

**CHECKLIST AND BIBLIOGRAPHY  
OF THE MARINE BENTHIC ALGAE  
FROM THE MARSHALL ISLANDS**

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**UNIVERSITY OF GUAM MARINE LABORATORY**

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of the Marine Benthic Algae  
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**By**

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## TABLE OF CONTENTS

	<b>Page</b>
<b>INTRODUCTION</b>	<b>1</b>
<b>SPECIES AND REFERENCES</b>	<b>3</b>
<b>Division Cyanophyta</b>	<b>3</b>
<b>Class Cyanophyceae</b>	
<b>Order Chroococcales</b>	<b>3</b>
Family Entophysalidaceae	
Family Microcystaceae	
<b>Order Oscillatoriales</b>	<b>4</b>
Family Oscillatoriaceae	
Family Phormidiaceae	
Family Pseudanabaenaceae	
Family Schizothrichaceae	
<b>Order Nostocales</b>	<b>6</b>
Family Microchaetaceae	
Family Nostocaceae	
Family Rivulariaceae	
Family Scytonemataceae	
<b>Order Stigonematales</b>	<b>7</b>
Family Mastigocladaceae	
Family Nostochopsidaceae	
<b>Division Chlorophyta</b>	<b>7</b>
<b>Class Chlorophyceae</b>	
<b>Order Ctenocladales</b>	<b>7</b>
Family Ulvellaceae	
<b>Order Ulvales</b>	<b>7</b>
Family Ulvaceae	

**TABLE OF CONTENTS**  
(Continued)

	<b>Page</b>
<b>Order Cladophorales</b>	<b>8</b>
Family Anadyomenaceae	
Family Cladophoraceae	
Family Siphonocladaceae	
Family Valoniaceae	
<b>Order Bryopsidales</b>	<b>10</b>
Family Bryopsidaceae	
Family Caulerpaceae	
Family Codiaceae	
Family Halimedaceae	
Family Ostreobiaceae	
Family Udoteaceae	
<b>Order Dasycladales</b>	<b>15</b>
Family Dasycladaceae	
Family Polyphysaceae	
<b>Division Phaeophyta</b>	<b>15</b>
<b>Class Phaeophyceae</b>	
<b>Order Ectocarpales</b>	<b>15</b>
Family Ectocarpaceae	
Family Ralfsiaceae	
<b>Order Sphacelariales</b>	<b>16</b>
Family Sphacelariaceae	
<b>Order Dictyotales</b>	<b>16</b>
Family Dictyotaceae	
<b>Order Scytosiphonales</b>	<b>17</b>
Family Chnoosporaceae	
Family Scytosiphonaceae	
<b>Order Fucales</b>	<b>18</b>
Family Sargassaceae	

**TABLE OF CONTENTS**  
(Continued)

	<b>Page</b>
<b>Division Rhodophyta</b>	<b>18</b>
<b>Class Rhodophyceae</b>	
<b>Subclass Bangiophycidae</b>	<b>18</b>
<b>Order Porphyridiales</b>	<b>18</b>
Family Porphyridiaceae	
<b>Order Erythropeltidales</b>	<b>18</b>
Family Erythrotrichiaceae	
<b>Subclass Florideophycidae</b>	<b>18</b>
<b>Order Acrochaetiales</b>	<b>18</b>
Family Acrochaetiaceae	
<b>Order Nemaliales</b>	<b>19</b>
Family Galaxauraceae	
Family Liagoraceae	
<b>Order Gelidiales</b>	<b>19</b>
Family Gelidiaceae	
Family Gelidiellaceae	
Family Wurdemanniaceae	
<b>Order Bonnemaisoniales</b>	<b>20</b>
Family Bonnemaisoniaceae	
<b>Order Cryptonemiales</b>	<b>20</b>
Family Halymeniaceae	
Family Peyssonneliaceae	
<b>Order Hildenbrandiales</b>	<b>21</b>
Family Hildenbrandiaceae	
<b>Order Corallinales</b>	<b>21</b>
Family Corallinaceae	

**TABLE OF CONTENTS**  
**(Continued)**

	<b>Page</b>
<b>Order Gigartinales</b>	<b>22</b>
Family Dicranemataceae	
Family Hypneaceae	
<b>Order Rhodymeniales</b>	<b>22</b>
Family Champiaceae	
Family Lomentariaceae	
Family Rhodymeniaceae	
<b>Order Ceramiales</b>	<b>23</b>
Family Ceramiaceae	
Family Dasyaceae	
Family Delesseriaceae	
Family Rhodomelaceae	
<b>DISCUSSION</b>	<b>27</b>
<b>REFERENCES CITED</b>	<b>29</b>

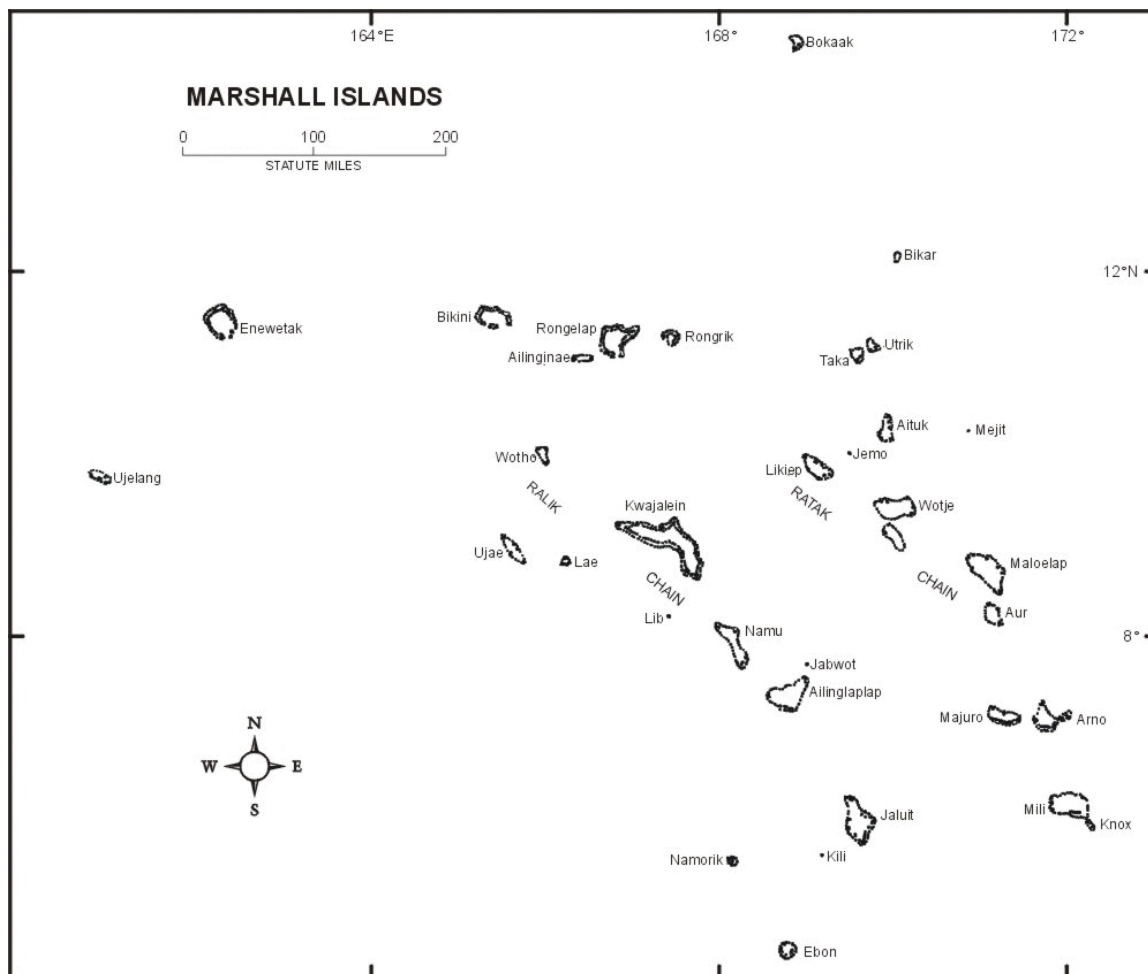
## INTRODUCTION

The checklist of marine benthic algae from the atolls within the Republic of the Marshall Islands (Figure 1) is based on the compilation from past references cited in Tsuda and Wray (1977) and Tsuda (1981), the compilation of Enewetak Atoll algae (Tsuda, 1987) and subsequent phycological studies conducted within the Marshall Islands. The classification system follows Silva et al. (1996), and synonymies are according to Silva et al. (1987) and Silva et al. (1996). New species based on Types from the Marshall Islands are designated in boldface.

Past references reveal that marine benthic algae have been reported from 17 of the 28 atolls (i.e., low coral islets with lagoon and barrier reefs) within the Ratak Chain and Ralik Chain which comprise the Republic of the Marshall Islands. The names of the 17 atolls (Motteler, 1986) are as follows - Ailuk, Arno, Bikar, Bokaak (Pokak, Taongi), Likiep, Majuro, and Utrik (Utirik) in the Ratak Chain, and Bikini, Enewetak (Eniwetok), Jaluit, Kwajalein, Lae, Rongelap, Rongrik (Rongerik), Ujae, Ujelang, and Wotho in the Ralik Chain. Algal records are delineated with their respective atolls which show collection efforts within the various atolls and islands of the Marshall Islands.

The studies on the marine benthic algae by Taylor (1950a, 1950b) from Bikini, Enewetak, Rongelap and Rongrik, by Dawson (1956) from the southern atolls of Arno, Jaluit, Majuro and Kwajalein, and by Dawson (1957) from Enewetak represent the pioneer taxonomic studies on marine benthic algae for the Micronesian region. Taylor (1966) also included taxonomic notes on selected marine algae from atolls within the Marshall Islands. Other taxonomic studies targeted selected genera and families of marine benthic algae which included species from the Marshall Islands, i.e., *Halimeda* (Hillis, 1959; Moul, 1964; Colinvaux, 1968; Hillis-Colinvaux, 1980), *Udotea* (Moul, 1964), *Malaconema* (Hollenberg, 1963), *Turbinaria* (Taylor, 1964), *Tydemanina* (Gilmartin, 1966), Family Rhodomelaceae and Delesseriaceae (Hollenberg, 1967a, 1967b, 1968d), *Polysiphonia* (Hollenberg, 1968a, 1968b), *Herposiphonia* (Hollenberg, 1968c), *Lophosiphonia* (Hollenberg, 1968d), *Caulerpa* (Taylor, 1977; Calvert et al., 1976), *Rhipilia* (Gilbert, 1978) and *Avrainvillea* (Olsen-Stojkovich, 1985).

The presence of the Mid-Pacific Marine Laboratory (formerly the Eniwetok Marine Biological Laboratory) on Enewetak Atoll provided logistic support for the taxonomic study by Dawson (1957) and several subsequent ecological and physiological studies on coral reef biota in an atoll environment. Odum and Odum (1955) and Johannes et al. (1972) conducted extensive studies on coral reef metabolism on Enewetak Atoll. Other ecological studies on Enewetak include the distribution of deep-water lagoonal marine algae (Gilmartin, 1960), food habits of fish (Bakus, 1967), crustose alga on live sea urchin spines (Lawrence and Dawes, 1969), bacterial infestation in marine algae (Johnson et al., 1971), primary productivity of reef-building algae (Marsh, 1970), organic carbon production in reef systems (Smith and Marsh, 1973), detritus (Gerber and Marshall, 1974), nitrogen cycle in coral reefs (Webb et al., 1975; Webb and Wiebe, 1975; Wiebe, 1975; Wiebe et al., 1975), and the distribution of *Halimeda* and *Tydemanina* in a lagoonal environment (Hillis-Colinvaux, 1977, 1980).



**Figure 1. Map of the Republic of the Marshall Islands (Adapted from Motteler, 1986).**



Nuclear testing in the Marshall Islands prompted studies on selected marine algal genera mentioned in technical reports of the U.S. Atomic Energy Commission (Palumbo, 1950, 1955, 1959) and a subsequent publication (Lowman and Palumbo, 1962). Marine algae were quantified in two technical reports of the University of Guam Marine Laboratory applicable to Ebeye, Kwajalein Atoll (Amesbury et al., 1975a) and Darrit-Uliga-Dalap area, Majuro Atoll (Amesbury et al., 1975b). Although few algal voucher specimens are available from these two studies, the technical reports provide preliminary quantitative information on the marine benthic algae within each of the study sites.

Only one species of seagrass, i.e., *Thalassia hemprichii* (Ehrenberg) Ascherson, has been reported from the Marshall Islands from Ujelang (Fosberg, 1955, 1976; den Hartog, 1970; Tsuda et al. 1977), Ailinglaplap (Ailinglapalap) (Fosberg, 1976; Tsuda et al., 1977) and Jaluit (Tsuda et al., 1977).

