

## **Preliminary Studies on The Marine Vegetation of Northern Cyprus \***

### **Kuzey Kıbrıs'ın Deniz Bitkileri Üzerine Notlar**

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#### **Abstract**

These preliminary studies were mainly carried out on the marine vegetation of the upper littoral zone of northern Cyprus. A total of 151 taxa (Cyanophyceae 11, Rhodophyceae 83, Fucophyceae 27, Chlorophyceae 25, Liliopsida 5) were determined.

**Key words:** Marine vegetation, algae, northern Cyprus.

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#### **Introduction**

Lack of knowledge on the diversity, abundance and distribution of the living resources of a region seriously impedes the sound management and production of these resources. The information regarding marine vegetations of the Eastern Mediterranean coast of Turkey (Aysel, 1996 a,

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b; Cirik, 1991; Cirik and Öztürk, 1991; Gallardo *et al.*, 1993; Güven *et al.*, 1991; Ribera *et al.*, 1992; Zeybek *et al.*, 1986) and the living resources along the coast of the Northern Cyprus (Lipkin, 1975; Nechama and Payiatis, 1999; Russo, 1997) is rather limited due to the scarce studies carried out in the region. In order to increase our knowledge on the living resources of the northern Cyprus, recently two research surveys were conducted with R/V K. Piri Reis in spring 1997 and summer 1998 (Benli *et al.*, 1999). These surveys aimed to determine mainly the diversity, abundance and distribution of the marine plants and animals along the coast of the northern Cyprus Turkish Republic, and also to monitor the basic oceanographic parameters influencing the organisms living in the region.

This paper is a preliminary contribution to the knowledge on the diversity of the marine plants of the northern Cyprus, and it is based on the data collected during the recent cruises.

### Material and Methods

Plant material for this study were collected during two research surveys conducted in this region with R/V K. Piri Reis operated by the Institute of Marine Sciences and Technology of Dokuz Eylül University. The first survey was carried out in spring 1997 (8-20 May 1997) and the second in summer 1998 (10-22 July 1998). Collection of plant material was performed in 12 coastal stations (Figure 1) mainly by skin and SCUBA divers down to the 12 meters depth. Plant samples from the deeper waters were collected with dredging and grabbing equipment in addition to bottom and beam trawls. The material was preserved in the field and later examined and determined in the laboratory.

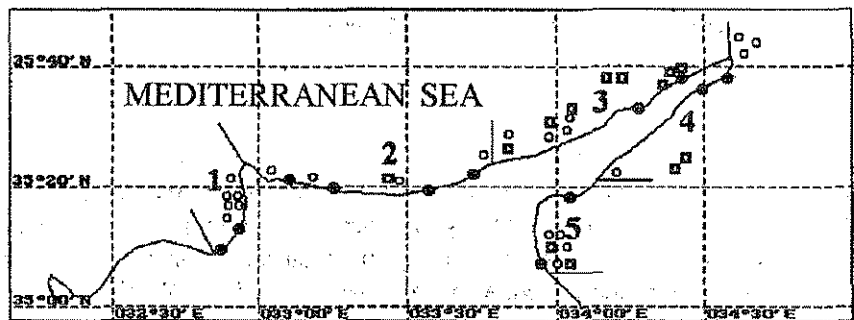


Fig.1. Sampling stations of northern Cyprus (KKTC)

Basic oceanographic parameters and also nutrients were measured in 38 offshore stations.

## Results

A total of 151 marine plant species have been determined from the samples collected along the coast of the Northern Cyprus (Table 1). The species list is presented in Table 1. Blue-green (Cyanophyceae), red (Rhodophyceae), brown (Fucophyceae) and green algae (Chlorophyceae) are represented with 84, 11, 27 and 25 species, respectively. The list also includes 4 seagrasses (Liliopsida) species. The number of species is expected to increase with additional surveys to cover the other seasons. An inspection of Table 1 reveals that the proportion of the species of tropical and indo-pacific origin is fairly high. According to the literature, more than 300 hundred species, which are also called as lessepsian migrants, are known to enter the Mediterranean Sea especially after the opening of the Suez Channel (Unep, 1998; Cirik and Cirik, 1995; Aleem, 1992; Den Hartog, 1972; Lipkin, 1975). These invasions caused considerable changes in the composition of native species in the eastern Mediterranean Sea (Benli, et al. 1999, Por 1971). Further investigations will be conducted on these lessepsian plant species such as *Stypopodium schimperi*, *Caulerpa racemosa* and *Halophila stipulacea*.

Table 1. List of determined vegetations from Northern Cyprus

### CYANOPHYTA

#### CYANOPHYCEAE

#### HORMOGONALES

#### RIVULARIACEAE

*Calothrix clavata* G.S.West,

*C. parietina* (Naegeli) Thur.

