

Acknowledgment

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Table 1: A summary of the recorded marine algae from Zawia region.

Class	Genus	Species
Chlorophyceae	18	44
Pheophyceae	22	41
Rhodophyceae	48	102
Cyanophyceae	5	8
Total	93	195

الطحالب البحرية من الساحل الغربي لليبيا (منطقة الزاوية)

■ أ.هناء المهدي ابوحبيل

■ د. عمر أحمد الشتيوي

قسم علم النبات - كلية العلوم
صبراتة- جامعة الزاوية

قسم علم النبات - كلية العلوم -
جامعة طرابلس

• الملخص:

مجموع أنواع الطحالب المختلفة التي جمعت من الساحل الغربي لليبيا (منطقة الزاوية) 195 نوعاً. الأنواع المختلفة كالاتي: الطحالب الخضراء 44 نوعاً تنتمي إلي 18 جنساً، الطحالب البنية 41 نوعاً تنتمي إلي 22 جنساً، الطحالب الحمراء 102 نوعاً تنتمي إلي 48 جنساً والطحالب الخضراء المزرقمة (سيانوبكتيريا) 8 أنواع تنتمي إلى 5 اجناس. نسبة R/P كانت 2.5 .

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MARINE ALGAE OF WESTERN COAST OF LIBYA (ZAWIA REGION)

Achrochaetium Nageli 1862
Achrochaetium pectinatum 1
Rhodochorton Nageli 1862
Rhodochorton floridulum 3
Rhodochorton purpureum 1
Family : Bonnemaisoniaceae
Asparagopsis Montagne 1840
Asparagopsis armata 1
Asparagopsis taxiformis 1,2,4
Family : Chaetangiaceae
Scinaia Bivona 1822
Scinaia forcellata 3
Order : Corallinales
Family : Corallinaceae
Corallina Linnaeus 1758
Corallina mediterranea 1,2,3,4
Corallina culoensis 1
Corallina officinalis 1,2
Jania Lamouroux 1812
Jania adherens 1,2,3
Jania capillacea 1,2,3,4
Jania pumila 1,2
Jania rubens 1,2,3,4
Amphiroa Lamouroux 1812
Amphiroa rigida 4
Choreonema NovNom. 1883
Choreonema thuretii 1,2,4
Order : Nematiales
Family : Helminthocladiaceae
Nemalion Targioni - Tozzetti 1818
Nemalion helminthoides 2
Liagora Lamouroux 1812
Liagora viscid 4
Order : Bangiales
Family : Bangiaceae
Bangia Lyngbye 1819
Bangia atropurpurea 2
Bangia fuscopurpurea 1,2,4
Porhyra C. Agardh 1824
Porhyra linearis 1,2
Porhyra miniata 2
Porhyra leucosticta 2
Porhyra bilicalis 1,2
Order : Gigartinales

Family: Gigartineaceae
Gigartina Stackhouse 1809
Gigartina acicularis 1,2
Gracilaria Greville 1830
Gracilaria verrucosa 3
Family : Hypneaceae
Hypnea Lamouroux 1813
Hypnea cervicornis 1,3,4
Hypnea cornuta 2,4
Hypnea musciformis 1,2,3,4
Hypnea spiralis 1,2,3
Family : Phyloporaceae
Phyllophora Greville 1830
Phyllophora truncate 1
Family : Plocamiaceae
Plocamium Lamouroux 1813
Plocamium cartilagineum 1,2,3
Family : Polyidaceae
Polyides C. Agardh 1823
Polyides rotundus 4
Order : Compsopogonales
Family : Erythropeltidaceae
Porphyropsis Rosenving 1909
Porphyropsis coccinea 2,4
Family: Furcellariaceae
Furcellaria Lamouroux 1813
Furcellaria lumbricalis 1
Order : Gelidiales
Family : Gelidiaceae
Pterocladia J. Agardh 1851
Pterocladia capillacea 1
Gelidium Lamouroux 1813
Gelidium crinale 3,4
Gelidium latifolium 1,2,3
Family: Rhodophyllidaceae
Rhodophyllis Kutzing 1847
Rhodophyllis divaricata 2
Order: Rhodymeniales
Family: Rhodymeniaceae
Botryocladia Kylin 1831
Botryocladia Capillacea 1
Family: Champiaceae
Gastroclonium Kutzing 1843
Gastroclonium ovatum 1,2

