

**A LIST OF THE MARINE ALGAE FROM THE ALEXANDRIA
COAST, EGYPT**

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ABSTRACT

A total of 116 taxa of seaweeds was collected from 15 sites along the Alexandria coast, including 30 Chlorophyceae, 28 Phaeophyceae and 58 Rhodophyceae. Of these, 25 species (6 green, 3 brown and 16 red) are newly recorded from Alexandria area. The character of vegetation in the Alexandria coast is rather boreal than subtropical.

INTRODUCTION

There are very few published reports of marine algae from Alexandria. The only information since the early part of the present century has been given by Nasr (1940 a and b) and by Aleem (1951) who published a list of algae comprised 20 green, 20 brown and 62 red algal species. Furthermore, Shaaban et al 1983, from sporadic collections, observed only 26 algal species at two locations in Alexandria.

MATERIAL AND AREA OF INVESTIGATION

During the period of 1980-1984, seasonal collections of marine algae were made from 15 sites along the Alexandria coast, (Fig. 1). The sites are numbered as follows:

1. **Abu-Qir Bay:** A sheltered site. The substratum is muddy sand with a scattered stones. The area is subjected to industrial and urban wastes.
2. **Abu-Qir:** An exposed rocky site, near the western edge of Abu-Qir Bay. The massive rocky outcrops in the location provides a good substratum for a rich algal flora.
3. **Montazah:** A semi-exposed rocky site.