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## SPECIES AND REFERENCES

### Division CYANOPHYTA (Blue-Green Algae/Cyanobacteria)

#### Class Cyanophyceae

#### Order Chroococcales

#### Family Entophysalidaceae

- Entophysalis conferta* (Kützing) Drouet & Daily. ENEWETAK: Dawson (1957).  
*Entophysalis deusta* (Meneghini) Drouet & Daily. ENEWETAK: Drouet and Daily (1956), Dawson (1957). MAJURO: Amesbury et al. (1975b).  
*Entophysalis granulosa* Kützing. BIKINI: Taylor (1950a). ENEWETAK: Taylor (1950a). RONGELAP: Taylor (1950a).

#### Family Microcystaceae

- Aplanothece stagnina* (Sprengel) A. Braun [= *Coccochloris stagnina* Sprengel]. ENEWETAK: Dawson (1957) as *Coccochloris stagnina*.  
*Gloeocapsa alpicola* (Lyngbye) Bornet. BIKINI: Taylor (1950a). RONGELAP: Taylor (1950a).  
*Gloeocapsa turgida* (Kützing) Hollerbach. ENEWETAK: Taylor (1950a).  
*Gomphosphaeria aponina* Kützing. ENEWETAK: Taylor (1950a), Drouet and Daily (1956), Dawson (1957).

*Microcystis dimidiata* (Kützing) P. Silva [= *Anacystis dimidiata* (Kützing) Drouet & Daily]. BIKINI: Drouet and Daily (1956) as *Anacystis dimidiata*. ENEWETAK: Dawson (1957) as *A. dimidiata*.

## Order Oscillatoriales

### Family Oscillatoriaceae

*Blennothrix cantharidosma* (Montagne) Anagnostidis & Komárek [= *Hydrocoleum cantharidosmum* (Montagne) Gomont]. ENEWETAK: Taylor (1950a) and Dawson (1957) as *Hydrocoleum cantharidosmum*.

*Blennothrix lyngbyacea* (Kützing) Anagnostidis & Komárek [= *Hydrocoleum lyngbyaceum* Kützing]. ENEWETAK: Dawson (1957) as *Hydrocoleum lyngbyaceum*. MAJURO: Johnson et al. (1971) as *H. lyngbyaceum*.

*Lyngbya aestuarii* (Mertens) Liebman. BIKINI: Taylor (1950a). ENEWETAK: Dawson (1957).

*Lyngbya confervoides* C. Agardh. ENEWETAK: Taylor (1950a), Dawson (1957).

*Lyngbya lutea* (C. Agardh) Areschong [= *Oscillatoria lutea* C. Agardh]. JALUIT: Drouet (1968) as *Oscillatoria lutea*.

*Lyngbya majuscula* (Dillwyn) Harvey. BIKINI: Taylor (1950a). ENEWETAK: Dawson (1957), Gilmartin (1960). KWAJALEIN: Amesbury et al. (1975a) as *Microcoleus lyngbyaceus* (Kützing) P. Crouan & H. Crouan. MAJURO: Johnson et al. (1971), Amesbury et al. (1975b) as *M. lyngbyaceus*.

*Lyngbya meneghiniana* (Kützing) Falkenberg. ENEWETAK: Taylor (1950a), Dawson (1957).

*Lyngbya penicilliformis* P. Silva [= *Phormidium penicillatum* Gomont]. BIKINI: Taylor (1950a) as *Phormidium penicillatum*. ENEWETAK: Dawson (1957) as *P. penicillatum*.

*Lyngbya polychroa* (Meneghini) Rabenhorst [= *Lyngbya sordida* Gomont]. BIKINI: Taylor (1950a) as *Lyngbya sordida*. ENEWETAK: Dawson (1957) and Gilmartin (1960) as *L. sordida*. RONGRIK: Taylor (1950a) as *L. sordida*.

*Lyngbya semiplena* (C. Agardh) J. Agardh. ENEWETAK: Dawson (1957).

### Family Phormidiaceae

*Arthrospira major* (Kützing) Crow [= *Spirulina major* Kützing]. ENEWETAK: Dawson (1957) as *Spirulina major*.

*Hydrocoleum coccineum* Gomont. ENEWETAK: Dawson (1957). RONGELAP: Taylor (1950a). RONGRIK: Taylor (1950a).

*Hydrocoleum comoides* (Harvey) Gomont. BIKINI: Taylor (1950a). ENEWETAK: Dawson (1957), Gilmartin (1960).

*Hydrocoleum confluens* (Setchell & Gardner) Drouet. BIKINI: Taylor (1950a). RONGRIK: Taylor (1950a).

*Hydrocoleum glutinosum* (C. Agardh) Gomont. ENEWETAK: Dawson (1957), Gilmartin (1960).

*Microcoleus acutissimus* Gardner. BIKINI: Taylor (1950a).

*Phormidium nigroviride* (Thwaites) Anagnostidis & Komàrek [= *Oscillatoria nigroviridis* Thwaites in Harvey]. ENEWETAK: Dawson (1957) as *Oscillatoria nigroviridis*.

*Phormidium submembranacea* (Ardissonne & Strafforello) Gomont [= *Oscillatoria submembranacea* Ardissonne & Strafforello]. ENEWETAK: Drouet (1968) as *Oscillatoria submembranacea*.

*Porphyrosiphon fuscus* Gomont. BIKINI: Taylor (1950a). ENEWETAK: Taylor (1950a).

*Sirocoleum guyanense* Kützing ex Gomont. RONGRIK: Taylor (1950a).

*Spirulina subsalsa* Oersted. ENEWETAK: Dawson (1957), Drouet (1968). KWAJALEIN: Drouet (1968).

*Spirulina tenerrima* Kützing. ENEWETAK: Dawson (1957).

*Symploca hydroides* (Harvey) Kützing. ENEWETAK: Dawson (1957), Gilmartin (1960).

*Symploca laeteviridis* Gomont. BIKINI: Taylor (1950a). ENEWETAK: Dawson (1957), Gilmartin (1960).

*Symploca muscorum* (C. Agardh) Gomont. BIKINI: Taylor (1950a).

#### Family Pseudanabaenaceae

*Leibleinia gracilis* Meneghini [= *Lyngbya gracilis* (Meneghini) Rabenhorst]. ENEWETAK: Taylor (1950a) and Dawson (1957) as *Lyngbya gracilis*.

*Spirocoleus crosbyanus* (Tilden) P. Silva [= *Phormidium crosbyanum* Tilden]. ENEWETAK: Taylor (1950a) and Dawson (1957) as *Phormidium crosbyanum*.

*Spirocoleus terebrans* (Bornet & Flahault) P. Silva [= *Plectonema terebrans* Bornet & Flahault]. BIKINI: Emery et al. (1954) as *Plectonema terebrans*. ENEWETAK: Dawson (1957) as *P. terebrans*.

*Spirocoleus* sp. ? [*Plectonema golenkinianum* Gomont]. BIKINI: Taylor (1950a).

*Spirocoleus* sp. ? [*Plectonema nostocorum* Bornet ex Gomont]. ENEWETAK: Taylor (1950a), Dawson (1957). RONGELAP: Taylor (1950a).

#### Family Schizothrichaceae

*Schizothrix arenaria* (Berkeley) Gomont. ARNO: Drouet (1968). MAJURO: Drouet (1968).

*Schizothrix calcicola* (C. Agardh) Gomont. ARNO: Drouet (1968). BIKINI: Taylor (1950a), Drouet (1968). ENEWETAK: Bakus (1967), Drouet (1968), Johannes et al. (1972), Webb and Wiebe (1975). JALUIT: Drouet (1968). KWAJALEIN: Drouet (1968), Amesbury et al. (1975a). LAE: Drouet (1968). MAJURO: Amesbury et al. (1975b). RONGELAP: Drouet (1968). RONGRIK: Drouet (1968). UTRIK: Drouet (1968).

*Schizothrix creswellii* (Harvey) Harvey. BIKINI: Taylor (1950a). RONGRIK: Taylor (1950a).

- Schizothrix lacustris* A. Braun ex Gomont. BIKINI: Taylor (1950a). ENEWETAK: Dawson (1957).
- Schizothrix longiarticulata* Gardner. BIKINI: Taylor (1950a). RONGELAP: Taylor (1950a).
- Schizothrix mexicana* Gomont. ARNO: Drouet (1968). BIKINI: Drouet (1968). ENEWETAK: Drouet (1968). Drouet (1968). KWAJALEIN: Drouet (1968), Amesbury et al. (1975a). MAJURO: Drouet (1968), Amesbury et al. (1975b). RONGRIK: Drouet (1968).
- Schizothrix tenerrima* (Gomont) Drouet [= *Microcoleus tenerrimus* Gomont]. ARNO: Drouet (1968). BIKINI: Drouet (1968). ENEWETAK: Dawson (1957) as *Microcoleus tenerrimus*, Drouet (1968). LIKIEP: Drouet (1968). MAJURO: Drouet (1968), Johnston et al. (1971) as *Schizothrix tenerimum*. UJELANG: Drouet (1968).

## Order Nostocales

### Family Microchaetaceae

- Tolypothrix byssoidea* (C. Agardh) Kirchner [= *Scytonema byssoidea* C. Agardh and *Hassallia byssoidea* (Berkeley) Hassall ex Bornet & Flahault. BIKINI: Taylor (1950a). ENEWETAK: Taylor (1950a). RONGELAP: Taylor (1950a). RONGLIK: Taylor (1950a). All as *Hassallia byssoidea*.

### Family Nostocaceae

- Hormothamnium enteromorphoides* Grunow [= *Hormothamnion enteromorphoides* Grunow]. ENEWETAK: Taylor (1950a), Dawson (1957), Gilmartin (1960), Webb et al. (1975) and Wiebe et al. (1975) as *Hormothamnion enteromorphoides*. MAJURO: Amesbury et al. (1975b) as *Hormothamnion enteromorphoides*.

### Family Rivulariaceae

- Calothrix crustacea* Thuret. ARNO: Drouet (1973). BIKAR: Drouet (1973). BIKINI: Drouet (1973). ENEWETAK: Dawson (1957), Bakus (1967), Drouet (1973), Webb et al. (1975), Webb and Wiebe (1975), Wiebe et al. (1975), Wiebe (1976). KWAJALEIN: Drouet (1973). MAJURO: Drouet (1973). RONGELAP: Drouet (1973). RONGRIK: Drouet (1973).
- Calothrix parietina* (Nägeli ex Kützing) Thuret. BIKINI: Taylor (1950a).
- Calothrix scopulorum* (Weber & Mohr) C. Agardh ex Bornet & Flahault. BIKINI: Taylor (1950a).
- Dichothrix penicillata* Zanardini. RONGELAP: Taylor (1950a). RONGRIK: Taylor (1950a).
- Rivularia atra* Roth. ENEWETAK: Dawson (1957), Webb et al. (1975) as *Rivularia* sp.
- Rivularia polyotis* (J. Agardh) Hauck. ENEWETAK: Dawson (1957).

### **Family Scytonemataceae**

*Scytonema myochrous* (Dillwyn) C. Agardh ex Bornet & Flahault. BIKINI: Taylor (1950a).  
ENEWETAK: Dawson (1957).

*Scytonema ocellatum* Lyngbye ex Bornet & Flahault. BIKINI: Taylor (1950a).  
RONGELAP: Taylor (1950a).

*Scytonema polycystum* Bornet & Flahault. ENEWETAK: Dawson (1957), Gilmartin (1960).

### **Order Stigonematales**

### **Family Mastigocladaceae**

*Fischerella ambigua* Kützing ex Bornet & Flahault) Gomont. RONGELAP: Taylor (1950a).

### **Family Nostochopsidaceae**

*Mastigocoleus testarum* Lagerheim. BIKINI: Emery et al. (1954). KWAJALEIN: Drouet  
(1981).

## **Division CHLOROPHYTA (Green Algae)**

### **Class Chlorophyceae**

### **Order Ctenocladales**

### **Family Ulvellaceae**

*Entocladia viridis* Reinke. ENEWETAK: Dawson (1957).

### **Order Ulvales**

### **Family Ulvaceae**

*Enteromorpha acanthophora* Kützing. ENEWETAK: Dawson (1957).

*Enteromorpha clathrata* (Roth) Greville. ARNO: Dawson (1956). ENEWETAK: Dawson  
(1957). JALUIT: Dawson (1956). KWAJALEIN: Amesbury et al. (1975a).  
MAJURO: Amesbury et al. (1975b).

*Enteromorpha compressa* (Linnaeus) Nees. MAJURO: Dawson (1956).

*Enteromorpha flexuosa* (Wulfen) J. Agardh [= *Enteromorpha tubulosa* (Kützing) Kützing].  
ENEWETAK: Dawson (1957) as *Enteromorpha tubulosa*.

