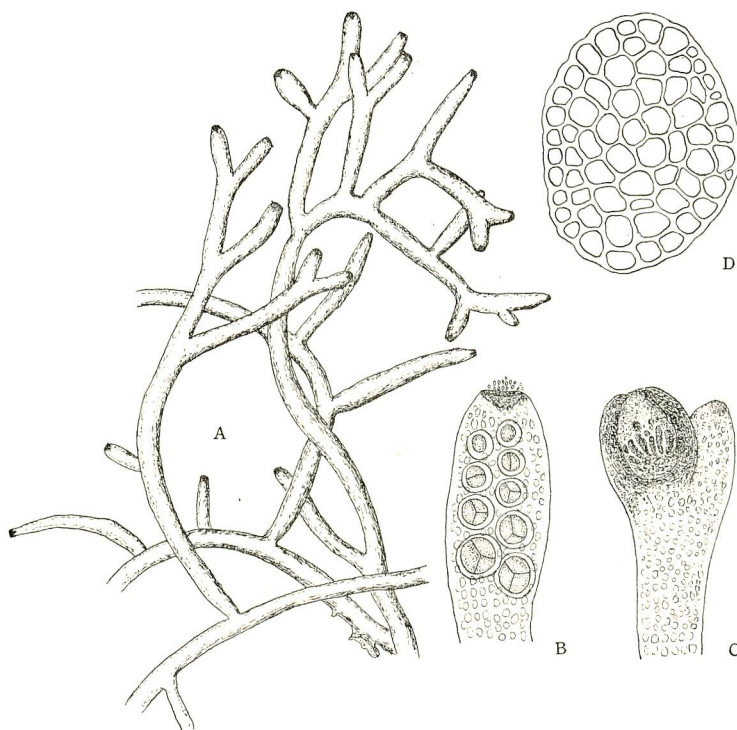
Japanese name. Hime-yanaginori (nov.)

Habitat. Hikawa, Yonakuni Island, Ryukyu Islands (28 Oct., 1959). Growing on coral fragment associated with *Centroceras* and *Ceramium* sp.

Distribution. Easter Island; Viet-Nam; Pacific Ocean.

Frond terate, minute, caespitose, very soft, membranaceous, 0.5–1 cm. high,  $200\text{--}350\mu$  thick, irregularly or subdichotomously ramified, attached to the substratum by means of short and broad hapters; lower part of the frond consisting of creeping main branches and give off shorter and longer branches; branches and branchlets usually obtuse at the apex and somewhat contracted at the base; tetrasporangia in the ultimate branchlets, which at first elongate, but with age become more or less swollen cylindrical, subspherical and tetrahydral, about  $15\mu$  in diam.; cystocarps on distinct plants, usually elliptical, about  $150\mu$  in diam., on the top or near the tip of the branchlets; structurally cortical layer rather thick and the central strand generally not visible, surface cell roundish to polygonal with rather thin walls; colour of the frond light greenish red.

The present species belong to the smallest species of the genus *Chondria*.

Fig. 4. *Chondria repens* Boergesen.

- A. Portion of the clump.  $\times 15$ . B. Tetrasporangial branchlet.  $\times 40$ .  
 C. Cystocarpic branchlet.  $\times 40$ . D. Transverse section of a frond.  
 $\times 160$ .

Our materials at hand from Yonakuni Island, Ryukyu Islands, seem to agree well with the description of Boergesen, and also our plant bears not a small resemblance to the Vietnamese plant. This algae is here reported for the first time in the Ryukyu Islands.

***Cryptonemia semiprocumbens* spec. nov**

Pl. 1, A, and Text-figs. 5-6.

Fronde 5-10cm. lata, plana, membranacea, aliquantum procumbens, brevissime stipitata, extra costa; segmenta 0.5-1 cm. lata, ca. 150-200 $\mu$  crassa, laminis irregulariter dichotomo-flabellata, margineis integri et undulatis interdum adhaerescens ad haptera secundaria lamina; cortex e duobus stratis cellularum irregulariter ovatarum constans, medulla e tela laxa filamentorum membranas crassas habentium constans; cystocarpia subspherica, ca. 200 $\mu$  diam., in medulla immersa; colore roseo vel rubello-purpureo. Planta typica in loco dicto Koniya, Amami Islands, legit Tanaka, no. 19632, 19 oct., 1956.

Japanese name. Nankai-kakureito.

Habitat. Koniya, Amami Islands. Dredged from 30-60 meter's depth on the coral bottom.

Frond 5-10 cm. high, membranaceous, complanate, without mid-rib, some-



what procumbent, attached to the substratum by small disc, irregularly dichotomous ramified, segments 0.5–1 cm. broad and 150–200  $\mu$  in thickness, entire or somewhat undulate margin, often secondary attached to the substratum at the tip of the branchlets, sometimes proliferations arising from the surface of the segments.; structurally the medulla of slender and loosely placed intertwined filaments about 5–8  $\mu$  diam.; cortical layer consisting of about two layers of rounded angular cells 12–18  $\mu$  diam.; carpogonial and auxiliary organs forming ampullar structure, immersed in the inner portion of the cortical layer; cystocarps embedded in the outer portion of the medullary layer, arising on both side, causing well defined elevation of



Fig. 5. *Cryptonemia semiprocumbens* spec. nov. Habit of a plant.  $\times 4/5$ .

