

# An Annotated Checklist of Macrobenthic Algae of the Western Coast of Zamboanga City (Mindanao, Philippines)

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## ABSTRACT

Seaweed collections were made at several sites along the western coast of Zamboanga City from July to August 1999. Ninety-four (94) taxa were identified. These represent the three (3) major algal divisions broken down into fifteen (15) orders, twenty-six (26) families and forty-four (44) genera.

Six species: *Botryocladia leptopoda* (J. Agardh) Kylin, *Halimeda distorta* (Yamada) Colinvaux, *Halimeda melanesica* Valet, *Kallymenia perforata* J. Agardh, *Sarconema filiforme* (Sonder) Kylin and *Solieria robusta* (Greville) Kylin, and the genus *Sarconema* Zanardini represent new records for Zamboanga and the Philippines. All specimens are deposited in the Zamboanga State College of Marine Sciences and Technology Herbarium.

*Keywords:* checklist, seaweed species, new records, Zamboanga

## INTRODUCTION

Records of the marine algae and its taxonomic studies for the entire Western Coast of Zamboanga City are scanty. The latest treatise that compiles the reported seaweeds from the Philippines prior to 1987 is the work of Silva et al. (1987) who catalogued 911 species, including those found in Zamboanga waters. The earliest account of marine algae collected from this area is probably that of Goerg von Martens in 1868, during the Preussische Expedition, followed by the British Challenger Expedition in 1874-1875 and the Dutch Siboga Expedition in 1899. Subsequent reports that include seaweeds from Zamboanga were published by Velasquez (1955), Taylor (1966), Cordero (1980), and Trono et al. (1983). The most recent collections done

by Japanese and Filipino scientists in 1988 resulted in a list of species published by Umezaki in 1989. However, some of these reports documented in Zamboanga do not mention the specific locality of the area except those made in Santa Cruz Islands, Sacol Island, and the Calarian areas.

The main purpose of this study is to identify the different macrobenthic algae growing along the littoral zones of the western coast of Zamboanga City.

## MATERIALS AND METHODS

Seaweeds were collected from littoral areas (10 sites). Stations 1 to 6 were located from the southeastern portion of Zamboanga City. These areas were partially protected from strong waves and currents. Stations 4 and 5 were situated near the river mouth and

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characterized by heavy siltation resulting from run-off waters due to heavy rains. Stations 7 to 10 were narrow reef flats facing the Sulu-Celebes Sea, and were exposed to strong waves and winds.

Snorkeling and wading on the reef flats were done to collect the specimens. Topographical and oceanographic data and other relevant information were recorded. Collection and preservation procedures were adopted and modified from Abbott et al. (1976), Lewmanomont & Ogawa (1995), and Ganzon-Fortes (1991). Collected specimens were initially sorted out on the beach before being transported to the ZSCMST laboratory for identification and preservation.

Materials were pressed and dried, following the methods described by Ganzon-Fortes (1991), Tito (1999), and by Dr. Max H. Hommersand and Dr. Laurence M. Liao (pers. comm.). Some specimens were preserved in clear glass bottle with 5% formalin-seawater solution. Microscopic examination of samples was done by sectioning the materials using freehand method. Samples were identified on the basis of external and internal morphological features using reliable taxonomic keys like those of Magruder & Hunt (1979), Calumpang & Meñez (1997), & Trono (1997).

## RESULTS AND DISCUSSION

A total of ninety-four (94) species of marine macrobenthic algae were collected and identified. These represent the three major algal divisions (Rhodophyta, Phaeophyta, and Chlorophyta). These are broken down into 15 orders, 26 families, and 44 genera. Of these, six species, namely, *Botryocladia leptopoda*, *Kallymenia perforata*, *Sarconema filiforme*, and *Soliera robusta* (Greville) for Rhodophyta, *Halimeda melanesica* and *Halimeda distorta* for Chlorophyta, and one genus, *Sarconema Zanardini* (a red alga), represent new records for the area and the Philippines.

The list of all the taxa included in this study is presented below following the classification scheme of Silva, et al. (1996):

### **DIVISION RHODOPHYTA**

Number of Orders: 8

Number of Families: 12

Number of Genera: 21

Number of Species: 42

### **ORDER NEMALIALES**

#### **FAMILY GALAXAURACEAE**

##### **Actinotrichia** Decaisne

*Actinotrichia fragilis* (Forsskaal) Boergesen

Specimen examined: MB-154.

##### **Galaxaura** Lamouroux

*Galaxaura apiculata* Kjellman

Specimen examined: MB-044a.

*Galaxaura arborea* Kjellman

Specimens examined: MB-044, MB-079, MB-221.