*Enteromorpha intestinalis* (Linnaeus) Nees. ENEWETAK: Dawson (1957).

*Enteromorpha kylinii* Bliding. ENEWETAK: Dawson (1957). JALUIT: Dawson (1956).  
KWAJALEIN: Dawson (1956). MAJURO: Dawson (1956).

- Enteromorpha lingulata* J. Agardh. BIKINI: Taylor (1950a).  
*Enteromorpha ralfsii* Harvey. ENEWETAK: Dawson (1957). KWAJALEIN: Dawson (1956).  
*Enteromorpha torta* (Mertens) Reinbold. BIKINI: Taylor (1950a).

## Order Cladophorales

### Family Anadyomenaceae

- Anadyomene wrightii* Harvey ex Gray. ARNO: Dawson (1956). ENEWETAK: Dawson (1957). JALUIT: Dawson (1956).  
*Microdictyon japonicum* Setchell. ENEWETAK: Palumbo (1950), Dawson (1957).  
*Microdictyon okamurai* Setchell. ARNO: Dawson (1956). BIKINI: Taylor (1950a). ENEWETAK: Taylor (1950a), Dawson (1957). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956). RONGELAP: Taylor (1950). RONGRIK: Taylor (1950a).  
*Microdictyon pseudohapteron* A.Gepp & E. Gepp. ARNO: Dawson (1956).  
*Microdictyon setchellianum* Howe. ARNO: Dawson (1956). See Silva et al. (1996).  
*Rhipidiphylon reticulatum* (Askenasy) Heydrich. ARNO: Dawson (1956). BIKINI: Taylor (1950a). ENEWETAK: Taylor (1950a), Dawson (1957). RONGELAP: Taylor (1950a).

### Family Cladophoraceae

- Chaetomorpha indica* (Kützing) Kützing. ENEWETAK: Dawson (1957). KWAJALEIN: Dawson (1956). MAJURO: Dawson (1956).  
*Cladophora albida* (Nees) Kützing. ENEWETAK: Gilmartin (1960).  
*Cladophora crystallina* (Roth) Kützing. ENEWETAK: Dawson (1957). KWAJALEIN: Dawson (1956).  
*Cladophora flexuosa* (O.F. Müller) Kützing [= *Cladophora gracilis* Griffiths ex Harvey]. ENEWETAK: Gilmartin (1960) as *Cladophora gracilis*.  
*Cladophora inserta* Dickie. ENEWETAK: Dawson (1957).  
*Cladophora socialis* Kützing. ENEWETAK: Dawson (1957), Gilmartin (1960). JALUIT Dawson (1956).  
*Rhizoclonium riparium* (Roth) Harvey [= *Rhizoclonium implexum* (Dillwyn) Kützing]. ENEWETAK: Dawson (1957) as *Rhizoclonium implexum*.  
*Rhizoclonium samoense* Setchell. ARNO: Dawson (1956). JALUIT: Dawson (1956). MAJURO: Johnson et al. (1971) as *Rhizoclonium* sp..

## Family Siphonocladaceae

- Boergesenia forbesii* (Harvey) Feldmann [= *Valonia forbesii* Harvey]. BIKINI: Taylor (1950a) as *Valonia forbesii*. ENEWETAK: Taylor (1950a) as *Valonia forbesii*, Dawson (1957).
- Boodlea composita* (Harvey) Brand [= *Boodlea siamensis* Reinbold]. ARNO: Dawson (1956). ENEWETAK: Palumbo (1950) as *Cladophora luteola* Harvey which may be a *Boodlea* sp. as per Dawson (1957); Taylor (1950a) and Dawson (1957) as *Boodlea composita* and *Boodlea siamensis*; Gilmartin (1960). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956). MAJURO: Dawson (1956), Amesbury et al. (1975b).
- Boodlea vanbosseae* Reinbold. ARNO: Dawson (1956).
- Cladophoropsis gracillima* Dawson. ARNO: Dawson (1956). ENEWETAK: Dawson (1957), Gilmartin (1960).
- Cladophoropsis javanica* (Kützing) P. Silva [= *Cladophoropsis zollingeri* (Kützing) Børgesen]. BIKINI: Taylor (1950a) as *Cladophoropsis zollingeri*.
- Cladophoropsis sundanensis* Reinbold. ARNO: Dawson (1956). ENEWETAK: Dawson (1957), Gilmartin (1960). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956), Amesbury et al. (1975a). MAJURO: Dawson (1956), Amesbury et al. (1975b).
- Dictyosphaeria bokotensis* Yamada. KWAJALEIN: Dawson (1956).
- Dictyosphaeria cavernosa* (Forsskål) Børgesen. ARNO: Dawson (1956). BIKINI: Taylor (1950a). ENEWETAK: Taylor (1950a), Dawson (1957), Webb et al. (1975). JALUIT: Dawson (1956). MAJURO: Dawson (1956), Johnson et al. (1971), Amesbury et al. (1975b). RONGELAP: Taylor (1950a). RONGRIK: Taylor (1950a).
- Dictyosphaeria intermedia* Weber-van Bosse. ARNO: Dawson (1956). BIKINI: Taylor (1950a). ENEWETAK: Taylor (1950a), Odum and Odum (1955), Dawson (1957). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956), Taylor (1966). RONGELAP: Taylor (1950a). RONGRIK: Taylor (1950a).
- Dictyosphaeria versluysii* Weber-van Bosse. ENEWETAK: Dawson (1957). KWAJALEIN: Dawson (1956).
- Siphonocladus rigidus* Howe. ARNO: Dawson (1956). ENEWETAK: Dawson (1957). KWAJALEIN: Dawson (1956).
- Struvea anastomosans* (Harvey) Piccone & Grunow ex Piccone. ENEWETAK: Dawson (1957). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956).
- Ventricaria ventricosa* (J. Agardh) Olsen & West [= *Valonia ventricosa* J. Agardh]. ARNO: Dawson (1956) as *Valonia ventricosa*. ENEWETAK: Dawson (1957) and Gilmartin (1960) as *Valonia ventricosa*. JALUIT: Dawson (1956) as *Valonia ventricosa*. KWAJALEIN: Dawson (1956) as *Valonia ventricosa*.

## Family Valoniaceae

*Valonia aegagropila* C. Agardh. ARNO: Dawson (1956). BIKINI: Taylor (1950a). ENEWETAK: Taylor (1950a), Dawson (1957), Gilmartin (1960). KWAJALEIN: Dawson (1956). MAJURO: Dawson (1956).

*Valonia fastigiata* Harvey ex J. Agardh. ENEWETAK: Dawson (1957).

*Valonia utricularis* (Roth) C. Agardh. BIKINI: Taylor (1950a). ENEWETAK: Dawson (1957), Gilmartin (1960). JALUIT: Dawson (1956).

*Valoniopsis pachynema* (G. Martens) Børgesen. BIKINI: Taylor (1950a). ENEWETAK: Taylor (1950a), Dawson (1957). RONGRIK: Taylor (1950a).

## Order Bryopsidales

### Family Bryopsidaceae

*Bryopsis hypnoides* Lamouroux. ENEWETAK: Dawson (1957).

*Bryopsis indica* A. Gepp & E. Gepp. ARNO: Dawson (1956). ENEWETAK: Taylor (1950a), Dawson (1957).

*Bryopsis pennata* Lamouroux. ARNO: Dawson (1956). BIKINI: Taylor (1950a). ENEWETAK: Dawson (1957), Gilmartin (1960). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956). MAJURO: Dawson (1956).

*Derbesia attenuata* Dawson. ARNO: Dawson (1956). ENEWETAK: Dawson (1957). JALUIT: Dawson (1956). MAJURO: Dawson (1956).

*Derbesia marina* (Lyngbye) Solier. ENEWETAK: Dawson (1957). JALUIT: Dawson (1956).

*Derbesia minima* Weber-van Bosse. BIKINI: Taylor (1950a).

*Derbesia neglecta* Reinbold. ENEWETAK: Gilmartin (1960).

*Derbesia* sp. [= *Halicystis pyriformis* Levring]. JALUIT: Dawson (1956) as *Halicystis pyriformis*.

*Pedobesia ryukyuensis* (Yamada & T. Tanaka) Kobara & Chihara [= *Derbesia ryukyuensis* Yamada and T. Tanaka]. ARNO: Dawson (1956) as *Derbesia ryukyuensis*. ENEWETAK: Dawson (1957) as *D. ryukyuensis*.

### Family Caulerpaceae

*Caulerpa antoensis* Yamada. ARNO: Taylor (1977). ENEWETAK: Dawson (1957). MAJURO: Dawson (1956).

***Caulerpa arenicola* W.R. Taylor (1950a), Type from Rongelap.** BIKINI: Taylor (1950a).

***Caulerpa bikinensis* Taylor (1950a), Type from Bikini.** ENEWETAK: Dawson (1957). RONGELAP: Taylor (1950a).

*Caulerpa brachypus* Harvey. BIKINI: Taylor (1950a). ENEWETAK: Taylor (1950a), Dawson (1957), Gilmartin (1960). MAJURO: Johnson et al. (1971), Taylor (1977).



- Caulerpa cupressoides* (Vahl) C. Agardh. ARNO: Taylor (1977). KWAJALEIN: Amesbury et al. (1975a).
- Caulerpa elongata* Weber-van Bosse. ARNO: Dawson (1956), Taylor (1977). BIKINI: Taylor (1950a). ENEWETAK: Odum and Odum (1955), Dawson (1957), Calvert et al. (1976).
- Caulerpa filicoides* Yamada [= *Caulerpa acuta* (Yamada) Yamada]. ENEWETAK: Dawson (1957) and Gilmartin (1960) as *Caulerpa acuta*.
- Caulerpa lentillifera* J. Agardh. BIKINI: Taylor (1950a). RONGELAP: Taylor (1950a).
- Caulerpa mexicana* Sonder ex Kützing [*Caulerpa crassifolia* (C. Agardh) J. Agardh]. BIKINI: Taylor (1950a) as *Caulerpa crassifolia*. RONGELAP: Taylor (1950a) as *C. crassifolia*.
- Caulerpa peltata* Lamouroux. ARNO: Taylor (1977). BIKINI: Taylor (1950a). ENEWETAK: Gilmartin (1960).
- Caulerpa racemosa* (Forsskål) J. Agardh. ARNO: Dawson (1956), Taylor (1977). BIKINI: Taylor (1950a). ENEWETAK: Taylor (1950a), Dawson (1957), Gilmartin (1960). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956). MAJURO: Dawson (1956), Amesbury et al. (1975b). RONGELAP: Taylor (1950a).
- Caulerpa serrulata* (Forsskål) J. Agardh. AILUK: Taylor (1966). ARNO: Dawson (1956), Taylor (1977). BIKAR: Taylor (1966). BIKINI: Taylor (1950a). BOKAAK: Taylor (1966). ENEWETAK: Taylor (1950a), Dawson (1957), Gilmartin (1960), Calvert et al. (1976). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956), Amesbury et al. (1975a). LAE: Taylor (1966). MAJURO: Dawson (1956). RONGELAP: Taylor (1950a). . UJAE: Taylor (1966). UTRIK: Taylor (1966).
- Caulerpa sertularioides* (Gmelin) Howe. ENEWETAK: Gilmartin (1960). KWAJALEIN: Dawson (1956).
- Caulerpa taxifolia* (Vahl) C. Agardh. ARNO: Dawson (1956). ENEWETAK: Dawson (1957).
- Caulerpa urvilleana* Montagne [= *Caulerpa urvilliana* Montagne]. ARNO: Dawson (1956), Taylor (1966, 1977). BIKAR: Taylor (1966). BIKINI: Taylor (1950a). ENEWETAK: Taylor (1950a), Dawson (1957), Calvert et al. (1976). KWAJALEIN: Dawson (1956). LIKIEP: Taylor (1966). MAJURO: Dawson (1956), Johnson et al. (1971), Amesbury et al. (1975b). RONGELAP: Taylor (1950a). UJAE: Taylor (1966). UJELANG: Taylor (1966). UTRIK: Taylor (1966). WOTH0: Taylor (1966). All as *Caulerpa urvilliana*.
- Caulerpa verticillata* J. Agardh. ARNO: Dawson (1956). BIKINI: Taylor (1950a). ENEWETAK: Gilmartin (1960). MAJURO: Dawson (1956).
- Caulerpa webbiana* Montagne. ARNO: Taylor (1977). ENEWETAK: Dawson (1957), Gilmartin (1960), Calvert et al. (1976).
- Caulerpella ambigua* (Okamura) Prud'homme van Reine & Lokhorst [= *Caulerpa ambigua* Okamura and *Caulerpa vickersiae* Børgesen]. ENEWETAK: Dawson (1957) and Gilmartin (1960) as *Caulerpa vickersiae*. JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956) as *Caulerpa ambigua* and *Caulerpa vickersiae*.