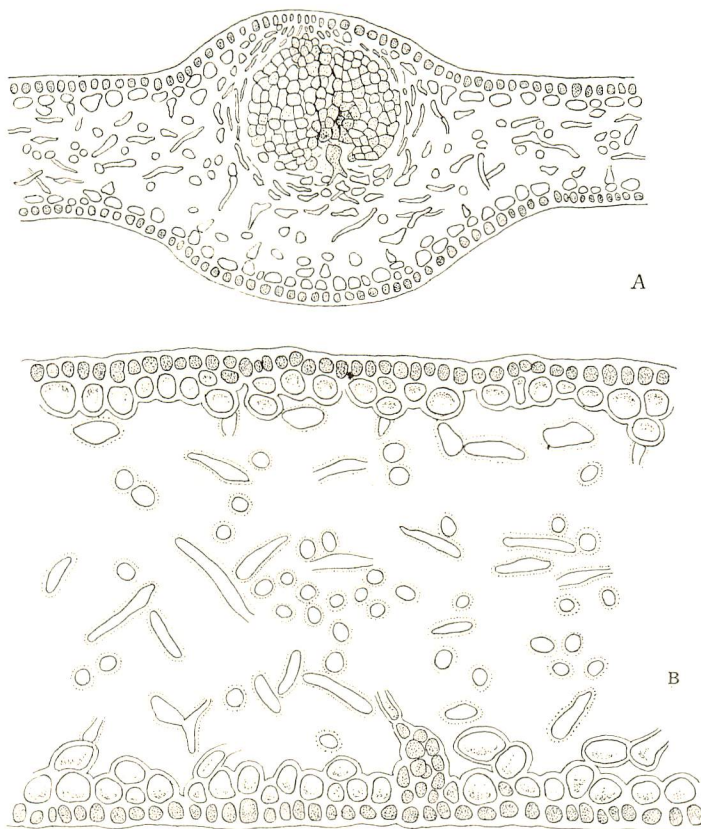


Fig. 6. *Cryptonemia semiprocumbens* spec. nov.  
A. Transverse section of a cystocarpic frond.  $\times 160$ . B. Portion of the transverse section of the blade.  $\times 160$ .

the surface, about  $200\mu$  in diam.; colour of the frond light red or reddish purple.

In general appearance, the present new species in some degree resembles *Cryptonemia umbraticola* Dawson and *C. undulata* Sonder. Yet, by the difference in the mode of ramification and the size of the frond, this is distinguishable from *C. umbraticola* Dawson. And also, this can be distinguished from *C. undulata* by the absence of the mid-rib of the blades.

The present species seems to be widely distributed in the warmer deep sea of Southern Japan.

***Cryptonemia luxurians* (Mertens) J. Agardh**

Pl. 1. B. and Text-figs. 7-8.

Spec. Alg., II (1851) p. 228; Kuetzing, Tab. Phyc., XIX (1869) t. 32, fig. a-c; De Toni, Syll. Alg., IV (1905) p. 1606; Okamura, Nippon Sorui Meii (1916) p. 112, Nippon Kaisoshi (1936) p. 557; Taylor, Mar. Alg. of the Eastern Trop. and Subtrop. Coasts of the Americas (1960) p. 428, pl. 58, fig. 3.

*Fucus luxurians* Mert., mscr.

*Euhymenia luxurians* Kg., Spec. Alg. (1849) p. 142.

Japanese name. Hirohano-kakureito (Nov.)

Habitat. Nanatuyama, Nakanoshima, Tokara Islands (May, 1957); Koniya, Amami Islands (Oct. 1959); Anbo, Yakushima (June, 1957). Growing on rock in sublittoral zone.

Distribution. Florida, Brazil; Barbados.

Frond caulescent, 5-8 cm tall, somewhat celluloid-like membranaceous or

subcartilagenous stipitate; several times subdichotomously ramified; stipes subterete, alate, continuing into broad leaf-like blades; blade irregularly linear-oblong, 2.5 cm. long and 1.5 cm. broad, and about  $40-60\mu$  in thickness, undulate at the margin, always having the conspicuous mid-rib, but gradually indistinct or absent toward the upper part of the blade; structurally showing a loose medulla of intertwined filaments of elongated cells, about  $12\mu$  in diam.; colour of the frond darkish red or reddish purple.

The writer examined several authentic specimens from the Atlantic Ocean, and it was ascertained that, in the outer appearance and anatomical



Fig. 7. *Cryptonemia luxurians* (Mert.) J. Ag.  
Habit of a plant.  $\times 2/3$ .

structure of the frond, our materials at hand seem to be quite similar to the European specimens.



