

Roy T. TSUDA* and William J. TOBIAS**: Marine Benthic Algae
from the Northern Mariana Islands, Cyanophyta and Rhodophyta

Introduction

This report is a continuation of the account of the marine benthic algae collected from the northern Mariana Islands¹⁾. The collecting stations are similar to those previously reported for species within the Divisions Chlorophyta and Phaeophyta. All specimens listed here are deposited in the Algal Herbarium of the University of Guam Marine Laboratory.

Algal Listing

Division Cyanophyta

The classifications of Drouet^{2), 3)} are used in the following species determinations.

Spirulina subsalsa Gomont—Pagan: RT 4924 (mixed with *Schizothrix calcicola*).

Microcoleus lyngbyaceus (Kütz.) Crouan—Anatahan: RT 4826, RT 4841, WJT 2; Guguan: WJT 29, WJT 31, WJT 53, RT 5038, RT 5045; Alamagan: WJT 93; Pagan: RT 4901, WJT 144, RT 4957; Agrihan: WJT 177, WJT 178; Asuncion: WJT 207, RT 4982, RT 4984; Maug: RT 4854, RT 4874, WJT 231, RT 5023; Uracas: WJT 279.

Schizothrix calcicola (Ag.) Gomont—Guguan: WJT 30; Pagan: RT 4921, RT 4926, WJT 143, RT 4956; Agrihan: RT 4791; Maug: RT 4935, WJT 229, RT 5005; Uracas: WJT 280.

Schizothrix mexicana Gomont—Anatahan: RT 4835; Guguan: WJT 28, WJT 70, RT 5033; Pagan: WJT 119, WJT 146, WJT 147, RT 4955; Asuncion: RT 4983; Maug: RT 4883, RT 4936, WJT 233, RT 4994, RT 5001; Uracas: WJT 300.

Hormothamnion enteromorphoides Bornet & Flahault—Pagan: WJT 120.

Calothrix crustacea Schousboe & Thuret—Pagan: RT 4903; Maug: RT 4997.

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Division Rhodophyta

- Asparagopsis taxiformis* (Delile) Collins & Hervey—Maug: RT 4948, WJT 266.
- Actinotrichia fragilis* (Forsskal) Boerg.—Maug: RT 4850, RT 4939, RT 5008.
- Galaxaura filamentosa* Chou—Anatahan: RT 4816; Guguan: WJT 48; Agrihan: WJT 195; Maug: RT 4857, RT 4941.
- Galaxaura veprecula* Kjellman—Guguan: RT 5059.
- Gelidium crinale* (Turn.) Lamx.—Anatahan: WJT 24.
- Gelidium pusillum* (Stackh.) Le Jolis—Anatahan: WJT 23; Pagan: RT 4918; Maug: RT 4860.
- Wurdemannia miniata* (Lmk. & DC) Feldmann & Hamel—Anatahan: WJT 20; Maug: RT 4868, RT 5010.
- Amphiroa fragilissima* (L.) Lamx.—Anatahan: WJT 15; Guguan: RT 5035, RT 5062; Pagan: WJT 141, RT 4952, RT 4973; Maug: WJT 260, RT 5003.
- Jania capillacea* Harvey—Anatahan: RT 4846, WJT 17a; Guguan: WJT 81, RT 5028, RT 5053; Alamagan: WJT 115; Pagan: RT 4915, RT 4925, WJT 136, WJT 163, WJT 166, WJT 173, RT 4961; Agrihan: RT 4805, WJT 198; Maug: WJT 267, WJT 272, RT 4998, RT 5021.
- Jania decussato-dichotoma* (Yendo) Yendo—Agrihan: WJT 199; Maug: WJT 278.
- Jania tenella* Kütz.—Anatahan: RT 4819, WJT 17b; Guguan: WJT 38, WJT 68; Pagan: WJT 142; Asuncion: WJT 218; Maug: RT 4858.
- Desmia hornemanni* Lyngbye—Anatahan: RT 4843; Guguan: WJT 65; Pagan: WJT 160; Agrihan: RT 4795.
- Gelidiopsis intricata* (Ag.) Vickers—Anatahan: WJT 21b, WJT 22; Guguan: RT 5054; Maug: WJT 263, RT 4995.
- Gracilaria salicornia* (Mert.) Grev.—Anatahan: RT 4886.
- Dermonema frappieri* (Mont. & Millard) Boerg.—Anatahan: WJT 27.
- Hypnea pannosa* J. Ag.—Guguan: WJT 39; Pagan: RT 4975.
- Botryocladia skottsbergii* (Boerg.) Levring—Pagan: WJT 137; Maug: RT 4875.
- Champia parvula* (C. Ag.) Harvey—Pagan: RT 4972 (epiphytic on *Padina tenuis*).
- Centroceras apiculatum* Yamada—Pagan: RT 4909 (epiphytic on *Gelidium pusillum*).
- Centroceras clavulatum* (C. Ag.) Montagne—Pagan: WJT 121, WJT 138 (epiphytic on *Jania capillacea*), RT 4974.
- Ceramium* cf. *mazatlanense* Dawson—Maug: RT 4996.