## Family Codiaceae

- Codium arabicum* Kützing. ARNO: Dawson (1956). ENEWETAK: Dawson (1957). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956).
- Codium edule* P. Silva. ENEWETAK: Odum and Odum (1955), see Dawson (1957).
- Codium geppiorum* O.Schmidt [= *Codium geppii* O. Schmidt]. ENEWETAK: Dawson (1957), Gilmartin (1960). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956). MAJURO: Dawson (1956). All as *Codium geppii*.
- Codium ovale* Zanardini. KWAJALEIN: Dawson (1956). MAJURO: Dawson (1956).
- Codium saccatum* Okamura. ENEWETAK: Dawson (1957).
- Codium tenue* (Kützing) Kützing. BIKINI: Taylor (1950a). ENEWETAK: Taylor (1950a), Dawson (1957).

## Family Halimedaceae

- Halimeda bikinensis* W.R. Taylor (1950a), Type from Bikini.** BIKINI: Hillis (1959).
- Halimeda copiosa* Goreau & Graham [= *Halimeda opuntia* (Linnaeus) Lamouroux variety or form *hederacea* Barton, *Halimeda opuntia* (Linnaeus) Lamouroux f. *elongata* Barton and *Halimeda hederacea* (Barton) Colinvaux]. BIKINI: Taylor (1950a) and Hillis (1959) as *H. opuntia* v. *hederacea*, Hillis-Colinvaux (1968) as *H. hederacea*. ENEWETAK: Taylor (1950a), Dawson (1957) and Gilmartin (1960) as *H. opuntia* f. *hederacea*, Hillis-Colinvaux (1977). RONGELAP: Taylor (1950a) as *H. opuntia* v. *hederacea* and *H. opuntia* f. *elongata*.
- Halimeda cuneata* Hering. KWAJALEIN: Dawson (1956).
- Halimeda cylindracea* Decaisne. ARNO: Moul (1964). BIKINI: Taylor (1950a) as *Halimeda monile* (Ellis & Solander) Lamouroux (see Hillis, 1959 and Hillis-Colinvaux, 1980), Hillis (1959). ENEWETAK: Dawson (1957) and Gilmartin (1960, 1966) as *H. monile*, Hillis-Colinvaux (1977). KWAJALEIN: Dawson (1956) as *H. monile*, Amesbury et al. (1975a). MAJURO: Dawson (1956) as *H. monile*. RONGELAP: Hillis (1959).
- Halimeda discoidea* Decaisne. ARNO: Moul (1964). BIKINI: Taylor (1950a), Hillis (1959). ENEWETAK: Gilmartin (1960). RONGELAP: Taylor (1950a).
- Halimeda distorta* (Yamada) L.H. Colinvaux. ENEWETAK: Hillis-Colinvaux (1977).
- Halimeda fragilis* W.R. Taylor (1950a), Type from Enewetak.** ARNO: Dawson (1956), Moul (1964). BIKINI: Taylor (1950a), Hillis (1959). ENEWETAK: Dawson (1957), Hillis (1959), Gilmartin (1960, 1966), Hillis-Colinvaux (1977).
- Halimeda gigas* W.R. Taylor (1950a), Type from Enewetak.** ENEWETAK: Dawson (1957), Hillis (1959), Hillis-Colinvaux (1977).
- Halimeda gracilis* Harvey ex J. Agardh. ARNO: Dawson (1956). ENEWETAK: Gilmartin (1960), Hillis-Colinvaux (1977).

- Halimeda incrassata* (Ellis) Lamouroux [= *Halimeda tridens* (Ellis & Solander) Lamouroux]. ARNO: Moul (1964). BIKINI: Taylor (1950a) as *Halimeda tridens*, Hillis (1959). ENEWETAK: Taylor (1950a), Dawson (1957) and Gilmartin (1960) as *H. tridens*; Hillis-Colinvaux (1977). RONGELAP: Taylor (1950a) as *H. tridens*.
- Halimeda lacunalis* W.R. Taylor (1950a) [= *Halimeda gracilis* Harvey ex J. Agardh forma *lata* W.R. Taylor], Type from Enewetak.** ARNO: Moul (1964). BIKAR: Moul (1964). BIKINI: Taylor (1950a) as *Halimeda gracilis* f. *lata*, Hillis (1959). ENEWETAK: Dawson (1957), Hillis (1959), Gilmartin (1960), Hillis-Colinvaux (1977). RONGELAP: Taylor (1950a), Hillis (1959).
- Halimeda macrophysa* Askenasy. ENEWETAK: Dawson (1957), Hillis-Colinvaux (1977).
- Halimeda micronesica* Yamada [= *Halimeda orientalis* Gilbert]. ARNO: Moul (1964). BIKINI: Taylor (1950a), Hillis (1959). BOKAAK: Moul (1964). ENEWETAK: Hillis-Colinvaux (1977). RONGELAP: Taylor (1950a) as *H. micronesica* and *H. orientalis*, Hillis (1959).
- Halimeda minima* (W.R. Taylor) Colinvaux (1968), Type from Bikini [= *Halimeda opuntia* (Linnaeus) Lamouroux form *minima* W.R. Taylor (1950a)].** ENEWETAK: Dawson (1957) as *Halimeda opuntia* f. *minima*, Hillis-Colinvaux (1977).
- Halimeda opuntia* (Linnaeus) Lamouroux. ARNO: Moul (1964). BIKINI: Taylor (1950a). BOKAAK: Moul (1964). ENEWETAK: Taylor (1950a), Dawson (1957), Gilmartin (1960), Hillis-Colinvaux (1977). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956), Amesbury et al. (1975a). LAE: Moul (1964). MAJURO: Amesbury et al. (1975b). RONGELAP: Taylor (1950a). UJAE: Moul (1964). WOTHO: Moul (1964).
- Halimeda renschii* Hauck [= *Halimeda opuntia* form *renschii* (Hauck) Barton]. BIKINI: Taylor (1950a) as *H. opuntia* f. *renschii*.
- Halimeda simulans* Howe. BIKINI: Hillis (1959).
- Halimeda stuposa* W.R. Taylor (1950a), Type from Rongelap.** ARNO: Moul (1964). BIKINI: Taylor (1950a), Hillis (1959). ENEWETAK: Taylor (1950a), Dawson (1957), Hillis (1959), Hillis-Colinvaux (1977). KWAJALEIN: Dawson (1956). LIKIEP: Moul (1964). RONGELAP: Hillis (1959). UJAE: Moul (1964). UJELANG: Moul (1964). WOTHO: Moul (1964).
- Halimeda taenicola* W.R. Taylor (1950a), Type from Rongerik.** AILUK: Moul (1964). ARNO: Moul (1964). BIKAR: Moul (1964). BIKINI: Taylor (1950a), Hillis (1959). BOKAAK: Moul (1964). ENEWETAK: Dawson (1957), Gilmartin (1960), Hillis-Colinvaux (1977). JALUIT: Dawson (1956). KWAJALEIN: Moul (1964). MAJURO: Johnson et al. (1971). RONGELAP: Taylor (1950a), Hillis (1959). RONGRIK: Hillis (1959).
- Halimeda tuna* (Ellis & Solander) Lamouroux. BIKINI: Taylor (1950a).

## Family Ostreobiaceae

*Ostreobium quekettii* Bornet & Flahault [= *Ostreobium reineckeii* Bornet & Flahault].  
BIKINI: Taylor (1950a) as *Ostreobium reineckeii*. ENEWETAK: Dawson (1957) as  
*O. reineckeii*.

## Family Udoteaceae

*Avrainvillea lacerata* Harvey ex J. Agardh. BIKINI: Taylor (1950a), Olsen-Stojkovich  
(1985). ENEWETAK: Taylor (1950a), Dawson (1957).

*Avrainvillea nigricans* Decaisne. ARNO: Dawson (1956). BIKINI: Taylor (1950a).  
ENEWETAK: Gilmartin (1960). RONGRIK: Taylor (1950a).

*Avrainvillea obscura* (C. Agardh) J. Agardh. BIKINI: Taylor (1950a), Olsen-Stojkovich  
(1985). RONGRIK: Taylor (1950a), Olsen-Stojkovich (1985).

*Pseudochlorodesmis furcellata* (Zarnadini) Børgesen. ENEWETAK: Dawson (1957),  
Gilmartin (1960). KWAJALEIN: Dawson (1956).

*Rhipidosiphon javensis* Montagne [= *Udotea javensis* (Montagne) A. Gepp & E. Gepp].  
ENEWETAK: Taylor (1950a), Dawson (1957) and Gilmartin (1960) as *Udotea*  
*javensis*. MAJURO: Dawson (1956) as *U. javensis*.

***Rhipilia diaphana* Taylor (1950a), Type from Bikini.** ENEWETAK: Taylor (1950a),  
Dawson (1957). RONGELAP: Taylor (1950a).

***Rhipilia geppii* Taylor (1950a), Type from Bikini.** ENEWETAK: Taylor (1950a), Dawson  
(1957).

*Rhipilia orientalis* A. Gepp & E. Gepp. ARNO: Dawson (1956). BIKINI: Taylor (1950a).  
ENEWETAK: Dawson (1957). RONGRIK: Taylor (1950a).

*Rhipilia sinuosa* Gilbert. BIKINI: Gilbert (1978).

*Rhipiliopsis mortensenii* (Børgesen) Farghaly & Denizot [= *Geppella mortensenii* Børgesen].  
ARNO: Dawson (1956) as *Geppella mortensenii*.

*Tydemanium expeditionis* Weber-van Bosse. ENEWETAK: Taylor (1950a), Dawson (1957),  
Gilmartin (1960, 1966), Hillis-Colinvaux (1977). JALUIT: Dawson (1956).  
RONGELAP: Taylor (1950a).

*Udotea argentea* Zanardini. AILUK: Moul (1964). LIKIEP: Moul (1964).

*Udotea indica* A. Gepp & E. Gepp. AILUK: Moul (1964). BIKINI: Taylor (1950a).  
ENEWETAK: Taylor (1950a), Gilmartin (1960). RONGELAP: Taylor (1950a).  
RONGRIK: Taylor (1950a).

*Udotea orientalis* A. Gepp & E. Gepp. BIKINI: Taylor (1950a). ENEWETAK: Gilmartin  
(1960). RONGELAP: Taylor (1950a).

*Udotea palmetta* Decaisne. ARNO: Dawson (1956). ENEWETAK: Dawson (1957).  
KWAJALEIN: Dawson (1956, 1957). MAJURO: Dawson (1956, 1957).

## Order Dasycladales

### Family Dasycladaceae

*Neomeris annulata* Dickie. KWAJALEIN: Dawson (1956), Amesbury et al. (1975a). MAJURO: Dawson (1956).

*Neomeris bilimbata* Koster. ENEWETAK: Dawson (1957). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956). RONGRIK: Dawson (1957) based on Taylor (1950) specimen.

*Neomeris mucosa* Howe. ARNO: Dawson (1956).

*Neomeris van-bosseae* Howe. BIKINI: Taylor (1950a). RONGELAP: Taylor (1950a). RONGRIK: Taylor (1950a).

### Family Polyphysaceae

*Acetabularia exigua* Solms-Laubach. ARNO: Dawson (1956). KWAJALEIN: Dawson (1956).

*Acetabularia parvula* Solms-Laubach [= *Acetabularia moebii* Solms-Laubach]. ARNO: Dawson (1956) as *Acetabularia moebii*. BIKINI: Taylor (1950a). ENEWETAK: Dawson (1957) and Gilmartin (1960) as *A. moebii*. JALUIT: Dawson (1956) as *A. moebii*. KWAJALEIN: Dawson (1956) as *A. moebii*. MAJURO: Dawson (1956) as *A. moebii*.

## Division PHAEOPHYTA (Brown Algae)

### Class Phaeophyceae

### Order Ectocarpales

### Family Ectocarpaceae

*Feldmannia indica* (Sonder) Womersley & Bailey [= *Ectocarpus indicus* Sonder]. ENEWETAK: Taylor (1950a) and Dawson (1957) as *Ectocarpus indicus*. KWAJALEIN: Dawson (1956) as *E. indicus*. MAJURO: Johnson et al. (1971) as *E. indicus*, Amesbury et al. (1975b).

*Feldmannia irregularis* (Kützinger) G. Hamel [= *Ectocarpus irregularis* Kützinger]. ENEWETAK: Dawson (1957) as *Ectocarpus irregularis*.

*Hincksia breviarticulata* (J. Agardh) P. Silva [= *Ectocarpus breviarticulatus* J. Agardh]. ENEWETAK: Dawson (1957) as *Ectocarpus breviarticulatus*. JALUIT: Dawson (1956) as *Ectocarpus breviarticulatus*. MAJURO: Dawson (1956) as *E. breviarticulatus*.