**Division Cyanophyta
(Cyanobacteria)
Class Cyanophyceae**

Order: Oscillatoriales
Family: Oscillatoriaceae
Oscillatoria Vaucher ex Gomont 1892
Oscillatoria erythraea 1,3,4
Lyngbya C. Agardh ex Gomont 1892
Lyngbya aestuarii 1
Lyngbya majuscula 1,2,3,4
Lyngbya sordida 2,3,4
Microcoleus Desmazières ex
Gomont 1892
Microcoleus chthonoplastes 1,3,4
Family: Rivulariaceae
Calothrix C. Agardh ex Borent &
Flahault 1886
Calothrix aeruginea 1,2,3,4
Calothrix crustaceae 2
Rivularia C. Agardh ex Borent &
Flahault 1886
Rivularia mesenterica 1,3,4

1= Godium

2= Dellh

3= Harsha

4= Motrad

Scytosiphon lomentaria 1,2,3,4

Order : Fucales

Family : Cystoseiraceae

Cystoseira C. Agardh 1820

Cystoseira barbata 1,2,3,4

Cystoseira caespitosa 2,3,4

Cystoseira compressa 1,2,3,4

Cystoseira crinita 1,2,3,4

Cystoseira spinosa 2,3,4

Cystoseira stricta 1,2,3,4

Cystoseira zosteroides 3,4

Family : Sargassaceae

Sargassum C. Agardh 1820

Sargassum acinarium 3,4

Sargassum cymosum 3

Sargassum vulgare 1,2,3,4.