*Galaxaura fasciculata* Kjellman

Specimen examined: MB-079a.

##### **Tricleocarpa** Huisman & Borowitzka

*Tricleocarpa cylindrica* (Ellis & Sol.) Huisman & Borowitzka

Specimens examined: MB-045, MB-078, MB-125,  
MB-148, MB-183,  
MB-217, MB-230, MB-238.

*Tricleocarpa fragilis* (Linnaeus) Huisman & Townsend

Specimens examined: MB-046, MB-080.

### **ORDER GELIDIALES**

#### **FAMILY GELIDIACEAE**

##### **Gelidium** Lamouroux

*Gelidiella acerosa* (Forsskaal) Feldmann & Hamel

Specimen examined: MB-177.

## ORDER GRACILARIALES

### FAMILY GRACILARIACEAE

#### *Gracilaria* Greville

*Gracilaria arcuata* Zanardini

Specimen examined: MB- 073a.

*Gracilaria debilis* (Forsskaal) Boergesen

Specimen examined: MB-127, MB-149, MB-184,  
MB-213.

*Gracilaria edulis* (S.G. Gmelin) Silva

Specimens examined: MB-050, MB-071, MB-128,  
MB-144.

*Gracilaria eucheumoides* Harvey

Specimens examined: MB-051, MB-073, MB-129.

*Gracilaria salicornia* (C. Agardh) Dawson

Specimens examined: MB-119, MB-153.

*Gracilaria textorii* (Suringar) De Toni

Specimen examined: MB-035.

## ORDER CRYPTONEMIALES

### FAMILY HALYMENIACEAE

#### *Halymenia* C. Agardh

*Halymenia dilatata* Zanardini

Specimen examined: MB-041, MB-081, MB-122,  
MB-176.

*Halymenia durvillaei* Bory de Saint -Vincent

Specimens examined: MB-047, MB-077, MB-124,  
MB-187.

*Halymenia maculata* J. Agardh

Specimens examined: MB-039, MB-083, MB-145,  
MB-214.

### FAMILY KALLYMENIACEAE

#### *Kallymenia* J. Agardh

*Kallymenia perforata* J. Agardh

Specimens examined: MB-042, MB-175.

## ORDER CORALLINALES

### FAMILY CORALLINACEAE

#### *Amphiroa* Lamouroux

*Amphiroa fragilissima* (Linnaeus) Lamouroux

Specimens examined: MB-246.

*Amphiroa rigida* Lamouroux

Specimens examined: MB-043, MB-115, MB-229.

*Amphiroa foliacea* Lamouroux

Specimen examined: MB-252.

## ORDER GIGARTINALES

### FAMILY HYPNEACEAE

#### *Hypnea* Lamouroux

*Hypnea boergesenii* Tanaka

Specimens examined: MB-123, MB-152.

*Hypnea charoides* Sonder

Specimens examined: MB-049, MB-076, MB-205.

*Hypnea cervicornis* J. Agardh

Specimens examined: MB-178, MB-215.

*Hypnea divaricata* (C. Agardh) Greville

Specimens examined: MB-048, MB-219.

*Hypnea spinella* (C. Agardh) Kuetzing

Specimens examined: MB-074, MB-126, MB-147,  
MB-186.

*Hypnea pannosa* J. Agardh

Specimen examined: MB-123a.

### FAMILY SOLIERIACEAE

#### *Kappaphycus* Doty

*Kappaphycus alvarezii* (Doty) Doty ex Silva

Specimens examined: MB-047, MB-077, MB-124,  
MB-187.

*Kappaphycus cottonii* (Weber van-Bosse) Doty ex  
Silva

Specimen examined: MB-052.

*Kappaphycus striatum* (Schmitz) Doty ex Silva

Specimen examined: MB-040.

**Sarconema** Zanardini

*Sarconema filiforme* (Sonder) Kylin  
Specimen examined: MB-072.

**Solieria** J. Agardh

*Solieria robusta* (Greville) Kylin  
Specimen examined: MB-037.

**ORDER RHODYMENIALES**

**FAMILY CHAMPIACEAE**

**Champia** Desvaux

*Champia parvula* (C. Agardh) Harvey  
Specimen examined: MB-038.

**FAMILY RHODYMENIACEAE**

**Botryocladia** (J. Agardh) Kylin

*Botryocladia leptopoda* (J. Agardh) Kylin  
Specimens examined: MB-036, MB-116, MB-181,  
MB-218.

**Ceratodictyon** Zanardini

*Ceratodictyon spongiosum* Zanardini  
Specimen examined: MB-146.