*Hincksia mitchelliae* (Harvey) P. Silva [= *Ectocarpus mitchellae* Harvey and *Giffordia mitchelliae* (Harvey) G. Hamel]. BIKINI: Taylor (1950a) as *Ectocarpus mitchelliae*. ENEWETAK: Taylor (1950a) and Dawson (1957) as *E. mitchellae*. MAJURO: Dawson (1956) as *E. mitchellae*.

### Family Ralfsiaceae

*Ralfsia expansa* (J. Agardh) J. Agardh. KWAJALEIN: Dawson (1956).

## Order Sphacelariales

### Family Sphacelariaceae

*Sphacelaria novae-hollandiae* Sonder. BIKINI: Taylor (1950a). ENEWETAK: Taylor (1950a), Dawson (1957).

*Sphacelaria rigidula* Kützing [= *Sphacelaria furcigera* Kützing]. ENEWETAK: Dawson (1957) as *Sphacelaria furcigera*. JALUIT: Dawson (1956) and Gilmartin (1960) as *S. furcigera*. KWAJALEIN: Dawson (1956) as *S. furcigera*.

*Sphacelaria tribuloides* Meneghini. ENEWETAK: Dawson (1957). MAJURO: Johnson et al. (1971), Amesbury et al. (1975b).

## Order Dictyotales

### Family Dictyotaceae

*Dictyopteris delicatula* Lamouroux. BIKINI: Taylor (1950a).

*Dictyopteris repens* (Okamura) Børgesen. ARNO: Dawson (1956). ENEWETAK: Dawson (1957), Gilmartin (1960, 1966). JALUIT: Dawson (1956).

*Dictyota acutiloba* J. Agardh. ENEWETAK: Gilmartin (1960) as *Dictyota cervicornis* Kützing.

*Dictyota bartayresiana* Lamouroux [= *Dictyota bartayresii* Lamouroux]. KWAJALEIN: Amesbury et al. (1975a) as *Dictyota bartayresii*. MAJURO: Amesbury et al. (1975b) as *D. bartayresii*.

*Dictyota ceylanica* Kützing [*Dictyota dichotoma* (Hudson) Lamouroux = *Dictyota divaricata* Lamouroux]. ENEWETAK: Dawson (1957), Gilmartin (1960, 1966), and Lowman and Palumbo (1962) as *Dictyota divaricata*.

*Dictyota dichotoma* (Hudson) Lamouroux [= *Dictyota apiculata* J. Agardh]. ENEWETAK: Gilmartin (1960).

*Dictyota grossedentata* De Clerck & Coppejans [*Dictyota bartayresiana* Lamouroux = *Dictyota patens* J. Agardh]. ENEWETAK: Dawson (1957) as *Dictyota patens*.

*Dictyota pinnatifida* Kützing. BIKINI: Taylor (1950a). ENEWETAK: Taylor (1950a), Dawson (1957).

- Lobophora papenfussii* (W.R. Taylor) Farghaly [= *Pocockiella papenfussii* W.R. Taylor (1950a), Type from Bikini].** ARNO: Dawson (1956) as *Pocockiella papenfussii*. ENEWETAK: Taylor (1950a) and Dawson (1957) as *P. papenfussii*. RONGELAP: Taylor (1950a) as *P. papenfussii*. RONGRIK: Taylor (1950a) as *P. papenfussii*.
- Lobophora variegata* (Lamouroux) Womersley ex Oliveira [= *Gymnosorus variegatus* (Lamouroux) J. Agardh, *Zonaria variegata* (Lamouroux) C. Agardh and *Pocockiella variegata* (Lamouroux) Papenfuss]. ARNO: Dawson (1956) as *Pocockiella variegata*. BIKINI: Taylor (1950a) as *P. variegata*. ENEWETAK: Taylor (1950a), Dawson (1957) and Gilmartin (1960) as *P. variegata*, Odum and Odum (1955) as *Zonaria variegata*, Smith and Marsh (1973). JALUIT: Dawson (1956) as *P. variegata*. KWAJALEIN: Amesbury et al. (1975a). MAJURO: Johnson et al. (1971). RONGELAP: Taylor (1950a) as *P. variegata*. RONGRIK: Taylor (1950a) as *P. variegata*.
- Padina australis* Hauck. ENEWETAK: Dawson (1957).
- Padina boryana* Thivy in Taylor [= *Padina tenuis* (C. Agardh) Bory]. ENEWETAK: Taylor (1950a), Dawson (1957) and Gilmartin (1960, 1966) as *Padina commersonii* Bory de Saint-Vincent. JALUIT: Dawson (1956) as *P. commersonii*. KWAJALEIN: Dawson (1956) as *P. commersonii*, Amesbury et al. (1975a) as *Padina tenuis*. MAJURO: Dawson (1956) as *P. commersonii*.
- Padina japonica* Yamada. MAJURO: Johnson et al. (1971).
- Spatoglossum schroederi* (C. Agardh) Kützing. ENEWETAK: Gilmartin (1960).

## Order Scytosiphonales

### Family Chnoosporaceae

- Chnoospora implexa* J. Agardh. ENEWETAK: Dawson (1957).

### Family Scytosiphonaceae

- Hydroclathrus clathratus* (C. Agardh) Howe [= *Hydroclathrus cancellatus* Bory de Saint-Vincent]. ENEWETAK: Taylor (1950a), Dawson (1957).
- Rosenvingea fastigiata* (Zanardini) Børgesen. BIKINI: Taylor (1950). ENEWETAK: Taylor (1950a), Dawson (1957).
- Rosenvingea intricata* (J. Agardh) Børgesen [= *Asperococcus intricatus* J. Agardh], ENEWETAK: Taylor (1950a), Dawson (1957).
- Rosenvingea orientalis* (J. Agardh) Børgesen. ENEWETAK: Gilmartin (1960).

## Order Fucales

### Family Sargassaceae

*Turbinaria ornata* (Turner) J. Agardh. ARNO: Dawson (1956). BIKINI: Taylor (1950a, 1964). BOKAAK: Taylor (1964). ENEWETAK: Taylor (1950a, 1964), Dawson (1957). JALUIT: Dawson (1956) as *Turbinaria ornata* and *T. trialata* (J. Agardh) Kützing, Taylor (1964). KWAJALEIN: Dawson (1956), Taylor (1964). MAJURO: Taylor (1964).

## Division RHODOPHYTA (Red Algae)

### Class Rhodophyceae

### Subclass Bangiophycidae

### Order Porphyridiales

### Family Porphyridiaceae

*Chroodactylon ornatum* (C. Agardh) Basson [= *Asterocytis ornata* (C. Agardh) G. Hamel], ENEWETAK: Taylor (1950a) and Dawson (1957) as *Asterocytis ornata*.  
*Stylonema alsidii* (Zanardini) K. Drew [= *Goniotrichum alsidii* (Zanardini) Howe and *Goniotrichum elegans* (Chauvin) Zanardini]. ENEWETAK: Taylor (1950a) as *Goniotrichum alsidii*, Dawson (1957) as *Goniotrichum elegans*.

### Order Erythropeltiales

### Family Erythrotrichiaceae

*Erythrotrichia carnea* (Dillwyn) J. Agardh. ENEWETAK: Taylor (1950a), Dawson (1957). KWAJALEIN: Dawson (1956).  
*Erythrotrichia parietalis* T. Tanaka. ENEWETAK: Dawson (1957).

### Subclass Florideophycidae

### Order Acrochaetiales

### Family Acrochaetiaceae

*Acrochaetium crassipes* (Børgesen) Børgesen [= *Kylinia crassipes* (Børgesen) Kylin]. ENEWETAK: Dawson (1957) as *Kylinia crassipes*.  
*Acrochaetium gracile* Børgesen. ENEWETAK: Dawson (1957).



*Acrochaetium robustum* Børgesen. ENEWETAK: Dawson (1957), Gilmartin (1960).  
*Acrochaetium rongelapense* I.A. Abbott in Taylor (1950a), Type from Rongelap.  
*Acrochaetium secundatum* (Lyngbye) Nägeli [= *Kylinia secundata* (Lyngbye) Papenfuss].  
ENEWETAK: Dawson (1957) as *Kylinia secundata*.

## Order Nemaliales

### Family Galaxauraceae

*Actinotrichia fragilis* (Forsskål) Børgesen [= *Actinotrichia rigida* (Lamouroux) Decaisne].  
JALUIT: Dawson (1956).  
*Galaxaura apiculata* Kjellman [= *Galaxaura acuminata* Kjellman ex Butters]. JALUIT:  
Dawson (1956) as *Galaxaura acuminata*..  
*Galaxaura fasciculata* Kjellman. JALUIT: Dawson (1956).  
*Galaxaura filamentosa* R. Chou. ARNO: Dawson (1956). ENEWETAK: Dawson (1957).  
JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956).  
*Tricheocarpa cylindrica* (Ellis & Solander) Huisman & Borowitzka (= *Galaxaura fastigiata*  
Decaisne]. ENEWETAK: Dawson (1957) as *Galaxaura fastigiata*.

### Family Liagoraceae

*Ganonema farinosum* (Lamouroux) Fan & Wang [= *Liagora farinosa* Lamouroux]. BIKINI:  
Taylor (1950) as *Liagora farinosa*. ENEWETAK: Dawson (1957) as *L. farinosa*.  
*Liagora ceranoides* Lamouroux. BIKINI: Taylor (1950a). RONGELAP: Taylor (1950a).  
RONGRIK: Taylor (1950a).  
*Liagora hawaiiiana* Butters. BIKINI: Taylor (1950a). ENEWETAK: Dawson (1957).  
RONGELAP: Taylor (1950a). RONGRIK: Taylor (1950a).  
*Liagora megagyna* Børgesen. BIKINI: Taylor (1950a). RONGELAP: Taylor (1950a).  
*Liagora orientalis* J. Agardh. ENEWETAK: Dawson (1957).  
*Liagora pinnata* Harvey. ENEWETAK: Dawson (1957).  
*Liagora robusta* Yamada. ENEWETAK: Dawson (1957).  
*Liagora valida* Harvey. BIKINI: Taylor (1950a). RONGRIK: Taylor (1950a).

## Order Gelidiales

### Family Gelidiaceae

*Gelidium crinale* (Turner) Gaillon. ENEWETAK: Dawson (1957).  
*Gelidium pusillum* (Stackhouse) Le Jolis. ARNO: Dawson (1956). ENEWETAK: Dawson  
(1957). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956).

## Family Gelidiellaceae

*Gelidiella antipae* Celan [= *Gelidiella adnata* Dawson]. ARNO: Dawson (1956) as *Gelidiella adnata*.

*Gelidiella lubrica* (Kützing) J. Feldmann & Hamel [= *Gelidiella bornetii* (Weber-van Bosse) J. Feldmann & G. Hamel]. ENEWETAK: Dawson (1957) as *Gelidiella bornetii*.

*Gelidiella pannosa* (J. Feldmann) J. Feldmann & G. Hamel [= *Gelidiella tenuissima* J. Feldmann & G. Hamel]. ARNO: Dawson (1956) as *Gelidiella tenuissima*. ENEWETAK: Dawson (1957) as *G. tenuissima*. JALUIT: Dawson (1956) as *G. tenuissima*. MAJURO: Dawson (1956) as *G. tenuissima*.

## Family Wurdemanniaceae (After Taylor, 1960)

*Wurdemannia miniata* (Sprengel) J. Feldmann & G. Hamel. ARNO: Dawson (1956). ENEWETAK: Dawson (1957). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956). MAJURO: Dawson (1956).

## Order Bonnemaisoniales

### Family Bonnemaisoniaceae

*Asparagopsis taxiformis* (Delile) Trevisan [= *Falkenbergia hillebrandii* Bornet in Ardissonne]. ARNO: Dawson (1956) as *Falkenbergia hillebrandii*. ENEWETAK: Palumbo (1955), Dawson (1957) and Gilmartin (1960) as *Asparagopsis taxiformis* and *Falkenbergia hillebrandii*, Gerber and Marshall (1974). JALUIT: Dawson (1956) as *F. hillebrandii*. KWAJALEIN: Dawson (1956) as *F. hillebrandii*.

## Order Cryptonemiales

### Family Halymeniaceae

*Grateloupia filicina* (Lamouroux) C. Agardh. ENEWETAK: Dawson (1957).

### Family Peyssonneliaceae

*Cruoriella dubyi* (P. Crouan & H. Crouan) Schmitz. ENEWETAK: Dawson (1957). KWAJALEIN: Dawson (1956).

*Peyssonnelia conchicola* Piccone & Grunow. JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956).