Order : Dictyotales

Family : Dictyotaceae

Dictyopteris J.V. Lamouroux 1809

Dictyopteris jamaicensis 2

Dictyopteris membranacea 1,2,3,4

Dictyota J.V. Lamouroux 1809

Dictyota cervicornis 1

Dictyota dichotoma 1,2,3,4

Dictyota divaricata 1

Dictyota indica 2,3

Dilophus J. Agardh 1882

Dilophus fasciola 3

Dilophus spiralis 1,2,3,4

Styopodium J. Agardh 1894

Styopodium zonale 1

Padina Adanson 1763

Padina pavonica 1,2,3,4

Taonia J. Agardh 1848

Taonia atomaria 1,2,3,4

Order : Ectocarpales

Family : Ectocarpaceae

Ectocarpus Lyngbye emend. Hamel 1939

Ectocarpus elachistaeformis 2,4

Ectocarpus siliculosus 1,2,3,4

Spongonema Kutzing 1849

Spongonema tomentosum 3,4

Division Rhodophyta Class Rhodophyceae

Order : Ceramiales

Family : Rhodomelaceae

Acanthophora Lamouroux 1813

Acanthophora najadiformis 1,2

Herposiphonia Nageli 1846

Herposiphonia secunda 1,2,3,4

Herposiphonia tenella 1,2,3,4

Laurencia Lamouroux 1813

Laurencia hybrid 2,3,4

Laurencia obtuse 1,2,3,4

Laurencia paniculata 1,2

Laurencia papillosa 1,2,3,4

Laurencia pinnatifida 2,4

Lophosiphonia Falkenberg 1897

Lophosiphonia cristata 4

Lophosiphonia obscura 1,4

Lophosiphonia reptabunda 2,3,4

Polysiphonia Greville 1830

Polysiphonia fibrata 1,2,3,4

Polysiphonia flaccidissima 3

Polysiphonia macrocarpa 1,2

Polysiphonia nigra 1,2,3,4

Polysiphonia nigrescens 1,2,3,4

Polysiphonia richardsonii 3

Polysiphonia simulans 1,3

Polysiphonia urceolata 1,2,3,4

Polysiphonia violacea 1

Pterosiphonia Falkenberg 1897

Pterosiphonia ardreana 2

Pterosiphonia parasitica 1

Pterosiphonia pennata 1,2,4

Rytiphlaea C. Agardh 1824

Rytiphlaea tinctoria 1,2,3

Rhodomela C. Agardh 1823

Rhodomela lycopodioides 3

Brongiartella Bory 1822

Brongiartella byssoides 1,2

Chylocladia Greville 1833

Chylocladia mediterranea 1,2,4

Digenea C. Agardh 1822

Digenea simplex 2

Family : Delesseriaceae

Haraldia Feldmann 1939

Haraldia prostrate 1,2

Myriogramme Kylin 1924

Myriogramme divaricate 2

Myriogramme minute 3

Family : Ceramiaceae

Antithamnion Nageli 1847

Antithamnion lherminieri 1,3

Antithamnion sublittoral 1,2

Callithamnion Lyngbye 1819

Callithamnion arbuscula 2

Callithamnion breviramosum 1,3,4

Callithamnion compactum 1,2,3

Callithamnion paschal 3

Centroceras Kutzing 1841

Centroceras clavulatum 1,2,3,4

Ceramium Roth 1797

Ceramium camouii 2

Ceramium caudatum 1,2,4

Ceramium ciliatum 1,2

Ceramium fastigiatum 2,3

Ceramium flaccidum 1,2,4

Ceramium gracillimum 4

Ceramium mazatlanense 2,4

Ceramium paniculatum 2

Ceramium recticorticium 2,4

Ceramium rubrum 1,2,3,4

Ceramium serpens 1,4

Ceramium taylorii 1,3

Ceramium uruguayense 4

Ceramium zaca 1,2

Pleonosporium Nageli 1861

Pleonosporium codicolum 2

Pleonosporium flexuosum 1

Spyridia Harvey in Hooker 1833

Spyridia felamentosa 1,2,3,4

Platythamnion J. Agardh, 1892

Platythamnion tepocensis 1

Crouania J. Agardh 1842

Crouania minutissima 1,2,3,4

Family : Dasyaceae

Dasya C. Agardh 1842

Dasya clavigera 2

Dasya rigidula 1,2,3,4

Heterosiphonia Montagne 1842

Heterosiphonia gibbesii 1

Heterosiphonia plumose 1,2

Heterosiphonia wurdemanni 1,2,3,4

Order : Nemaliales

Family : Acrochaetiaceae

Division: Chlorophyta

Class: Chlorophyceae

Order : Dasycladales

Family: Dasycladaceae

Dasycladus C. Agardh 1828

Dasycladus vermicularis 1,2,3,4

Family : Polyphysaceae

Acetabularia Lamouroux 1817