**ORDER CERAMIALES**

**FAMILY DASYACEAE**

**Dictyurus** Bory de Saint- Vincent

*Dictyurus occidentalis* J. Agardh  
Specimen examined: MB-180.

**Vanvoorstia** Harvey

*Vanvoorstia spectabilis* Harvey  
Specimen examined: MB-118.

**FAMILY RHODOMELACEAE**

**Acanthopora** Lamouroux

*Acanthopora muscoides* (Linnaeus) Bory de  
Saint-Vincent  
Specimens examined: MB-1311, MB-085, MB-150.  
*Acanthopora spicifera* (Vahl) Boergesen  
Specimens examined: MB-082, MB-121, MB-151,  
MB-182.

**Chondria** C. Agardh

*Chondria armata* (Kuetzing) Okamura  
Specimen examined: MB-032.

**Laurencia** Lamouroux

*Laurencia cartilaginea* Yamada  
Specimen examined: MB-034.  
*Laurencia papillosa* (C. Agardh) Greville  
Specimen examined: MB-034a.

**Melanamansia** R.E. Norris

*Melanamansia glomerata* (C. Agardh) Norris  
Specimen examined: MB-117.

**DIVISION PHAEOPHYTA**

Number of Orders: 3  
Number of Families: 4  
Number of Genera: 8  
Number of Species: 15

**ORDER DICTYOTALES**

**FAMILY DICTYOTACEAE**

**Dictyota** Lamouroux

*Dictyota cervicornis* Kuetzing  
Specimens examined: MB-024, MB-207.  
*Dictyota dichotoma* (Hudson) Lamouroux  
Specimens examined: MB-025, MB-107, MB-141,  
MB-174.

*Dictyota friabilis* Setchell

Specimen examined: MB-023.

*Dictyota mertensii* (Martius) Kuetzing

Specimen examined: MB-020.

**Lobophora** J. Agardh

*Lobophora variegata* (Lamouroux) Womersley

ex Oliviera

Specimens examined: MB-022, MB-108, MB-143,  
MB-172.

**Padina** Adanson

*Padina australis* Hauck

Specimens examined: MB-027, MB-069, MB-113,  
MB-142.

*Padina tetrastromatica* Segawa

Specimen examined: MB-066.

**Spatoglossum** Kuetzing

*Spatoglossum pacificum* Yendo

Specimens examined: MB-026, MB-070, MB-206.

**ORDER SCYTOSIPHONALES**

**FAMILY SCYTOSIPHONACEAE**

**Colpomenia** (Endlicher) Derbes and Solier

*Colpomenia sinuosa* (Martens ex Roth) Derbes  
and Solier

Specimen examined: MB-018.

**ORDER FUCALES**

**FAMILY SARGASSACEAE**

**Sargassum** C. Agardh

*Sargassum crassifolium* J. Agardh

Specimens examined: MB-030, MB-140.

*Sargassum cristaefolium* C. Agardh

Specimens examined: MB-021, MB-109.

*Sargassum polycystum* C. Agardh

Specimens examined: MB-018, MB-110.

*Sargassum oligocystum* Montagne

Specimens examined: MB-028, MB-067, MB-112,  
MB-173.

**Turbinaria** Lamouroux

*Turbinaria ornata* (Turner) J. Agardh

Specimens examined: MB-029, MB-111.

**FAMILY CYSTOSERIACEAE**

**Hormophysa** Kuetzing

*Hormophysa cuneiformis* (Gmelin) P. Silva

Specimen examined: MB-143a.

**DIVISION CHLOROPHYTA**

Number of Orders: 4

Number of Families: 10

Number of Genera: 15

Number of Species: 37

**ORDER ULVALES**

**FAMILY ULVACEAE**

**Enteromorpha** Link

*Enteromorpha intestinalis* (Linnaeus) Van den Hoek

Specimens examined: MB-016, MB-058, MB-136,  
MB-165.

*Enteromorpha flexuosa* (Wulfen) J. Agardh

Specimen examined: MB-233.

**Ulva** Linnaeus

*Ulva lactuca* Linnaeus

Specimens examined: MB-006, MB-139, MB-162,  
MB-201.

*Ulva reticulata* Forsskaal

Specimens examined: MB-008, MB-089, MB-167,  
MB-193.

## ORDER CLADOPHORALES

### FAMILY CLADOPHORACEAE

#### *Chaetomorpha* Kuetzing

- Chaetomorpha crassa* (C. Agardh) Kuetzing  
Specimens examined: MB-001, MB-086, MB-135,  
MB-166.
- Chaetomorpha spiralis* (Okamura)  
Specimen examined: MB-235.