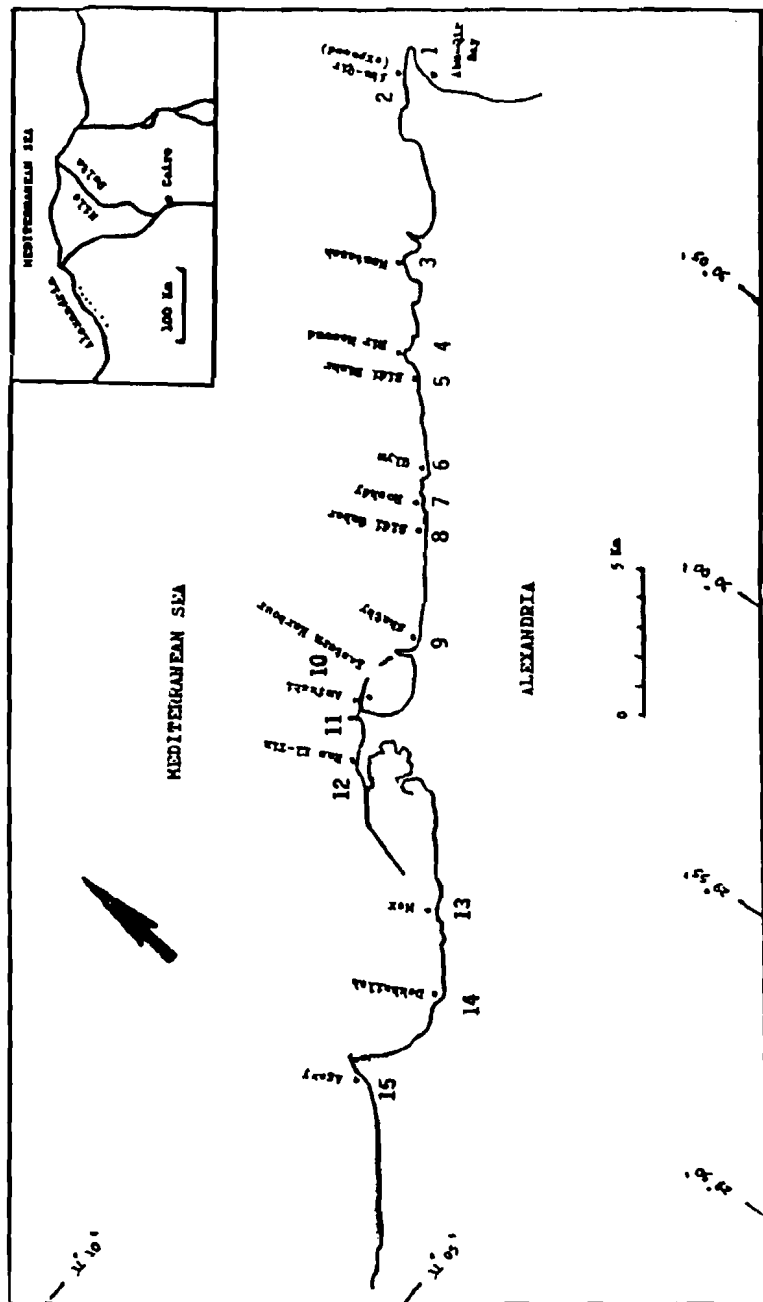


Fig. (1)
Area of investigation
and the sites of collection.

4. **Bir Masoud:** A rather exposed rocky coast, with uneven rocks.
5. **Sidi Bishr:** A semi-exposed coastal site. The substratum is partly sandy with scattered boulders. It is subjected to the influence of a main pipe of urban waste water.
6. **Glym:** An exposed locality. The substratum consists of large boulders and cobbles. The area is affected by a waste discharge.
7. **Roshdy:** A semi-exposed area. It is a stony flat, with gullies.
8. **Sidi Gaber:** A very exposed rocky site, with scattered boulders and cobbles. The substratum covered with shells fragments.
9. **Shatby:** A sheltered sandy site with small stones and scattered rocks. This location is affected by the discharge of urban waste waters.
10. **Eastern Harbour:** A semi-enclosed sheltered locality. The substratum is muddy sand. This area is subjected to urban waste waters.
11. **Anfoushi:** An exposed site with substratum consisting of rock outcrops and boulders. The location is relatively influenced by urban waste water.
12. **Ras El-Tin:** A very exposed area, with jumbled boulders, steep rocky cliffs. The site is relatively rich in flora.
13. **Mex:** A semi-exposed muddy sand site, with scattered stones, pebbles and in part rocky. The location is affected by an influx of agricultural and industrial waste water through a main drain (Umum Drain).
14. **Dekhailah:** A sheltered sandy coast with a few scattered rocks. It is influenced by the Umum Drain of Mex.
15. **Agamy:** An exposed coastal site at the west of Alexandria, consisting of rock outcrops and boulders on a sandy substratum.

Herbarium specimens and fixed material of the species recorded were deposited in the Department of Oceanography of the University of Alexandria.

Nomenclature follow the works of Hamel (1931-1939), Feldmann (1937), Nasr (1940 a & b), Ercegovic (1952), Taylor (1960), Zinova (1967), Papenfuss (1968), Abbott and Hollenberg (1976) and Parke and Dixon (1976).

RESULTS

The following list shows that 116 taxa of the benthic marine algae were recorded from the Alexandria coast, during the period of 1980-1984, including 30 Chlorophyceae, 28 Phaeophyceae and 58 Rhodophyceae. The list contains only those species that have been positively identified and includes 25 new records for the Alexandria coast. These are designated with an asterisk (*) in the systematic list.

Table (1) presents the affinities percentage of the algal species in Alexandria. The terms of boreal affinities were used according to Zinova (1967).

Table (1)
The affinities percentage of the algal species
in the Alexandria Coast.

Species Affinity	Chloro- phyceae %	Phaeo- phyceae %	Rhodo- phyceae %	Total recorded algal species %
Arctic - boreal	10	13.7	3.4	7.6
Wide boreal	16	10.3	15.5	14.5
Boreal	27	24.1	3.4	14.5
Lower boreal	7	37.9	53.4	37.6
Boreal-tropical	23.3	3.4	20.6	17.1
Cosmopolitan	3	-	-	0.1
Subtropical and tropical	13.3	10.3	3.4	7.6

It is worthy of note that the present data indicated that the algal flora of the Alexandria coast is rather boreal than subtropical.

the seasonal periodicity of the algal species along the Alexandria coast will be discussed in a separate paper.