*C. scopulorum* (Web. et Mohr.)

C. Ag.

#### OSCILLATORIACEAE

*Hydrocoleumlyngbyaceum* Kütz.

*Lyngbya adriae* Ercégovic

*L. baculum* Gom.

*L. lagerheimii* (Möbius) Gom.

*L. confervoides* C. Ag.

*Phormidium tenue* (Menegh.)

Gomont.

*Symploca hydnooides* Kütz.

*S. muscorum* Gom.

### RHODOPHYTA

#### RHODOPHYCEAE

#### BANGIOPHYCIDAE

#### PORPHYRIDIALES

## GONIOTRICHACEAE

*Chroodactylon ornatum* (C. Ag.)  
Basson ; (*C. ramosum* (Thwait.  
*in Harv.*) Hansg., *in South*  
*Asterocystis ornata* (C. Ag.)  
Hamel, *A. ramosa* (Thwait.  
*in Harv.*) Gobi *Stylonema alsidii*  
(Zanard.) Drew (= *Goniotricum*  
*alsidii* (Zanard.) Howe, *G.*  
*elegans* (Chauv.) Le Jolis,

## BANGIALES

### ERYTHROPELTIDACEAE

*Erythrotricia carnea* (Dilliw.)  
J. Ag. (= *E. ceramicola* (Lyngb.)  
Aresch., *E. bertholdii* Batt., *E.*  
*investiens* (Zanard.) Born., *E.*  
*obscura* Bert., *E. reflexa* (Cr.)  
Thur., *E. biseriata*, *E. ciliaris*  
(Carm. *ex Harv. in Hook.*) Thur.  
*in Le Jolis*, *E. rhizoidea* Cle.

## ACROCHAETIALES,

### ACROCHAETIACEAE

*Audouinella mediterranea*  
(Levring) Woelk. (= *Acrochaetium*  
*mediterraneum* (Levring) Boud.)

## NEMALIONALES,

### HELMINTHOCLADIACEAE

*Liagora farinosa* Lam.  
*L. viscida* (Forssk.) C. Ag.

### CHAETANGIACEAE,

*Galaxaura cylindrica* (Ellis *et*  
Sol.) Kjelm. *G. oblongata* (Ellis  
*et Sol.*) Lam. (= *G. fastigiata*  
Dec., *G. fragilis* Lamarck *et*  
Dec., *ricleocarpa oblongata*  
Huisman *et* Borowitzka

## GELIDIALES

### GELIDIACEAE

*Gelidiella lubrica* (Kütz.)  
J. Feldm. *et* Hamel *G. pannosa*  
(Born. *ex Feldm.*) Feld. *et*  
Hamel *Gelidium melanoideum*  
Schousb. *ex Born.* var.  
*melanoideum G. pusillum*  
(Stackh.) Le Jolis var. *pusillum*  
*Pterocladia capillacea* (Gmel.)  
Born. *in Born. et Thur.* (= *P.*  
*pinnata* (Huds.) Papenf.,  
*Gelidium capillaceum* (Gmel.)  
Kütz.

## GIGARTINALES

### CALOSIPHONIACEAE

*Calosiphonia vermicularis* (J.  
Ag.) Schmitz

### NEMASTOMACEAE

*Platoma cyclocalpa* (Mont.)  
Schmitz

### HYPNEACEAE

*Hypnea musciformis* (Wulf. *in*  
Jaquin) Lam.

### GIGARTINACEAE

*Gigartina acicularis* (Roth)  
Lam.

## RHODYMENIALES

### RHODYMENIACEAE

*Botryocladia botryoides* (Wulf.  
*in Jacq.*) J. Feldm.

## CHAMPIACEAE

Jolis *Lomentaria clavellosa*  
(Turn.) Gaill.

## CRYPTONEMIALES

### PEYSSONNELIACEAE

*Peyssonnelia borneyi* Boud. *et*  
Denizot *P. squamaria* (Gmel.)  
Decaisne

**CORALLINACEAE**  
**CORALLINACEAE**

*Amphiroa beauvoisii* Lam. (= *A. zonata* Yendo *A. rigida* Lam.)  
*Corallina elongata* Ellis et Sol. (= *C. mediterranea* Aresch. in J. Ag.) *Fosliella farinosa* (Lam.) Howe (= *Melobesia farinosa* Lam.) F.--- var. *chalicodictya* Taylor *Haliptylon squamatum* (L.) Johans. et al. (= *Corallina squamata* Ell., *C. confusa* Yendo) *Jania adhaerens* Lam. *J. rubens* (L.) Lam. *Lithophyllum incrustans* Philippi  
*Melobesia membranacea* (Esp.) Lam. (= *Epilithon membranaceum* (Esp.) Heydr. *Pneophyllum lejolisii* osan.) Chamberline (= *Fosliella lejolisii* (Rosan.) Howe) *Pseudolithophyllum expansum* (Philippi) Lemoine (= *Lithophyllum expansum* Philippi) *Tenarea undulosa* Bory *Titanoderma cystoseirae* (Hauck) Huve (= *Dermatholithon cystoseirae* (Hauck) Huve, *D. papillosum* (Zanard.) Foslie *T. pustulatum* (Lam.) Woelk. = *Dermatholithon pustulosum* (Lam.) Foslie

