

GENUS HALIMEDA FROM CAMIGUIN ISLAND, NORTHERN PHILIPPINES

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and

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This paper treats on the systematics of three *Halimeda* species collected by the senior author in November 1964 as member of the Kagoshima University - National Museum of the Philippines joint Marine Biological Expedition to Northern Luzon. The Japanese group was headed by Dr. TAKESI TANAKA, who in 1967 published a new alga species, *Avrainvillea capituliformis* also from this province.

We wish to express our thanks to Mr. HIROSHI ITONO of the same department who helped us to photograph the specimens.

TAXONOMIC TREATMENT

Halimeda bikinensis TAYLOR - as *H. bikinensis* in TAYLOR¹⁾ and HILLIS²⁾. Plants 7.5 cm tall or more(-40) from a stupose base, erect, evidently compressed sometimes loose; heavily calcified; when dry pale greenish to cream, surface dull and moderately rugose; segments 6-8mm broad, 5-6mm long with an average thickness of 1.0mm, seldom four of them arising from a subcylindrical basal-most segment. Other segments vary from discoid, subcuneate or reniform; margin undulato-entire.

Cortical layer of 2-3 utricles as a result of dichotomies in the lateral branches of the medullary filaments; outermost utricles round when viewed from above, slightly cemented but disengages when calcified, 11.4-15.2 μ in diameter, 20.9-22.8 μ long transversely; secondary utricles bear 4 utricles or more, 30.4-38.0 μ broad.

Nodal medullary filaments fusing for a short distance in 2's seldom 3-4(-5), the filaments are branched usually trichotomously below and above the point of union. The filaments(75-)135-150 μ in diameter, distance between dichotomies 1,050 μ .

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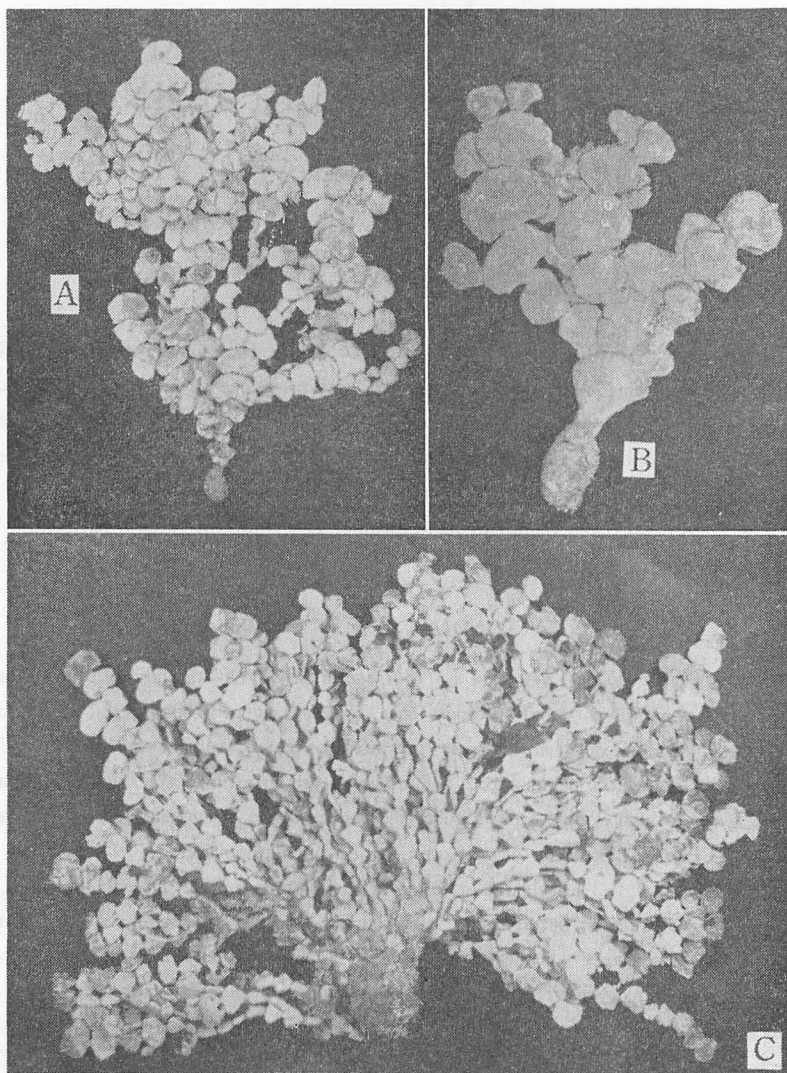


Fig. 1. A-C: Habit of the plants.