Acetabularia acetabulum 1

Order : Siphonocladales

Family : Anadyomenaceae

Anadyomene Lamouroux 1812

Anadyomene stellata 1,2,3,4

Order : Bryopsidales

Family : Bryopsidaceae

Bryopsis Lamouroux 1809

Bryopsis adriatica 1,2

Bryopsis corymbosa 2

Bryopsis duplex 2,3

Bryopsis muscosa 2

Order : Caulerpales

Family : Caulerpaceae

Caulerpa Lamouroux 1809

Caulerpa rasemosa 1,2,3,4

Family : Udotaceae

Halimeda Lamouroux 1816

Halimeda tuna 1,2,3,4

Family : Flabelliaceae

Flabellia Reichenbach 1841

Flabellia petiolata 1,2,3,4

Family : Valoniaceae

Valonia C. Agardh 1823

Valonia aegagropila 1,3,4

Valonia macrophysa 1,2,3,4

Order : Cladophorales

Family : Cladophoraceae

Chaetomorpha Kutzing 1843

Chaetomorpha aerea 1,2,3

Chaetomorpha crassa 1

Chaetomorpha melagonium 1,4

Chaetomorpha princeps 2

Cladophora Kutzing 1843

Cladophora catenifera 2

Cladophora cymopliae 1,2,3,4

Cladophora fascicularis 1,2,3

Cladophora fuliginosa 1,2

Cladophora inclusa 1,2,3,4

Cladophora neesiorum 1,2,4

Cladophora pellucid 1,2

Cladophora prolifera 1,2,3,4

Cladophora rupestri 2,3,4

Cladophora trichotoma 1,2,3,4

Cladophora utriculosa 1,2,3,4

order: Siphonocladales

Family : Siphonocladaceae

Cladophoropsis Borgesen 1905

Cladophoropsis modonensis 1,2,3

Cladophoropsis gerloffii 1,3,4

Siphonocladus Schmits 1878

Siphonocladus pusillus 2

Order : Ulvales

Family : Ulvaceae

Ulva Lannaeus 1753

Ulva lactuca 1,2,3,4

Enteromorpha Link 1820

Enteromorpha compressa 1,2

Enteromorpha linza 1,2,3

Order : Codiales

Family : Codiaceae

Codium Stackhouse 1797

Codium bursa 1,2,3,4

Codium coralloides 2

Codium corymbosum 2

Codium decortatum 2

Codium fragile 2,3

Codium tomentosum 1,2

Order : Derbesiales

Family : Derbesiaceae

Derbesia (Lyngbye) Solier 1847

Derbesia marina 3

Pedobesia MacRail & Womersley 1974

Pedobesia lamourouxii 1,2,3,4

Bryosidella Feldmann ex Rietema 1975

Bryosidella neglecta 2

Pseudobryopsis Berthold in Oltmanns 1904

Pseudobryopsis myura 1,2,3

Division: Pheophyta

Class: Pheophyceae

Order : Dctyosiphonales

Family : Asperococcaceae

Asperococcus J.V. Lamouroux 1813

Asperococcus bullosus 3,4

Asperococcus turneri 1,2

Order :Laminariales

Family : Chordaceae

Chorda Stackhouse 1797

Chorda filum 1

order: Chordariales

Family: Chordariaceae

Cladosiphon Kutzing 1843

Cladosiphon occidentalis 2

Eudesme J. Agardh 1882

Eudesme virescens 1,2,3,4

Giraudia Derbs & Solier 1851

Giraudia sphaclarioides 2

Order : Sphaclariales

Family: Sphaclariaceae

Sphaclaria Lyngbye 1819

Sphaclaria californica 2

Sphaclaria furcigera 1,2,3,4

Sphaclaria tribuloides 1,2,3,4

Family : Cladostephaceae

Cladostephus C. Agardh 1817

Cladostephus hirsutus 1,2,3,4

Family : Stypocaulaceae

Halopteris Kutzing 1843

Halopteris scoparia 1,2,3,4

Halopteris filicina 1,2,3,4

Family: Punctariaceae

Punctaria Greville 1830

Punctaria latifolia 1,3

Order : Scytosiphonales

Family : Scytosiphonaceae

Colpomenia Derbes et Solier 1851

Colpomenia sinuosa 1,2,

Hydroclathrus Bory de Saint- Vincent 1825

Hydroclathrus clathratus 1,2,3,4

Petalonia Derbs & Solier 1850

Petalonia fascia 2

Scytosiphon C. Agardh 1820

All specimens were fixed in 5% formalin seawater solution for anatomical studies, and other specimens were mounted on herbarium sheets which were kept in the algal herbarium, Botany Department, Zawia University.