SPECIES LIST

CHLOROPHYCEAE

- Anadyomene stellata* (Wulfen) C. Agardh
5,7,13,14,15; mid-infralittoral; on rocks and epiphyte. Boreal-tropical.
- Bryopsis hypnoides* Lamouroux
2,7,9,11; midlittoral; on rocks and sands. Lower boreal
- **B. Pennatula* J. Agardh
2,3,7,11,12,15; midlittoral; on rocks, epiphytic and epizoic. Boreal.
- B. plumosa* (Hudson) C. Agardh
2,3,4,7,8,11,12,15; midlittoral; on stones and shells. Wide boreal.
- Caulerpa prolifera* (Forsskal) Lamouroux
1,10,12; infralittoral; on muddy sands, rocks and epiphyte. Subtropical.
- C. scalpelliformis* (R.Br.) Van Bosse
2,3; infralittoral; infrequent on rocks and muddy sands., Subtropical.
- Chaetomorpha aerea* (Dillwyn) Kützing
2,7,8,11,14; mid-infralittoral; on rocky crevices and epiphyte. Boreal-tropical.
- Ch. linum* (Muller) Kützing
2,5,8,10; mid-infralittoral; on stones and epiphyte. Arctic - boreal.
- **Cladophora albida* (Hudson) Kützing
1, 2, 5, 7, 9, 10, 12, 15; midlittoral; on rocks and epiphyte. Wide boreal.
- * *Cl. gracilis* (Griffiths ex Harvey) Kützing
4, 5, 6, 8, 15; infralittoral; on stones and epiphyte. Boreal.
- Cl. pellucida* (Hudson) Kützing
2, 3, 4, 5, 6, 7, 13; mid-infralittoral; on rocks in shady areas. Boreal.
- Cl. prolifera* (Roth) Kützing
3,4,5,6,10,12,13,14; infralittoral; on stones and epiphyte. Boreal-tropical

**Cl. refracta* (Roth) Kutzing

2,4,8,12; mid-infralittoral; on rocks in shady places. Boreal

**Cl. rupestris* (Linnaeus) Kutzing

2,3,6; mid-infralittoral; on stones and epiphyte. Boreal

Cl. utriculosa Kutzing

4,5,6,7; midlittoral; as tufts on stones and epiphyte. Boreal-tropical

Codium bursa (Linnaeus) C. Agardh

3,4,7; drift material, found occasionally. Boreal

Co. elongatum J. Agardh

2,3,4,7,11,12; midlittoral; on rocks and muddy polluted areas. Boreal.

C. tomentosum (Hudson) Stackhouse

2,4,7,8,12,13,15; midlittoral; on stones, shells and muds. Lower boreal.

Co. vermicillare (Olivi) Delle Chiaje

3,4,6,7,8,9,10,11,12; midlittoral; on rocks and muds. Wide boreal

Enteromorpha clathrata (Roth) Greville

1,2,3,4,6,8,11,12,15; infralittoral; on rocks and epiphyts. Arctic-boreal

E. compressa (Linnaeus) Greville

1,5,6,9,11; midlittoral; on stones, mainly in polluted areas. Cosmopolitan

**E. flexuosa* (Wulfen) J. Agardh

1,2,3,4,5,6,7,8,9,10,11,12,13,15; infralittoral; on rocks and epiphyte, found in both clean and polluted waters. Wide boreal

E. intestinalis (Linnaeus) Link

2,3,8,11; midlittoral; on stones even in polluted areas. Arctic-boreal

E. linza (Linnaeus) J. Agardh

2,8,10; mid-infralittoral; on stones and in polluted areas. Boreal-tropical

Halimeda tuna (Ellis et Solander) Lamouroux

2,3,4,7,12; infralittoral; on shady sandy and rocky substratum. Subtropical

Udotea petiolata (Turra) Borgesen

1,12; infralittoral; on shady rocks. Boreal.

Ulva fasciata Delile

1,2,3,4,5,6,7,8,9,11,12,15; midlittoral; on various substrata. Boreal.

U. lactuca Linnaeus

2,3,7,10,11,13,14,15; midlittoral; on rocky substrata and piles. Boreal-tropical.