*Peyssonnelia rubra* (Greville) J. Agardh. ARNO: Dawson (1956). BIKINI: Taylor (1950a). ENEWETAK: Dawson (1957). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956).

## Order Hildenbrandiales

### Family Hildenbrandiaceae

*Hildenbrandia rubra* (Sommerfelt) Meneghini [= *Hildenbrandia prototypus* Nardo].  
JALUIT: Dawson (1956) as *Hildenbrandia prototypus*.

## Order Corallinales

### Family Corallinaceae

*Amphiroa anastomosans* Weber-van Bosse. ARNO: Dawson (1956).

*Amphiroa foliacea* Lamouroux, Trono (1969). JALUIT: Dawson (1956).

*Amphiroa fragilissima* (Linnaeus) Lamouroux. ARNO: Dawson (1956). JALUIT: Dawson (1956). MAJURO: Amesbury et al. (1975b).

*Choreonema thuretii* (Bornet) Schmitz. RONGRIK: Taylor (1950a).

*Hydrolithon craspedium* (Foslie) P. Silva [= *Porolithon craspedium* (Foslie) Foslie].  
BIKINI: Taylor (1950a) and Emery et al. (1954) as *Porolithon craspedium*.  
ENEWETAK: Taylor (1950a) and Dawson (1957) as *P. craspedium*. RONGELAP:  
Taylor (1950a) and Lee (1967) as *P. craspedium*.

*Hydrolithon farinosum* (Lamouroux) Penrose & Y.M. Chamberlain [= *Fosliella farinosa*  
(Lamouroux) Howe]. ARNO: Dawson (1956) as *Fosliella farinosa*. BIKINI: Taylor  
(1950a) as *F. farinosa*. ENEWETAK: Dawson (1956), Dawson (1957) and  
Lawrence and Dawes (1969) as *F. farinosa*.

*Hydrolithon gardineri* (Foslie) Verheij & Prud'homme van Reine [= *Porolithon gardineri*  
(Foslie) Foslie and *Lithophyllum gardineri* Foslie form *obpyramidatum* Foslie].  
BIKINI: Taylor (1950a) as *Porolithon gardineri* and *Porolithon marshallense* W.R.  
Taylor, Emery et al. (1954) as *P. gardineri*. ENEWETAK: Taylor (1950a) and  
Dawson (1957) as *P. gardineri*. RONGELAP: Taylor (1950a) as *P. gardineri* and  
*P. marshallense*, Lee (1967) as *P. gardineri*. RONGRIK: Taylor (1950a) as *P.*  
*gardineri*.

*Hydrolithon onkodes* (Heydrich) Penrose & Woelkerling [= *Porolithon onkodes* Foslie].  
BIKINI: Taylor (1950a) as *Porolithon onkodes*. ENEWETAK: Taylor (1950a),  
Dawson (1957), Marsh (1970), Smith and Marsh (1973) as *P. onkodes*. MAJURO:  
Amesbury et al. 1975b). RONGELAP: Taylor (1950a) and Lee (1967) as *P. onkodes*.  
RONGRIK: Taylor (1950a) as *P. onkodes*.

*Hydrolithon* sp. [= *Porolithon aequinoctiale* (Foslie) Foslie]. BIKINI: Taylor (1950a) as  
*Porolithon aequinoctiale*. RONGELAP: Taylor (1950a) as *P. aequinoctiale*.  
RONGRIK: Taylor (1950a) as *P. aequinoctiale*.

*Jania capillacea* Harvey. ARNO: Dawson (1956). ENEWETAK: Taylor (1950a), Dawson  
(1957), Gilmartin (1960), Smith and Marsh (1973). JALUIT: Dawson (1956).  
KWAJALEIN: Dawson (1956). MAJURO: Dawson (1956), Amesbury et al.  
(1975b).

*Jania constricta* Kützing. BIKINI: Taylor (1950a). RONGRIK: Taylor (1950a).  
*Jania decussatodichotoma* (Yendo) Yendo. ENEWETAK: Dawson (1957), Gilmartin (1960). KWAJALEIN: Dawson (1956). MAJURO: Dawson (1956).  
*Jania micrarthrodia* Lamouroux [= *Jania antennina* Kützing]. ARNO: Dawson (1956). ENEWETAK: Taylor (1950a) as *Jania antennina*, Dawson (1957)..  
*Jania rubens* (Linnaeus) Lamouroux. ENEWETAK: Taylor (1950a). RONGELAP: Taylor (1950a). RONGRIK: Taylor (1950a).  
*Jania taylorii* Dawson. MAJURO: Dawson (1956).  
*Jania tenella* (Kützing) Grunow. ENEWETAK: Dawson (1957). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956).  
*Lithoporella pacifica* (Heydrich) Foslie. JALUIT: Dawson (1956).  
*Neogoniolithon brassica-florida* (Harvey) Setchell & Mason [= *Goniolithon frutescens* Foslie and *Neogoniolithon frutescens* (Foslie) Setchell & Mason]. BIKINI: Taylor (1950) as *Goniolithon frutescens*. RONGELAP: Lee (1967) as *Neogoniolithon frutescens*.  
*Pneophyllum* sp. [= *Heteroderma minutula* Foslie and *Heteroderma subtilissima* (Foslie) Foslie]. ARNO: Dawson (1956) as *Heteroderma minutula*. ENEWETAK: Dawson (1957) as *H. minutula* and *H. subtilissima*. KWAJALEIN: Dawson (1956) as *H. minutula* and *H. subtilissima*.

## Order Gigartinales

### Family Dicranemataceae

*Dicranema rosaliae* Setchell & Gardner. ENEWETAK: Dawson (1957).

### Family Hypneaceae

*Hypnea musciformis* (Wulfen) Lamouroux. ENEWETAK: Dawson (1957) and Gilmartin (1960) as *Hypnea esperi* Bory de Saint-Vincent. JALUIT: Dawson (1956) as *H. esperi*. KWAJALEIN: Dawson (1956) and Amesbury et al. (1975a) as *H. esperi*. MAJURO: Dawson (1956) as *H. esperi*.  
*Hypnea nidulans* Setchell. ENEWETAK: Dawson (1957).  
*Hypnea pannosa* J. Agardh. ARNO: Dawson (1956). ENEWETAK: Dawson (1957). JALUIT: Dawson (1956). MAJURO: Dawson (1956).  
*Hypnea spinella* (C. Agardh) Kützing. ENEWETAK: Taylor (1950a).

## Order Rhodymeniales

### Family Champiaceae

*Champia parvula* (C. Agardh) Harvey. ARNO: Dawson (1956). ENEWETAK: Dawson (1957), Gilmartin (1960). MAJURO: Dawson (1956).

*Champia vieillardii* Kützing. ENEWETAK: Dawson (1957). JALUIT: Dawson (1956).

### Family Lomentariaceae

*Lomentaria hakodatensis* Yendo. ENEWETAK: Dawson (1957). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956).

### Family Rhodymeniaceae

*Botryocladia skottsbergii* (Børgesen) Levring [= *Botryocladia kuckuckii* (Weber-van Bosse) Y. Yamada & T. Tanaka]. ARNO: Dawson (1956). BIKINI: Taylor (1950a) as *Botryocladia kuckuckii*. ENEWETAK: Dawson (1957), Gilmartin (1960). RONGELAP: Taylor (1950a) as *B. kuckuckii*.

*Chamaeobotrys boergesenii* (Weber-van Bosse) Huisman [*Coelarthrum boergesenii* Weber-van Bosse]. ARNO: Dawson (1956) as *Coelarthrum boergesenii*.

*Chrysymenia kaernbachii* Grunow [= *Chrysymenia kairnbackii* Grunow]. JALUIT: Dawson (1956) as *Chrysymenia kairnbackii*.

*Coelothrix irregularis* (Harvey) Børgesen. ENEWETAK: Dawson (1957).

*Gelidiopsis intricata* (C. Agardh) Vickers. ARNO: Dawson (1956). ENEWETAK: Dawson (1957). JALUIT: Dawson (1956). MAJURO: Amesbury et al. (1975b).

*Gelidiopsis repens* (Kützing) Weber-van Bosse. ARNO: Dawson (1956).

*Leptofauchea anastomosans* (Weber-van Bosse) R. Norris & Aken [= *Rhodymenia anastomosans* Weber-van Bosse]. ENEWETAK: Dawson (1957) and Gilmartin (1960) as *Rhodymenia anastomosans*. JALUIT: Dawson (1956) as *R. anastomosans*.

## Order Ceramiales

### Family Ceramiaceae

*Anotrichium tenue* (C. Agardh) Nägeli [= *Griffithsia tenuis* C. Agardh]. ENEWETAK: Dawson (1957) and Gilmartin (1960) as *Griffithsia tenuis*. JALUIT: Dawson (1956) as *Griffithsia tenuis*.

*Antithamnion elegans* (Berthold) J. Price & D. John [= *Antithamnion breviramsum* Dawson]. ENEWETAK: Dawson (1957) as *A. breviramsum* v. *simplex*.

*Antithamnion lherminieri* (P. Crouan & H. Crouan) Bornet ex Nasr. ENEWETAK: Dawson (1957), Gilmartin (1960). JALUIT: Dawson (1956).

***Antithamnion percurrens* Dawson (1957), Type from Enewetak.**

***Callithamnion marshallensis* Dawson (1957), Type from Enewetak.**

*Centroceras clavulatum* (C. Agardh) Montagne [= *Ceramium clavulatum* C. Agardh]. BIKINI: Taylor (1950a). ENEWETAK: Dawson (1957), Gilmartin (1960). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956). MAJURO: Dawson (1956), Johnson et al. (1971). RONGELAP: Taylor (1950a). RONGRIK: Taylor (1950a).

*Centroceras minutum* Yamada. ARNO: Dawson (1956). ENEWETAK: Dawson (1957) as *Centroceras minimum* Yamada.

*Ceramium camouii* Dawson. ARNO: Dawson (1956).

*Ceramium clarionensis* Setchell & Gardner [= *Ceramium marshallense* Dawson]. ENEWETAK: Dawson (1957) as *Ceramium clarionense* Setchell & Gardner and *Ceramium marshallense*, n. sp. MAJURO: Dawson (1956) as *C. clarionense*.

*Ceramium fimbriatum* Setchell & Gardner. JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956).

*Ceramium flaccidum* (Harvey ex Kützing) Ardisone [= *Ceramium byssoideum* Harvey, *Ceramium gracillimum* (Kützing) Zanardini, *Ceramium taylorii* Dawson and *Ceramium transversale* Collins & Hervey]. ARNO: Dawson (1956) as *Ceramium gracillimum*. BIKINI: Taylor (1950a) as *C. byssoideum*. ENEWETAK: Dawson (1957) as *C. gracillimum* and *C. taylorii*, Gilmartin (1960) as *C. gracillimum*. JALUIT: Dawson (1956) as *C. gracillimum*. KWAJALEIN: Dawson (1956) as *C. gracillimum*. MAJURO: Dawson (1956) as *C. gracillimum*. RONGRIK: Taylor (1950a) as *C. byssoideum*.

*Ceramium macilentum* J. Agardh [= *Ceramium mazatlanense* Dawson]. ARNO: Dawson (1956) as *Ceramium mazatlanense*. ENEWETAK: Dawson (1957) and Gilmartin (1960) as *C. mazatlanense*. JALUIT: Dawson (1956) as *C. mazatlanense*.

*Ceramium serpens* Setchell & Gardner. ARNO: Dawson (1956). ENEWETAK: Dawson (1957). JALUIT: Dawson (1956). MAJURO: Dawson (1956).

***Ceramium sympodiale* Dawson (1957), Type from Enewetak.**

***Ceramium vagans* P. Silva in Silva et al. (1996) [= *C. vagabunde* Dawson (1957)], Type from Enewetak.**

*Corallophila apiculata* (Yamada) R. Norris [= *Centroceras apiculatum* Yamada]. ARNO: Dawson (1956) as *Centroceras apiculatum*. ENEWETAK: Dawson (1957) as *Centroceras apiculatum*.

*Corallophila huysmansii* (Weber-van Bosse) R. Norris [= *Ceramium huysmansii* Weber-van Bosse]. ARNO: Dawson (1956) as *Ceramium huysmansii*.

*Crouania attenuata* (C. Agardh) J. Agardh. ENEWETAK: Gilmartin (1960).

*Crouania minutissima* Yamada. ARNO: Dawson (1956).

*Griffithsia metcalfii* Tseng. KWAJALEIN: Dawson (1956).

*Griffithsia ovalis* Harvey. ENEWETAK: Dawson (1957).

*Griffithsia rhizophora* Grunow ex Weber-van Bosse. RONGRIK: Taylor (1950a).

*Haloplegma duperreyi* Montagne. BIKINI: Taylor (1950a). ENEWETAK: Gilmartin (1960).