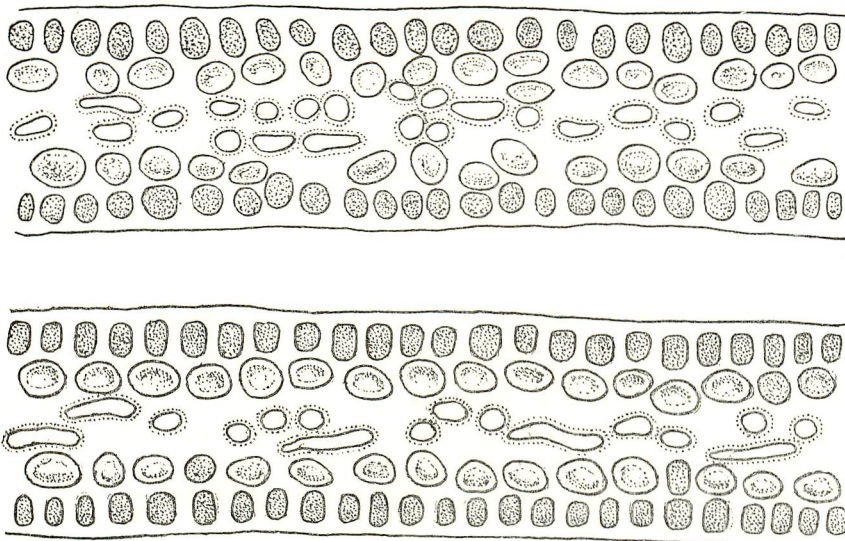


Fig. 8. *Cryptonemia luxurians* (Mer.) J. Ag.  
Two portions of the transverse sections of the blades.  $\times 350$ .

In Japan, the present species was already reported from Enoshima and Nemoto, Boshu by Dr. Okamura in 1916, yet, the writer has not had opportunity of examining Okamura's specimens. This plant seems to be distributed widely in the warmer deep sea of Southern Japan.

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## 日本南海産海藻類の研究（其四）

田 中 剛

筆者は 1957 年から、日本南海および琉球列島の深海性の海藻類の調査を行って来ているが、これらの諸地域からの採集品中には学術上興味あるものが多数あり、今回はそのうち 5 種について報告した。

カワグチミドロ： この植物は微小の *Rhizoclonium* の一種で、南方のマングローブ地帯および半鹹水の川口等にコケモドキ類と一緒に生育し、世界に広く分布している。なお、*Rhizoclonium* のやや大形のもので、オキナワネダシグサ（岡村命名）も日本南方近海に広く分布しているが、この植物の学名、*Rhizoclonium hookeri* Kg. については再検討を要すると思われる。

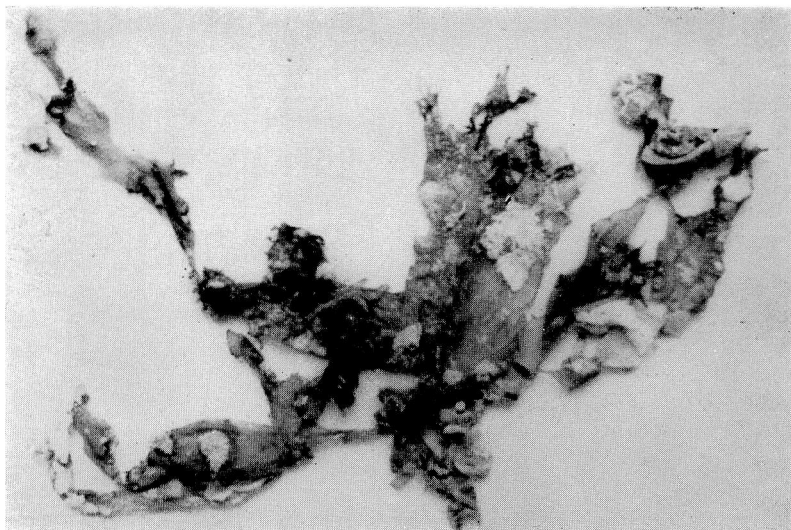
ヒメイチヨウモドキ： ヒメイチヨウにやや似たごく微小のミル科の *Geppella* 属の一新種で、藻体は単細胞の茎部と一層の面からなるやや扇状の盃状部とからなり、体に石灰質を被っていない。琉球列島、西表島、船浮の深海より採集された。

ヒメヤナギノリ： ヤナギノリ属植物中、最も微小のものの一つで、与那国島、比川海岸のサンゴ片上に生育する。

ナンカイカクレイト： 紅藻類、カクレイト目、ムカデノリ科のカクレイト属の一新種で、この藻体は半平臥性で、不規則に叉状分布をするが、葉体の先端にてしばしば他物に附着することがある。奄美大島、古仁屋の深海より採集された。

ヒロハノカクレイト： 本種はすでに岡村博士（1916）によって、房州、根本および江ノ島から報告されているが、今回はまた本邦のトカラ列島、奄美大島、屋久島等の南海から多量に採集せられ、広い分布をなすと思われる。筆者は、これらの標本の査定に当っては、歐洲産の本種の信頼出来る標本と比較研究して正確を期した。

PLATE. I



A



B

- A. *Cryptonemia semiprocumbens* Tanaka.  $\times 1$ .  
B. *Cryptonemia luxurians* (Mert.) J. Ag.  $\times 2/3$ .