U. rigida C. Agardh

2,4,8,10,12,13; midlittoral; on rocks and muddy sands. Wide boreal

Valonia utricularis (Roth) C. Agardh

2,8,12; midlittoral: in rocky crevices and in shady areas. Boreal-tropical.

PHAEOPHYCEAE

Cladostephus verticillatus (Lightfoot) C. Agardh

2,4,15; infralittoral; on rocks, sometimes epiphyte. wide boreal

***Colpomenia peregrina** (Sauvageau) Hamel

2,4,7; mid-infralittoral; on rocks and epiphytes. Boreal

Co. sinuosa (Roth) Derbes et Solier

2,3,4,5,6,11,12; infralittoral; on rocks and epiphyte. Lower boreal.

***Cystoseira discors** (Linnaeus) C. Agardh

2,12,15; infralittoral; on rocks, Boreal

C. compressa (Esper) Gerloff and Nizamuddin

2,3,8,15; infralittoral; on rocks in associations. Boreal

C. spinosa Sauvageau

2,7,12; mid-infralittoral; on rocks and stones. Lower boreal

C. tamariscifolia (Hudson) Papenfuss

2; infralittoral; on rocks. Boreal

Dictyopteris membranacea (Stackhouse) Batters

2,3,4; mid-infralittoral; on rocks in shady sides. Lower boreal

Dictyota dichotoma (Hudson) Lamouroux

2,3,4,5,6,7,8,15; mid-infralittoral; on rocks and epiphyte. Boreal-tropical.

D. linearis (C. Agardh) Greville

7,12; infralittoral; on rocks and epiphyte. Subtropical

- Dilophus fasciola** (Roth) Howe
2,4,7,12,15; infralittoral; on rocks, shells and epiphyte. Lower boreal
- Ectocarpus confervoides** (Roth) Le Jolis
1,2,3,4,5,11; mid-infralittoral; on stones and epiphyte. Arctic-boreal
- E. siliculosus** (Dillwyn) Lyngbye
6,9,11; infralittoral; on rocks, shells and epiphyte. Arctic boreal
- Halopteris scoparia** (Linnaeus) Sauvageau
2,4,8,12,15; infralittoral; on rocks and stones in tufts. Lower boreal.
- Hydroclathrus clathratus** (C. Agardh) Howe
2,7,12,15; infralittoral; on rocks and usually with *Colpomenia*.
Subtropical.
- Nereia filiformis** (J. Agardh) Zanardini
4, drift material. Lower boreal.
- Padina pavonia** (Linnaeus) Gaillon
2,4,7,8,12,15; mid-infralittoral; on stones, rocks at open areas. Lower
boreal.
- Petalonia fascia** (Muller) Kuntze
2,3,4,12; infralittoral; on rocks, stones and epiphyte. Lower boreal
- Punctaria latifolia** Greville
2,12,15; infralittoral; on rocks, sometimes epiphyte. wide boreal.
- Sargassum hornschurchii** C. Agardh
2,7,12,15; infralittoral; on rocks among *Cystoseira* association. Lower
boreal
- S. salicifolium** (Bertoloni) J. Agardh
2,8,15; infralittoral; in associations on exposed rocky areas. Lower
boreal
- Scytosiphon lomentaria** (Lyngbye) J. Agardh
2; mid-infralittoral; on rocks. Arctic boreal.
- Spatoglossum solieri** (Chauvin) Kutzing
3,12; infralittoral; on rocks in shady areas and epiphyte. Boreal
- Sp. variable** Figari et De Notaris
2,15; infralittoral; on rocky substratum in shadowy sides. Subtropical.
- Sphaeroceros** (Agardh) C. Agardh
1,11,12,13; mid-infralittoral; on other algae. Arctic boreal.

Sph. tribuloides Meneghini
2,3,8,10,14,15; infralittoral; on stones and epiphyte. Lower boreal.

Stilophora rhizodes (Ehrhart) J. Agardh
2,12; infralittoral; on rocks and epiphyte. Wide boreal.