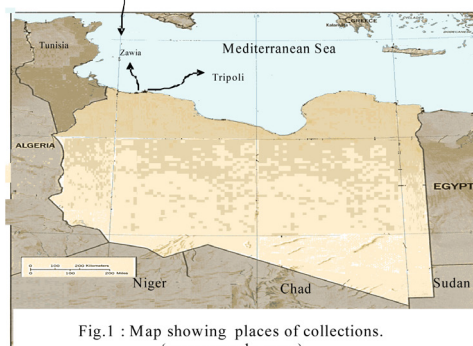
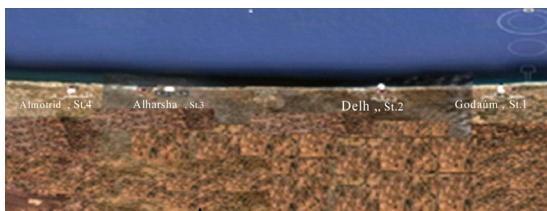


Fig.1 : Map showing places of collections.
(www.google.com.)

Results and Discussion

The preliminary survey of the Western coast of Libya (Zawia region) showed the existence of 195 species of algae including 18 genera, 44 species (22.56%) of Chlorophyceae; 22 genera, 41 species (21.03%) of Pheoophyceae; 48 genera, 102 species (52.31%) of Rhodophyceae ; 5 genera, 8 species (4.10%) of Cyanophyceae (Table 1). The (R/P) ratio (number species of Rhodophyceae/number of species of Pheoophyceae) was 2.5 which agree with the findings of Haritonidis and Tsekos (1975) for the Northern Greece where R/P ratio is 2.7 which is higher than the Eastern coast of Libyan (Cyrenaica) Godeh et al (1992), and Guven & Oztig (1971) for the Turkish coast where R/P ratio are 2.05 and 2.0 respectively.

The coast is also including sea grasses, *Posidonia oceanica* (linn.) Delile and *Cymodocea nodosa* (Ucria) Ascherson on sandy substrata. The number of phaeoophycean species is lower than the rhodophycean i.e. R/P = 2.5. Along the coast of Godium and Della the large pheoophyceae members from pure communities i.e., *Cystoseira crinite*, *Halopetris scoparia* and *Padina pavonica* which cover a large area. Filaments and crustose rhodophycean, a number of chlorophycean, pheoophycean and rhodophycean algae are always found growing as epiphyte.

Marine Algae of Western Coast of Libya (Zawia Region)

Omar A. Shtewi

Department of Botany, Faculty of
Science, University of Tripoli

Hana M. Abohbell

Department of Botany, Faculty
of Science Sobrata, University of
Zawia

Abstract

A total of 195 different algae species were collected and identified from the Western coast of Libya (Zawia region). The different species were as follows: 44 Chlorophyta species belong to 18 genera, 41 Pheaophyta species belong to 22 genera, 102 Rhodophyta species belong to 48 genera and 8 Cyanophyta (Cyanobacteria) species belong to 5 genera. The R/P ratio was 2.5.

Key words: Marine algae. Zawia. Libya

Introduction

Libya has a large and long coast that stretches from the Tunisian border on the west to Egyptian one on the east about, 2000 Km long. The Libyan coast is mostly sandy with beautiful beaches, but there are some rocky regions. The eastern coast is mainly while rocky, some rocky areas in the western coast can be round (Nizamuddin, 1991).

Scientists studies concerns marine algae of Libyan coast is limeted. However, some scientific deal to the Libyan coast e.g. [Ardisson (1893); De Toni (1892, 1895); De Toni & Levi (1888); De Toni & Forti (1913, 1914); Lemoine (1915); Muschler (1910); Pampanini (1931); Petersen (1918); Raineri (1920, 1921)].

In the contemporary time, some information has been collected about the Libyan marine algae by the studies of [Nizamuddin et al. (1979), Nizmuddin (1981, 1991), Shameel (1983), Godeh et al. (1992); Shtewi and Fetory (2007); Godeh et al. (2009)].

Materials and Methods

A survey for the collection of specimens was made from four stations i.e., Godium to Motrad extending about 25 Km., the specimens were classified in classes, orders, families and were marked by station number (Fig. 1). vis., station 1- Godium, station 2- Dellh, station 3- Harsha, and station 4- Motrad during November 2010 to October 2011.