A-*Halimeda bikinensis*($\times 1.2$)

B-*H. macroloba*($\times 1.1$)

C-*H. velasquezii*($\times 0.8$)

PHILIPPINES: Luzon, Cagayan Province, camiguin Is., Cadadalman, Cordero et al, PNH 94831, 96900 (both as *H. gracilis* f. *lata*) November 1964.

Our materials are exceptionally small in gross morphology if compared with those encountered by the above authors. But we maintain that this is only a matter of age differences and individual variation which may be affected by ecological and environmental factors and therefore, to consider this as sole basis in any taxonomic claim is deemed risky. Macroscopically, the present materials appear to have most in common with *H. fragilis* and *H. gracilis* having much reduced basal segment compared to segments arising therefrom. However, this troublesome feature is easily resolved histologically. *H. gracilis* has hexagonal peripheral utricles, remains attached, nodal filaments always fusing in 2's less often in 3's. In *H. fragilis*, peripheral utricles are rounded separating on decalcification, nodal filaments ordinarily unfused but may be observed slightly adhering. In the present plant, peripheral utricles are round in surface view, remains slightly cemented or are separated only when pressed, nodal filaments occasionally separate but when "fused" it is either in 2's or 3's. Furthermore, in *H. fragilis* the secondary utricles are usually not constricted at their origin while this is not true in *H. bikinensis*. Also, in *H. gracilis* the secondary utricles may support 6-18 peripheral utricles (HILLIS²⁾), while the present plant bears 4 usually.

***Halimeda macroloba* DECAISNE**-In HARVEY³⁾, OKAMURA⁴⁾, and YAMADA and TANAKA⁵⁾ as *H. macrolaba*. Fronds 6.5-9cm(-23), erect, arising from a 1.5 cm long or morewell-developed sandy-muddy coated holdfast; moderately calcified; whitish to greenish on drying, dull; segments to 19 mm broad, 12mm tall, 1.0mm thick, vary from cuneate, subdiscoidal or reniform rather scantily branched; basal-most segments fan-shaped, undulato-compressed or semi-trapezoidal bearing anumber of segments commonly di-trichotomous to polychotomuos; margin varying from entire to slightly lobed depending on the position of the segment.

Cortex usually bearing 3-4 layers of utricles; external ones easily parted upon decalcification, very rarely adhered, in surface diameter from 30.4-34.2 μ to 53.2-70.8 μ long tansversely, 2-4 per secondary utricles, the latter 22.8-26.6 μ broad; tertiary utricles to 38.0-45.6 μ broad; fourth utricular layer to 64.6 μ broad; all of them showing constriction at point of origin and pigmented.

Nodal medullary filaments heavily pigmented, fused in a bunch like manner, each filament communicating by roundish pores. Filaments 75-90 μ in diameter.

PHILIPPINES: Luzon, Cagayan Province, Camiguin Is, Cadadalman, Cordero et al, PNH 96898, 94830(both as *H. discoidea*), November 20, 1964.

Because of the size and age of this specimen, initially the senior author was vent on

assigning this as *H. discoidea*. Externally, this plant possesses a well-developed robust holdfast, fan-shaped basal-most segment and predominantly broad segments all over. These features are not true in *H. discoidea* having small holdfast region, cuneato-cylindrical basal segment and absence of not too large segments. Histologically, in deep contrast as regard number of utricular layers being restricted to 2-3 in *H. discoidea*, peripheral utricles remaining attached even after decalcification and nodal medullary filaments uniting in two's or three's commonly.

This species appear to be well distributed in this part of the Pacific having been reported by OKAMURA⁴⁾ from Ryukyu Islands, YAMADA and TANAKA⁵⁾ from Yonakuni, Southern Japan.

Halimeda velasquezii TAYLOR-In. Taylor⁶⁾. Plants reaching a height of 7 cm but usually less, arising from a conspicuous holdfast, of relatively heavy calcification, greenish to cream on drying, surface somewhat glossy, branching generally in one plane, basal-most segments decidedly small, compressed; other segments oval to reniform; margin more or less even and slightly robed, to 5mm long, 4mm broad, averaging 0.5 mm in thickness.