*Monosporus* sp. [= *Neomonosporum pedicellata* Feldmann-Mazoyer]. ENEWETAK: Dawson (1957) as *Neomonosporum pedicellata* v. *tenuis*.

*Pleonosporium caribaeum* (Børgesen) R. Norris [= *Mesothamnion caribaeum* Børgesen]. ENEWETAK: Gilmartin (1960) as *Mesothamnion caribaeum*.

*Spermothamnion orientale* Weber-van Bosse. BIKINI: Taylor (1950a).

*Spermothamnion saccorhiza* (Setchell & Gardner) Feldmann-Mazoyer. ENEWETAK: Gilmartin (1960). KWAJALEIN: Dawson (1956).

*Spyridia filamentosa* (Wulfen) Harvey. BIKINI: Taylor (1950a). ENEWETAK: Taylor (1950a), Dawson (1957), Gilmartin (1960). KWAJALEIN: Dawson (1956). MAJURO: Dawson (1956), Johnson et al. (1971).

*Wrangelia anastomosans* Yamada. ENEWETAK: Dawson (1957).

*Wrangelia argus* (Montagne) Montagne. ARNO: Dawson (1956). ENEWETAK: Dawson (1957). MAJURO: Dawson (1956).

*Wrangelia penicillata* (C. Agardh) C. Agardh. BIKINI: Taylor (1950a). ENEWETAK: Taylor (1950a), Dawson (1957).

### Family Dasyaceae

*Dasya adhaerens* Yamada. BIKINI: Taylor (1950a). ENEWETAK: Taylor (1950a), Dawson (1957). RONGELAP: Taylor (1950a). RONGRIK: Taylor (1950a).

*Dasya corymbifera* J. Agardh. ENEWETAK: Gilmartin (1960).

*Dasya iyengarii* Børgesen. ENEWETAK: Dawson (1957), Gilmartin (1960).

*Dasya mollis* Harvey. ENEWETAK: Dawson (1957), Gilmartin (1960).

*Dasya pacifica* Harvey. BIKINI: Taylor (1950a).

*Dictyurus purpurascens* Bory de Saint-Vincent. ARNO: Dawson (1956). BIKINI: Taylor (1950a). ENEWETAK: Dawson (1957). RONGELAP: Taylor (1950a).

*Eupogodon geppii* (Weber-van Bosse) P. Silva [= *Dasyopsis geppii* Weber-van Bosse]. ENEWETAK: Dawson (1957) as *Dasyopsis geppii*.

*Eupogodon tenellus* (Weber-van Bosse) P. Silva [= *Dasyopsis tenella* Weber-van Bosse]. BIKINI: Taylor (1950a) as *Dasyopsis tenella*.

*Heterosiphonia crispella* (C. Agardh) Wynne [= *Heterosiphonia wurdemanii* (J. Bailey ex Harvey) Falkenberg]. ARNO: Dawson (1956). BIKINI: Taylor (1950a). ENEWETAK: Dawson (1957), Gilmartin (1960). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956). All as *Heterosiphonia wurdemannii*.

### Family Delesseriaceae

*Caloglossa adhaerens* King & Puttock. JALUIT: Dawson (1956) as *Caloglossa adnata* (Zanardini) De Toni.

*Caloglossa leprieurii* (Montagne) G. Martens. ARNO: Dawson (1956). BIKINI: Taylor (1950a). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956).

*Cottoniella triseriata* Hollenberg. BIKINI: Hollenberg (1967b).

*Hypoglossum minimum* Yamada. ENEWETAK: Dawson (1957), Gilmartin (1960).

*Martensia fragilis* Harvey [*Hemitrema fragilis* (Harvey) Dawson]. ARNO: Dawson (1956) as *Hemitrema fragilis*. ENEWETAK: Dawson (1957) as *Hemitrema fragilis*.

*Taenioma perpusillum* (J. Agardh) J. Agardh. ENEWETAK: Dawson (1957).

## Family Rhodomelaceae

- Abbottella concinna* Hollenberg. ARNO: Hollenberg (1967a).  
*Chondria baileyana* (Montagne) Harvey. ENEWETAK: Gilmartin (1960).  
*Chondria minutula* Weber-van Bosse. ENEWETAK: Dawson (1957).  
*Chondria polyrhiza* Collins & Hervey. ENEWETAK: Dawson (1957).  
*Chondria repens* Børgesen. ENEWETAK: Dawson (1957), Gilmartin (1960).  
KWAJALEIN: Dawson (1956). MAJURO: Amesbury et al. (1975b). RONGELAP:  
Taylor (1950a) as *Chondria* sp..  
*Dawsoniella bulborrhiza* Hollenberg. ENEWETAK: Hollenberg (1967a).  
*Endosiphonia spinuligera* Zanardini. JALUIT: Dawson (1956).  
*Herposiphonia arcuata* Hollenberg. BIKINI: Hollenberg (1968c).  
*Herposiphonia delicatula* Hollenberg. BIKINI: Hollenberg (1968c).  
*Herposiphonia dendroidea* Hollenberg. BIKINI: Hollenberg (1968c).  
*Herposiphonia nuda* Hollenberg. ENEWETAK: Hollenberg (1968c).  
*Herposiphonia pacifica* Hollenberg. BIKINI: Hollenberg (1968c). ENEWETAK:  
Hollenberg (1968c).  
*Herposiphonia parca* Setchell. ENEWETAK: Hollenberg (1968c).  
*Herposiphonia secunda* (C. Agardh) Ambronn [= *Herposiphonia tenella* (C. Agardh)  
Nägeli]. ARNO: Dawson (1956) as *Herposiphonia secunda* and *Herposiphonia*  
*tenella*. BIKINI: Taylor (1950a) as *H. tenella*. ENEWETAK: Dawson (1957) as *H.*  
*secunda* and *H. tenella*, Hollenberg (1968c) as *H. tenella* f. *secunda*. JALUIT:  
Dawson (1956) as *H. tenella*. KWAJALEIN: Dawson (1956) as *H. tenella*.  
RONGELAP: Taylor (1950a).  
*Herposiphonia variabilis* Hollenberg. BIKINI: Hollenberg (1968c).  
*Laurencia caraibica* P. Silva [= *Laurencia nana* Howe]. ENEWETAK: Dawson (1957) as  
*Laurencia nana*.  
*Laurencia cruciata* Harvey. BIKINI: Taylor (1950a).  
*Laurencia mariannensis* Yamada. ARNO: Dawson (1956). BIKINI: Taylor (1950a).  
ENEWETAK: Taylor (1950a), Dawson (1957). MAJURO: Dawson (1956).  
RONGELAP: Taylor (1950a).  
*Laurencia parvipapillata* Tseng. ENEWETAK: Dawson (1957).  
*Laurencia perforata* (Bory de Saint-Vincent) Montagne. RONGRIK: Taylor (1950a).  
*Lophosiphonia bermudensis* Collins & Hervey. ARNO: Dawson (1956). ENEWETAK:  
Dawson (1957). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956).  
*Lophosiphonia cristata* Falkenberg. ENEWETAK: Hollenberg (1968d).  
*Lophosiphonia obscura* (C. Agardh) Falkenberg. ENEWETAK: Dawson (1957), Gilmartin  
(1960).  
***Malaconema mininum* Hollenberg (1963, Type from Bikini.**  
***Polysiphonia anomala* Hollenberg (1968a), Type from Bikini.** ARNO: Hollenberg  
(1968a).  
*Polysiphonia apiculata* Hollenberg. BIKINI: Hollenberg (1968a).



- Polysiphonia coacta* Tseng. ARNO: Dawson (1956). ENEWETAK: Dawson (1957). MAJURO: Dawson (1956).
- Polysiphonia delicatula* Hollenberg. BIKINI: Hollenberg (1968a).
- Polysiphonia dotyi* Hollenberg (1968b), Type from Bikini.** ARNO: Hollenberg (1968b).
- Polysiphonia exilis* Harvey. ARNO: Hollenberg (1968b). BIKINI: Hollenberg (1968b). ENEWETAK: Hollenberg (1968b).
- Polysiphonia flaccidissima* Hollenberg. BIKINI: Hollenberg (1968a). ENEWETAK: Hollenberg (1968a). MAJURO: Hollenberg (1968a).
- Polysiphonia herpa* Hollenberg. ARNO: Hollenberg (1968a). BIKINI: Hollenberg (1968a).
- Polysiphonia howei* Hollenberg. BIKINI: Taylor (1950a).
- Polysiphonia japonica* Harvey [= *Polysiphonia savatieri* Hariot]. ARNO: Hollenberg (1968a) as *Polysiphonia savatieri*.
- Polysiphonia mollis* J. Hooker & Harvey [= *Polysiphonia tongatensis* Harvey ex Kützing]. ENEWETAK: Dawson (1957) and Gilmartin (1960) as *Polysiphonia tongatensis*.
- Polysiphonia pentamera* Hollenberg (1968b), Type from Enewetak.**
- Polysiphonia poko* Hollenberg. BIKINI: Hollenberg (1968a).
- Polysiphonia scopulorum* Harvey [*Lophosiphonia villum* (C. Agardh) Setchell & Gardner]. ARNO: Dawson (1956) as *Lophosiphonia villum*, Hollenberg (1968a). ENEWETAK: Gilmartin (1960) as *L. villum*, Hollenberg (1968a).
- Polysiphonia sparsa* (Setchell) Hollenberg. ARNO: Hollenberg (1968a). BIKINI: Hollenberg (1968a).
- Polysiphonia sphaerocarpa* Børgesen. BIKINI: Hollenberg (1968a).
- Polysiphonia subtilissima* Montagne. ARNO: Dawson (1956). ENEWETAK: Dawson (1957), Gilmartin (1960).
- Polysiphonia upolensis* Grunow. ARNO: Hollenberg (1968a). ENEWETAK: Hollenberg (1968a).
- Tolypocladia calodictyon* (Harvey ex Kützing) P. Silva [= *Roschera calodictyon* (Harvey ex Kützing) Weber-van Bosse]. ARNO: Dawson (1956). ENEWETAK: Taylor (1950a) as *Roschera calodictyon*, Dawson (1957), Gilmartin (1960). JALUIT: Dawson (1956). KWAJALEIN: Dawson (1956), Amesbury et al. (1975a). MAJURO: Dawson (1956).
- Womersleyella pacifica* Hollenberg. BIKINI: Hollenberg (1967a).
- Womersleyella setacea* (Hollenberg) R. Norris [= *Polysiphonia setacea* Hollenberg]. ARNO: Hollenberg (1968a) as *Polysiphonia setacea*. ENEWETAK: Hollenberg (1968a) as *P. setacea*.

## DISCUSSION

The 361 species of marine benthic algae (142 genera) reported from the Marshall Islands consist of 58 species (27 genera) of Cyanophyta, 116 species (34 genera) of Chlorophyta, 28 species (13 genera) of Phaeophyta and 159 species (68 genera) of Rhodophyta. This number surpasses the number of marine benthic algae, thus far, reported from the Palau Archipelago, i.e., 258 species

within 118 genera (Tsuda, 2002). Twenty-one species, i.e., 11 species of Chlorophyta, 1 species of Phaeophyta and 9 species of Rhodophyta, were described as new based on the type specimens from the atolls of the Marshall Islands, i.e., Enewetak (8 new species), Bikini (9 new species), Rongelap (3 new species) and Rongrik (1 new species). As shown in Table 1, algal collection efforts have been most active on Enewetak (256 species), Bikini (133 species) and Arno (105 species). Fewer species have been reported from Kwajalein (75 species), Jaluit (72 species), Majuro (65 species), Rongelap (54 species) and Rongrik (36 species).

It is also of interest to note that certain common genera of marine benthic algae which inhabit the tropical Pacific have, to date, not been reported from the Marshall Islands. These species include the brown alga *Sargassum* (Doty, 1954; Tsuda, 1976), the green alga *Ulva* (Tsuda, 1968, 1982a) and the agar-producing red alga *Gracilaria* (Tsuda, 1982b).