Taonia atomaria (Woodward) J. Agardh
2,7,12; infralittoral; on rocks in dimmer places. Boreal.

RHODOPHYCEAE

Acanthophora najadiformis (Delile) Papenfuss
2,3,12,15; infralittoral; on rocks. Boreal - tropical.

Amphiroa rigida Lamouroux
2,3,4,12,15; infralittoral; on rocks and shells. Boreal - tropical.

Bangia fuscopurpurea (Dillwyn) Lyngbye
4,10,11; mid-infralittoral; on rocks as tufted mats. Wide boreal.

Botryocladia botryoides (Wulfen) Feldmann
2,4,7,11; infralittoral; on rocks and sands. Lower boreal.

Callithamnion corymbosum (J.E. Smith) Lyngbye
11, 12; infralittoral; on different substratum and epiphyte. Wide boreal.

**Callithamnion granulatum* (Ducluzeau) C. Agardh
9,11; infralittoral; on rocks and epiphyte. Lower boreal.

Centroceras clavulatum (C. Agardh) Montagne
2,3,4,15; midlittoral; on rocks and epiphytic on other algae. Boreal - tropical.

Ceramium ciliatum (Ellis) Ducluzeau
2,4,5,7,8; infralittoral; on rocks and epiphyte. Lower boreal.

C. diaphanum (Lightfoot) Roth
3,4,14,15; mid-infralittoral; on rocks and epiphyte. Wide boreal.

* *C. gardneri* Kylin
2,12,15; infralittoral; on rocks and epiphyte. Lower boreal.

C. rurbum (Hudson) C. Agardh
2,3,5,9,11,12,13; mid-infralittoral; on stones, rocks and epiphyte. Arctic-boreal.

- C. tenuissimum** (Lyngbye) J. Agardh
1,3,7,8,15; mid-infralittoral; on stones, rocks and epiphyte. Boreal - tropical.
- Champia parvula** (C. Agardh) Harvey
2,8,12; midlittoral; on rocks and epiphyte. Lower boreal.
- Chrysomenia ventricosa** (Lamouroux) J. Agardh
4,7,12; infralittoral; on rocks. Lower boreal
- Corallina granifera** Ellis et Solander
2,3,5,6,7; infralittoral; on rocks and epiphyte. Lower boreal.
- Co. mediterranea** Areschoug
2,4,5,10,11; infralittoral; on rocks and epiphyte. lower boreal.
- Co. officinalis** Linnaeus
1,2,4,7,8,12,15; mid-infralittoral; on rocks and epiphyte. wide boreal.
- * **Dasya pedicellata** C. Agardh
11; midlittoral; on rocks and epiphyte. Lower boreal.
- Erythrotrichia reflexa** (Crouan) Thuret
2,4,6,10; infralittoral; on stones, shells and epiphyte. Wide boeal.
- Gelidium crinale** (Turner) Lamouroux
2,4,5,8,12; midlittoral; on stones and rocks. Boreal - tropical.
- G. latifolium** (Greville) Bornet et Thuret
3,7,13; infralittoral; on stones, rocks and epiphyte. Lower boreal.
- Gigartina teedii** (Roth) Lamouroux
2,12; midlittoral; on shells, sands and rocks. Lower boreal.
- Gracilaria arcuata** Zanardini
2,8,12,15; mid-infralittoral; on stones and rocks. Lower boreal.
- Gracilaria armata** (C. Agardh) J. Agardh
2,4,7; infralittoral; on rocks. Boreal.
- * **Gr. bursa-pastoris** (Gmelin) Silva
2,4,12; infralittoral; on stones and rocks. Lower boreal.
- Gr. dura** (C. Agardh) J. Agardh
2,8,12,15; infralittoral; on rocks and shells. Lower boreal.
- * **Gr. verrucosa** (Hudson) Papenfuss
7,12; mid-infralittoral; on shells, stones and rocks. Boreal-tropical.