- Dasypbila plumarioides* Yendo—Pagan: RT 4920.
- Polysiphonia saccorhiza* (Collins & Hervey) Hollenberg—Asuncion: WJT 224 (epiphytic on *Lobophora variegata*).
- Polysiphonia sphaerocarpa* Boerg.—Pagan: WJT 139.
- Tolypiocladia glomerulata* (Ag.) Schmitz—Alamagan: WJT 111; Pagan: WJT 170, RT 4958; Agrihan: WJT 193; Maug: WJT 270, RT 4992.
- Wrangelia anastomosans* Yamada—Maug: RT 5000.
- Wrangelia penicillata* C. Ag.—Guguan: WJT 64.
- Hypoglossum attenuatum* Gardner—Maug: WJT 257.
- Leveillea jungermannioides* (Mart. & Her.) Harvey—Pagan: RT 4900.
- Chondria polyrhiza* Collins & Hervey—Anatahan: WJT 21a.
- Laurencia succisa* Cribb—Maug: RT 5011.
- Laurencia surculigera* Tseng—Pagan: RT 4968.
- Laurencia tropica* Yamada—Anatahan: WJT 19; Pagan: RT 4889, WJT 140, RT 4971; Arihan: WJT 197; Maug: RT 5015.

Discussion

The addition of six species of Cyanophyta and 33 species of Rhodophyta increases the total to 90 species of marine benthic algae now known from the northern Mariana Islands. This total represents slightly less than 50 percent of the species known from Guam alone. *Galaxaura veprecula*, *Dermonema frappieri*, *Polysiphonia saccorhiza*, *Laurencia succisa* and *Laurencia surculigera* represent new records for Micronesia.

In general, the marine benthic algae of the northern Mariana Islands are very similar to the algae found on Guam. Quantitative studies, however, will most likely reveal differences in algal associations on the volcanic substratum of the northern Marianas; the southern Marianas has predominantly a limestone substratum.

The one distinct characteristic of the marine flora of the northern Marianas is the absence of seagrasses. The lack of the larger seagrass species, e.g., *Enhalus acoroides*, may be attributed to the absence of shallow fringing reefs and estuaries. Perhaps, further collections will include *Halophila* which is known to inhabit deeper waters.

References

- 1) TSUDA, R. T. and TOBIAS, W. J. (1977) Marine benthic algae from the Northern Mariana Islands, Chlorophyta and Phaeophyta. *Bull. Jap. Soc. Phycol.* **25** (2): 67-72.
- 2) DROUET, F. (1968) Revision of the classification of the Oscillatoriaceae. *Acad. Nat. Sci., Phila. Monog.* **15**: 1-370.
- 3) ————— (1973) Revision of the Nostocaceae with cylindrical trichomes. Hafner Press, N. Y. 1-292.

□ I. A. ABBOTT & G. J. HOLLENBERG: **Marine Algae of California.** xii-827 pp., 701 figs., 5 maps, Stanford Univ. Press, Stanford, California, 1976. 22.30 US \$ (邦貨にして約8,300円)

世界で海藻の生育の最も豊富な地域はオーストラリア・ニュージーランド沿岸、日本沿岸、南アフリカ沿岸、それにカリフォルニア沿岸であるという(本書 p. 7)。上記4地域のうち、わが日本近海海藻については、故岡村金太郎博士の努力で、既に「日本海藻誌(1936)」が完成している。これに対し、カリフォルニア沿岸については SETCHELL, W. A. & GARDNER, N. L.: *The marine algae of the Pacific coast of North America.* 1. Myxophyceae (1919); 2. Chlorophyceae (1920); 3. Melanophyceae (1925) や SMITH, G. M.: *Marine algae of the Monterey Peninsula, California.* (1944); *Supplement* (1969) などの著書があるが、SETCHELL & GARDNER には海藻の大部を占める紅藻類について纏ったものがなく、SMITH の著書は対象とする地域がカリフォルニア州中部に位置するモンレイ半島付近に限られている。今回出版された ABBOTT & HOLLENBERG による本書はカリフォルニア海藻誌とも言うべきもので、採録された種類数は669に及び、この数は1976年までにカリフォルニア沿岸で生育することが記録された海藻の全種類数の約98%に相当する。それぞれ目、科、属、種等には検索表がつけられ、各種類には同定を容易にするため全形または内部構造を示す図が計701添えられている。また必要に応じて生活史についての概略も記述され、引用文献及び用語表の採録用語ともに豊富であり、便利である。

著者の ABBOTT 博士と HOLLENBERG 博士はカリフォルニア大学・パークレイにおいて PAPPENFUSS 教授に、スタンフォード大学において SMITH 教授にそれぞれ藻学の教育を受けた後、共にカリフォルニア州内に職を得、その半生をカリフォルニア沿岸の海藻の分類学的研究に専念してきた研究者である。両博士はこの本を書くのに10年の歳月を費したと言うが、上に述べた経緯を考えると、本書は両博士の終生の労作と言って差支えない。カリフォルニア沿岸の海藻は種類、植生ともに日本の太平洋沿岸、とくに関東以北の沿岸のそれと共通する点が多い。(筑波大学生物科学系 千原光雄)