#### *Cladophora* Kuetzing

- Cladophora vagabunda* (Linnaeus) Venden  
Specimens examined: MB-093, MB-129.

### FAMILY SIPHONOCLADACEAE

#### *Boergesenia* J. Feldman

- Boergesenia forbesii* (Harvey) J. Feldmann  
Specimens examined: MB-005, MB-088, MB-155.

#### *Boodlea* G. Murray and De Toni

- Boodlea composita* (Harvey) Brand  
Specimen examined: MB-094.

#### *Dictyosphaeria* Decaisne ex Endlicher

- Dictyosphaeria cavernosa* (Forsskaal) Boergesen  
Specimen examined: MB-092.

### FAMILY VALONIACEAE

#### *Valonia* C. Agardh

- Valonia aegagropila* C. Agardh  
Specimens examined: MB-055, MB-104, MB-131.

## ORDER BRYOPSIDALES

### FAMILY CAULERPACEAE

#### *Caulerpa* Lamouroux

- Caulerpa cupressoides* (Vahl) C. Agardh  
Specimen examined: MB-091.
- Caulerpa lentillifera* J. Agardh var. *compacta* Trono  
and Ang  
Specimen examined: MB-091.
- Caulerpa peltata* Lamouroux  
Specimens examined: MB-106, MB-156, MB-194,  
MB-226.
- Caulerpa racemosa* (Forsskaal) J. Agardh  
Specimens examined: MB-007, MB-065, MB-132,  
MB-169, MB-190.
- Caulerpa racemosa* (Forsskaal) Agardh var. *turbinata*  
(Agardh) Eubank  
Specimens examined: MB-105, MB-149.
- Caulerpa serrulata* (Forsskaal) J. Agardh  
Specimen examined: MB-232, MB-242.
- Caulerpa sertularioides* (S. Gmelin) Howe  
Specimens examined: MB-015, MB-060, MB-100,  
MB-130, MB-171, MB-202,  
MB-243, MB-248.
- Caulerpa taxifolia* (Vahl) J. Agardh  
Specimens examined: MB-222, MB-239.

### FAMILY CODIACEAE

#### *Codium* Stackhouse

- Codium bartlettii* Tseng & Gilbert  
Specimens examined: MB-061, MB-158, MB-204,  
MB-225, MB-240.
- Codium divaricatum* Tseng & Gilbert  
Specimen examined: MB-053.
- Codium edule* P. C. Silva  
Specimens examined: MB-010, MB-224, MB-236.
- Codium geppii* O. Schmidt  
Specimens examined: MB-188, MB-250.

**FAMILY HALIMEDACEAE**

**Halimeda** Lamouroux

- Halimeda bikiniensis* Taylor  
Specimen examined: MB-056.
- Halimeda discoidea* Decaisne  
Specimens examined: MB-017, MB-059, MB-101,  
MB-137, MB-195.
- Halimeda distorta* Decaisne  
Specimen examined: MB- 013.
- Halimeda gracilis* Harvey ex J. Agardh  
Specimen examined: MB- 014.
- Halimeda macroloba* Decaisne  
Specimens examined: MB-002, MB-090, MB-170,  
MB-191, MB- 244.
- Halimeda melanesica* Valet  
Specimens examined: MB-009, MB-063, MB-096,  
MB-161, MB-198.
- Halimeda micronesica* Yamada  
Specimen examined: MB-012.
- Halimeda tuna* (Ellis & Solander) Lamouroux  
Specimens examined: MB-003, MB-097, MB-132,  
MB-164, MB-234.

**FAMILY UDOTEACEAE**

**Chlorodesmis** Harvey & Barkley

- Chlorodesmis hildebrandtii* A. Gepp & E. Gepp  
Specimens examined: MB-160, MB-200, MB-227.
- Chlorodesmis fastigiata* (C. Agardh) Ducker  
Specimen examined: MB-247.

**ORDER DASYCLADALES**

**FAMILY DASYCLADACEAE**

**Bornetella** Munier- Chalmers

- Bornetella sphaerica* (Yamada) Solms- Laubach  
Specimens examined: MB-004, MB-102, MB-157.

**Neomeris** Lamouroux

- Neomeris annulata* Dickie  
Specimens examined: MB-195, MB-241.

**FAMILY POLYPHYSAEAE**

**Acetabularia** Lamouroux

- Acetabularia dentata* Solms- Laubach  
Specimens examined: MB-054, MB-103.
- Acetabularia major* G. Martens  
Specimens examined: MB-159, MB-203, MB-245,  
MB-249.

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