Cortical layer of two pigmented utricles; in surface view round or with round angles when not pressed, not constricted at the outer forks, 19.0-22.8 μ in diameter, 30.4-45.6 μ long; secondary utricles bear an average of 4 utricles, 22.8-41.8 μ in breadth and are lightly constricted at the point of dichotomies.

Nodal medullary filaments briefly united in pairs, branching di-trichotomously above and below the fused area. Filaments to 90 μ in diameter.

PHILIPPINES: Luzon, Cagayan Province, Camiguin Is., Cadadalmam, Cordero et al, PNH 94832, November 20, 1964.

The author agrees with TAYLOR⁶⁾ ".....at first sight these plants would pass as small specimens of *H. tuna*....." However, such external similarities are easily remedied by dealing on its histological differences. This could also be mistaken for a young *H. bikinensis* macroscopically, but differs on account of its small sized segments and number of fused medullary filaments.

On the one hand, similar to the erstwhile *H. opuntia* LAMX. var. *intermedia* YAMADA externally on the presence of faint midrib, size of segments and of the plant. But internally, this Ryukyuan material exhibits incomplete fusion of nodal medullary filaments, sometimes in pairs or three's or even four's though less, YAMADA⁷⁾.

We suspect highly that the specimen herein referred to is a new variety considering the nature of holdfast. TAYLOR²⁾ said that, ".....from a very small stupose base,....."

which is not true in the present material.

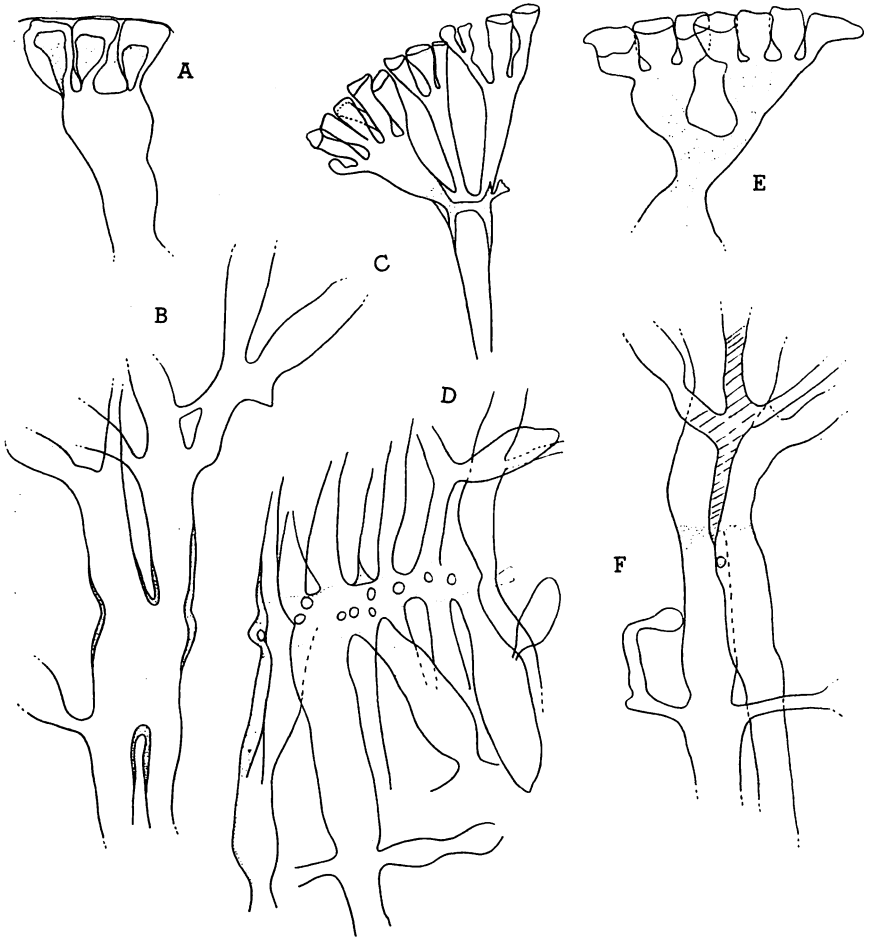


Fig. 2. A-B: *Halimeda velasquezii* TAYLOR
 A-Utricles in transverse section. ($\times 165$)
 B-Nodal medullary filaments. ($\times 28$)
 C-D: *Halimeda macrolaba* DECAISNE
 C-Utricles in transverse section. ($\times 28$)
 D-Nodal medullary filaments. ($\times 28$)
 E-F: *Halimeda bikinensis* TAYLOR
 E-Utricles in transverse section. ($\times 165$)
 F-Nodal medullary filaments. ($\times 28$)