**Table 1. Number of species reported from each of the 17 atolls.**

Atoll	Number of Algal Species				Total
	Cyanophyta	Chlorophyta	Phaeophyta	Rhodophyta	
Ailuk	0	4	0	0	4
Arno	5	48	4	48	105
Bikini	28	51	7	47	133
Bikar	1	3	0	0	4
Bokaak	0	4	1	0	5
Enewetak	42	85	24	105	256
Jaluit	2	27	6	37	72
Kwajalein	6	36	7	26	75
Lae	1	2	0	0	3
Likiep	1	3	0	0	4
Majuro	9	26	9	21	65
Rongelap	11	25	2	16	54
Rongrik	10	10	2	14	36
Ujae	0	4	0	0	4
Ujelang	1	2	0	0	3
Utrik	1	2	0	0	3
Wotho	0	3	0	0	3
<b>Marshall Islands</b>	<b>58</b>	<b>116</b>	<b>28</b>	<b>159</b>	<b>361</b>

## REFERENCES CITED

- Amesbury, S.S., R.T. Tsuda, W.J. Zolan and T.L. Tansy. 1975a. Limited current and underwater biological survey of proposed sewer outfall sites in the Marshall Island District: Ebeye, Kwajalein Atoll. Univ. of Guam Marine Lab., Tech. Rept. No. 22, 30 pp.
- Amesbury, S.S., R.T. Tsuda, W.J. Zolan and T.L. Tansy. 1975b. Limited current and underwater biological surveys of proposed sewer outfall sites in the Marshall Island District: Darrit-Uliga-Dalap area, Majuro Atoll. Univ. of Guam Marine Lab., Tech. Rept. No. 23, 31 pp.
- Bakus, G.J. 1967. The feeding habits of fishes and primary production at Eniwetok, Marshall Islands. *Micronesica*, 3(2): 135-149.
- Calvert, H.E., C.J. Dawes and M.A. Borowitzka. 1976. Phylogenetic relationships of *Caulerpa* (Chlorophyta) based on comparative chloroplast ultrastructures. *J. Phycol.*, 12(1): 149-162.
- Colinvaux, L.H. 1968. New species of *Halimeda*: A taxonomic reappraisal. *J. Phycol.*, 4(1): 30-35.
- Dawson, E.Y. 1956. Some marine algae of the southern Marshall Islands. *Pac. Sci.*, 10(1): 25-66.
- Dawson, E.Y. 1957. An annotated list of marine algae from Eniwetok Atoll, Marshall Islands. *Pac. Sci.*, 11(1): 92-132.
- den Hartog, C. 1970. The seagrasses of the world. *Verhandelingen der Koninklijke Nederlandse Akademie van Wetenschappen, AFD. Natuurkunde*, 59(1): 1-275, 31 pls.
- Doty, M.S. 1954. Distribution of the algal genera *Rhipilia* and *Sargassum* in the Central Pacific. *Pac. Sci.*, 8(3): 367-368.
- Drouet, F. 1968. Revision of the classification of the Oscillatoriaceae. *Monogr. Nat. Sci. Phila.*, 15: 1-334.
- Drouet, F. 1973. Revision of the Nostocaceae with cylindrical trichomes. Hafner Press, NY. 292 pp.
- Drouet, F. 1981. Revision of the Stigonemataceae with a summary of the classification of the blue-green algae. *Beihefte zur Nova Hedwigia*, J. Cramer, 66: 1-221.
- Drouet, F., and W.A. Daily. 1956. Revision of the coccoid Myxophyceae. *Butler Univ. Bot. Stud.*, 12: 1-218
- Emery, K.O., J.I. Tracey and H.S. Ladd. 1954. Geology of Bikini and nearby atolls. *U.S. Geol. Surv. Prof. Pap.*, 260-A: 1-265.

- Fosberg, F.R. 1955. Northern Marshall Island expedition, 1951-1952. Land biota: Vascular plants. Atoll Res. Bull., (39): 1-22.
- Fosberg, F.R. 1976. Distributional extensions of marine spermatophytes. *Micronesica*, 12(2): 317-318.
- Gerber, R.P., and N. Marshall. 1974. Ingestion of detritus by the lagoon pelagic community of Eniwetok Atoll. *Limnol. Oceanogr.*, 19: 815-824.
- Gilbert, W.J. 1978. *Rhipilia sinuosa* sp. nov. (Chlorophyta, Siphonales) from Micronesia. *Phycologia*, 17(3): 311-313.
- Gilmartin, M. 1960. The ecological distribution of the deep water algae of Eniwetok Atoll. *Ecology*, 41(1): 210-221.
- Gilmartin, M. 1966. Ecology and morphology of *Tydemanina expeditionis*, a tropical deep water siphonous green algae. *J. Phycol.*, 2(3): 100-105.
- Hillis, L.W. 1959. A revision of the genus *Halimeda* (Order Siphonales). *Publ. Inst. Mar. Sci., Univ. of Texas*, 6: 321-403.
- Hillis-Colinvaux, L. 1977. *Halimeda* and *Tydemanina*: Distribution, diversity and productivity at Enewetak. *Third Intern. Coral Reef Symp. Proc. (Miami)*, Vol. 1: 365-370.
- Hillis-Colinvaux, L. 1980. Ecology and taxonomy of *Halimeda*: Primary producer of coral reefs. *Adv. Mar. Biol.*, 17: 1-327.
- Hollenberg, G.J. 1963. A new species of *Malaconema* (Rhodophyta) from the Marshall Islands. *Phycologia*, 2(4): 169-172.
- Hollenberg, G.J. 1967a. New genera in the Rhodomelaceae from the central Pacific. *Bull. S. Calif. Acad. Sci.*, 66(3): 201-221.
- Hollenberg, G.J. 1967b. New marine algae from the central tropical Pacific Ocean. *Amer. J. Bot.*, 54(10): 1198-1203.
- Hollenberg, G.J. 1968a. An account of the species of *Polysiphonia* of the central and western tropical Pacific Ocean. I. Oligosiphonia. *Pac. Sci.*, 22(1): 56-98.
- Hollenberg, G.J. 1968b. An account of the species of the red alga *Polysiphonia* of the central and western tropical Pacific Ocean. II. Polysiphonia. *Pac. Sci.*, 22(2): 198-207.

- Hollenberg, G.J. 1968c. An account of the species of the red alga *Herposiphonia* occurring in the central and western tropical Pacific Ocean. *Pac. Sci.*, 22(4): 536-559.
- Hollenberg, G.J. 1968d. Phycological notes. III. New records of marine algae from the central tropical Pacific Ocean. *Brittonia*, 20(1): 74-82.
- Johannes, R.E., J. Alberts, C. D'Elia, R.A. Kinzie, L.R. Pomeroy, W. Sottile, W. Wiebe, J.A. Marsh Jr., P. Helfrich, J. Maragos, J. Meyer, S. Smith, D. Crabtree, A. Roth, L.R. McCloskey, S. Betzer, N. Marshall, M.E.Q. Pilon, G. Telek, R.I. Clutter, W.D. DuPaul, K.L. Webb and J.M. Wells Jr. 1972. The metabolism of some coral reef communities: A team study of nutrient and energy flux at Eniwetok. *Bioscience*, 22: 541-543.
- Johnson, P.W., J. McN. Sieburth, A. Sastry, C.R. Arnold and M.S. Doty. 1971. *Leucothrix mucor* infestation of benthic crustacea, fish eggs and tropical algae. *Limnol. Oceanogr.*, 16(6): 962-969.
- Lawrence, J.M., and C.J. Dawes. 1969. Algal growth over the epidermis of sea urchin spines. *J. Phycol.*, 5(3): 269.
- Lee, R.K.S. 1967. Taxonomy and distribution of the melobesioid algae on Rongelap Atoll, Marshall Islands. *Can. J. Bot.*, 45: 985-1001.
- Lowman, F.G., and R.F. Palumbo. 1962. Occurrence of Bismuth-207 at Eniwetok Atoll. *Nature*, 193: 796-797.
- Marsh, J.A. Jr. 1970. Primary productivity of reef-building calcareous red algae. *Ecology*, 51(2): 255-263.
- Motteler, L.S. 1986. Pacific Island Names, A map and name guide to the new Pacific. Bishop Museum Misc. Publ. 34, 91 pp.
- Moul, E.T. 1964. New records of *Halimeda* and *Udotea* for the Pacific area. *Atoll Res. Bull.*, (106): 1-10.
- Odum, H.T., and E.P. Odum. 1955. Trophic structure and productivity of a windward coral reef community on Eniwetok Atoll. *Ecol. Monog.*, 25(3): 291-320.
- Olsen-Stojkovich, J. 1985. A systematic study of the genus *Avrainvillea* Decaisne (Chlorophyta, Udoteaceae). *Nova Hedwigia*, 41: 1-68.
- Palumbo, R.F. 1950. Algae. P. 108-118. *In* Radiobiological survey of Bikini, Eniwetok, and Likiep Atolls, July-August 1949. U.S. Atomic Energy Comm., AECD-3446, 145 pp.

- Palumbo, R.F. 1955. Uptake of Iodine-131 by the red alga *Asparagopsis taxiformis*. U.S. Atomic Energy Commission, UWFL-44, 8 pp.
- Palumbo, R.F. 1959. Gross beta radioactivity of the algae at Enewetak Atoll, 1954-1956. U.S. Atomic Energy Commission, UWFL-61, 32 pp.
- Silva, P.C., P.W. Basson and R.L. Moe. 1996. Catalogue of the benthic marine algae of the Indian Ocean. Univ. of California Press, Berkeley, xiv + 1259 pp.
- Silva, P.C., E.G. Meñez and R.L. Moe. 1987. Catalog of the benthic marine algae of the Philippines. Smithsonian Contrib. to the Marine Sciences, No. 27, iv + 179 pp.
- Smith, S.V., and J.A. Marsh Jr. 1973. Organic carbon production on the windward reef flat of Eniwetok Atoll. Limnol. Oceanogr., 18(6): 953-961.
- Taylor, W.R. 1950a. Plants of Bikini and other Northern Marshall Islands. Univ. of Michigan Press, Ann Arbor. xv + 227 pp.
- Taylor, W.R. 1950b. Marine algal vegetation of the Marshall Islands in comparison with other tropical areas. Proc. Seventh Intern. Bot. Congr., Stockholm, p. 826.
- Taylor, W.R. 1960. Marine algae of the eastern tropical and subtropical coasts of the Americas. Univ. of Michigan Press, Ann Arbor, ix + 870 pp.
- Taylor, W.R. 1964. The genus *Turbinaria* in eastern seas. J. Linn. Soc. (Bot.), 58: 475-490.
- Taylor, W.R. 1966. Records of Asian and western Pacific marine algae, particularly from Indonesia and the Philippines. Pac. Sci., 30(3): 342-359.
- Taylor, W.R. 1977. Notes on plants of the genus *Caulerpa* in the Herbarium of Maxwell S. Doty at the University of Hawaii. Atoll Res. Bull., (208): 1-17.
- Tsuda, R.T. 1968. Distribution of *Ulva* (Chlorophyta) on Pacific Islands. Micronesica, 4(2): 365-368.
- Tsuda, R.T. 1976. Occurrence of the genus *Sargassum* (Phaeophyta) on two Pacific atolls. Micronesica, 12(2): 279-282.
- Tsuda, R.T. 1981. Bibliography of marine benthic algae of Micronesia: Addendum. Micronesica, 17: 213-218.
- Tsuda, R.T. 1982a. Further records of *Ulva* (Chlorophyta) in Micronesia. Micronesica, 18(2): 193-194.

- Tsuda, R.T. 1982b. Seasonality in Micronesian seaweed population and their biogeography as affecting wild crop potential. p. 27-31. *In* R.T. Tsuda and Y.-M. Chiang (Eds.), Proceedings of Republic of China-United States Cooperative Science Seminar on Cultivation and Utilization of Economic Algae. Funded by the National Science Council and National Science Foundation. Univ. of Guam Marine Laboratory, Mangilao. 122 pp.
- Tsuda, R.T. 1987. Marine benthic algae of Enewetak Atoll. p. 1-9. *In* D.M. Devaney, E.S. Reese, B.L. Burch and P. Helfrich (Eds.), The Natural History of Enewetak Atoll. Volume II. Biogeography and Systematics. Office of Scientific and Technical Information, U.S. Dept. of Interior. 348 pp.
- Tsuda, R.T. 2002. Checklist of the marine benthic algae from the Palau Archipelago based on past references. Palau International Coral Reef Center, PICRC Publ. 02-019, 21 pp.
- Tsuda, R.T., and F.O. Wray. 1977. Bibliography of marine benthic algae in Micronesia. *Micronesica*, 13(1): 85-120.
- Tsuda, R.T., F.R. Fosberg and M.-H. Sachet. 1977. Distribution of seagrasses in Micronesia. *Micronesica*, 13(2): 191-198.
- Webb, K.L., and W.J. Wiebe. 1975. Nitrification on a coral reef. *Canadian J. Microbiol.*, 21: 1427-1431.
- Webb, K.L., W.D. DuPaul, W. Wiebe, W. Sottile and R.E. Johannes. 1975. Enewetak (Eniwetok) Atoll: Aspects of the nitrogen cycle on a coral reef. *Limnol. Oceanogr.*, 20(2): 198-210.
- Wiebe, W.J. 1976. Nitrogen cycle on a coral reef. *Micronesica*, 12(1): 23-26.
- Wiebe, W.J., R.E. Johannes and K.L. Webb. 1975. Nitrogen fixation in a coral reef community. *Science*, 188: 257-259.