- Griffithsia furcellata** J. Agardh
2,8,12; infralittoral; unattached or epiphytic on other algae. Lower boreal.
- Halopitys incurvus** (Hudson) Batters
2,4; infralittoral; on rocks and sands. Boreal.
- ***Halymenia fastigiata** J. Agardh
2,4,12; infralittoral; on rocks and stones. Lower boreal.
- H. floresia** (Clement) C. Agardh
8,11,12; infralittoral; on rocks. Lower boreal.
- ***Herposiphonia tenella** (C. Agardh) Nageli
3,4,11,15; infralittoral; on rocks and epiphyte. Tropical.
- Heterosiphonia wurdemanni** (Bailey) Falkenberg
2,4,5,6,15; infralittoral; on rocks. Lower boreal.
- Hypnea musciformis** (Wulfen) Lamouroux
2,7,8,15; infralittoral; on stones and rocks. Boreal-tropical.
- ***Hypoglossum woodwardii** Kutzing
2,12,15; infralittoral; on rocks and shells. Lower boreal.
- ***Jania adhaerens** Lamouroux
2,3,4,6,7,15; midlittoral; on rocks and epiphyte. Lower boreal.
- J. rubens** (Linnaeus) Lamouroux
1,2,3,4,5,7,8,10,12; mid-infralittoral; on rocks and epiphyte. Boreal-tropical.
- Laurencia obtusa** (Hudson) Lamouroux
2,7; mid-infralittoral; on rocks and epiphyte. Boreal-tropical.
- L. paniculata** (C. Agardh) J. Agardh
3,12,15; midlittoral; on rocks and epiphyte. Lower boreal.
- L. papillosa** (Forsskal) Greville
2,7,12,15; mid-infralittoral; on stones and rocks. Tropical.
- L. pinnatifida** (Gmelin) Lamouroux
2,12,15; midlittoral; on rocks. Lower boreal.
- ***Liagora viscida** (Forsskal) C. Agardh
2,7,8,12,15; infralittoral; on rocks. Lower boreal.

- *Lithophyllum incrustans philippi**
2,3,4,8,12,15; midlittoral; as crusts on rocks. Lower boreal.
- Lomentaria articulata** (Hudson) Lyngbye
8,11; infralittoral; on shells, sands and rocks. Wide boreal.
- Nemalion helminthoides** (Velley) Batters
2,4,8,12; midlittoral; on spray-covered rocks. Lower boreal.
- *Polysiphonia breviarticulata.** (C. Agardh) Zanardini
4,14,15; infralittoral; on stones and rocks. Lower boreal.
- *P. brodiaei** (Dillwyn) Greville
2,4,12,15; infralittoral; on rocks and epiphyte. Wide boreal.
- *P. nigrescens** (Dillwyn) Greville
2,4,8,12,15; infralittoral; on rocks and epiphyte. Wide boreal.
- P. opaca** (C. Agardh) Zanardini
2,5,8,12,15; infralittoral; on rocks and epiphyte. Lower boreal.
- P. sertularioides** (Grateloup) J. Agardh
2,3,7,12; infralittoral; on stones and epiphyte. Lower boreal.
- Porphyra leucosticta** Thuret
7,10,12; mid-infralittoral; on rocks in spray zone. Wide boreal.
- Pterocladia capillacea** (Gmelin) Bornet et Thuret
2,3,4,5,6,7,8,12,15; midlittoral; on rocks and epiphyte. Boreal-tropical.
- Pterosiphonia pennata** (Roth) Falkenberg
12,15; infralittoral; on rocks. Lower boreal.
- *Rhodochorton purpureum** (Lightfoot) Rosenvinge
2,7; midlittoral; on rocks and epiphyte. Arctic boreal.
- *Rhodymenia palmetta** (Esper) Greville
2,4,12; infralittoral; on rocks. Lower boreal.
- Rytiphloea tinctoria** (Clemente) C. Agardh
2,3; infralittoral; on rocks. Lower boreal.
- Scinia furcellata** (Turner) Bivona
2,3; infralittoral; on rocks. Boreal-tropical.
- Spyridia filamentosa** (Wulfen) Harvey
2,11; mid-infralittoral; on sands, stones and epiphyte. Boreal-tropical.

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