SUMMARY

Three species of *Halimeda* are presented in this paper. They are *Halimeda bikinensis* TAYLOR compared with *H. fragilis* and *H. gracilis*; *macroloba* DECAISNE compared with *H. discoidea*; and *H. velasquezii* compared with *H. tuna*, *H. bikinensis*, and *H. opuntia* var. *intermedia*. *H. bikinensis* is herein recorded in the Philippines for the first time while the predominantly large *H. macroloba* is reported initially from Northern Luzon. *H. velasquezii* was found near the type locality.

KEY TO THE SPECIES

1. Thalli usually to 7.5 cm tall or may reach 40 cm, calcification heavy; margin undulato-entire; utricles round in surface view; nodal filament fusing in 2's for a short distance, branched trichotomously below and above point of union (75-)135-150 μ in diameter.....*H. bikinensis*
1. Thalli usually 7 cm tall more or less, calcification moderate to heavy; margin even to slightly lobed; utricles angled or with rounded angles; nodal filament may fuse for a short distance or unite in bunch-like manner; may or may not be branched below and above point of union, 75-90 μ in diameter.....2
2. Plant reaching 7-23 cm tall, erect, arising from a well developed sandy-muddy coated holdfast; segments variously shaped 19 mm broad, 12 mm tall, 1.0 mm thick, cuneate, subdiscoidal or reniform; not robed; nodal filaments heavily pigmented uniting in bunch-like manner.....*H. macroloba*
2. Plant small hardly reaching 7 cm ordinarily less in height, straggling, arising from a conspicuous holdfast; segments oval to reniform, slightly robed, 5 mm long, 4 mm broad, averaging 0.5 mm in thickness; nodal filaments slightly pigmented, uniting in pairs.....*H. velasquezii*

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新著紹介

Contributions to the Systematics of Benthic Marine Algae of the North Pacific. I.A. Abbott と黒木宗尚共同編集, 279頁。

日本藻類学会出版, 昭和47年。丸善書店販売, 2,500円

ここにいう North Pacific とは日本沿岸, カリフォルニア沿岸を含めた太平洋海域を指しており, この海域に産する海藻を材料とした諸研究は太平洋東西両沿岸において近年著しく進歩してきた。分けても日本におけるアマノリ属とコンブ属の増殖技術の発達は世界の注目を集めている。しかし一方, これら諸研究の基礎となる分類学的記載において, いまだ同じ海藻に別々の学名が附されたままの場合の多いことも事実である。そこで太平洋東西両沿岸の主要国である日米両国における斯方面の専門家が一堂に会して北部太平洋産の海藻の分類, 生活史, 培養, 生態, 及び増殖上の諸問題について大いに討論することを目的として計画されたシンポジウムが, 昭和46年8月の国際海藻学会議の直後に札幌で開催されたのである。このシンポジウムでのべられた講演要稿と各講演毎の討論のやりとりのすべてがアートペーパー279頁の美本中に盛られている。

シンポジウムの参加者は米国側9名日本側20名の他にカナダ2名, 台湾1名, 韓国1名が加わっている。講演数は日本側から13題米側から7題である。その内容は A. 生活史 B. 微細構造, C. 化学, D. 培養と発生 E. 分類, F. 生態に分れている。

講演者はいずれも藻類学研究の最先端にあって, それぞれの専門分野における現況の紹介とともに演者自身の最近の研究結果をのべたものであり, 藻類学に興味をいだく同学の士にとって極めて重要な考察資料であり, ここに本学会会員諸兄の座右に1冊備えられんことをおすすめする次第です。丸善書店に発注すればすぐに届けられます。

販売価格 2,500円。

本学会会長 廣 瀬 弘 幸