**CRYPTONEMIACEAE**

*Halymenia floresia* (Clem.) C. Ag. (= *H. harveyana* J. Ag.)

**BONNEMAISONIALES**  
**BONNEMAISONIACEAE**

*Falkenbergia rufolanosa* (Harv.) Schmitzstadium  
(Tetrasporophyte  
d'*Asparagopsis armata*)

**CERAMIALES**  
**CERAMIACEAE**  
**CERAMIALES**  
**CERAMIACEAE**

*Centroceras clavulatum* (C. Ag.) Montagne  
*Ceramium ciliatum* (Ell.) Ducl. var. *ciliatum*  
*C.*---var. *robustum* (J. Ag.) G. Mazoyer *C. flaccidum* (Kütz.) Ardiss. (= *C. gracillimum* (Kütz.) Griff. et Harv. in Harv., *C. byssoideum* Harv. *C. fastigiatum* Harvey (= *C. fastigiramosum* Boo et Lee) *C. tenerrimum* (Martens) Okamura var. *brevizonatum* (Peters.) G. Feldm.-Mazoyer *C. tenuissimum* (Lyngb.) J. Ag. var. *tenuissimum* *C. taylori* Dawson *Crouania attenuata* (Bonnem.) J. Ag. *Griffithsia devoniensis* Harv. *Champia parvula* (C. Ag.) Harvey *Chylocladia verticillata* (Lightf.) Blid. (*C. kaliformis* Good. et Woodw.) Grev., *C. bistratosa* Ercegovic, *C. squarrosa* (Kütz.) Le G. *globulifera* Harvey (*Anotrichum* (*Griffithsia*) *tenue*)  
*Pleonosporium borreri* (Smith) Näg. ex Hauck *Ptilothamnion pluma* (Dillwyn) Thur. *Seirospora giraudyi* (Kütz.) De Toni *Spermothamnion flabellatum* Born. in Born. et

Thur. *Spyridia filamentosa*  
(Wulf.) Harv. in Hook.;  
*Wrangelia penicillata* C. Ag.

#### DASYACEAE

*Dasya rigidula* (Kütz.) Ardiss.  
*Heterosiphonia wurdemanni*  
(Bailey ex Harv.) Falkenb.

#### DELESSERIAEAE

*Radicilingua thysanorhizans*  
(Holm.) Papenf

#### RHODOMELACEAE

*Acanthophora najadiformis*  
(Delile) Papenf.  
*Alsidium corallinum* Kütz  
*Chondria tenuissima* (Good. et  
Woodw.) C. Ag.  
*Digenea simplex* (Wulf.) C. Ag.  
*Herposiphonia secunda* (C. Ag.)  
Ambronn. *secunda*  
*Laurencia obtusa* (Huds.) Lam.  
var. *obtusa* L.—var. *gracilis*  
(Kütz.) Hauck L.—var. *laxa*  
(Kütz.) Ardiss. (= var. *crucifera*  
Kütz L. *paniculata* (C. Ag.) J.  
Ag. (L. *patentramea* (Mont.)  
Kütz. L. *papillosa* (Forsk.) Grev.  
; \*L. — var. *subsecundata*  
*Lophocladia lallemandii* (Mont.)  
Schmitz *Lophosiphonia cristata*  
Falkenb. L. *obscura* (C. Ag.)  
Falkenb. (=L. *reptabunda* (Shur.  
in Kütz.) Kylin) L. *subadunca*  
(Kütz.) Falkenb. *Polysiphonia*  
*kampsaxii* Børgesen P.  
*scopulorum* Harv. (L.  
*scopulorum* (Harv.) Womers.)

*P. tenerrima* Kütz.  
*P. tripinnata* J. Ag.  
*P. variegata* (C. Ag.) Zanard.  
*Rodriguezella strafforelli*  
Schmitz ex Rodriguez var.  
*crassicaulis* Ercegovic  
*Rytiphloea tinctoria* (Clem.) C.  
Ag.  
*Vidalia volubilis* (L.) J. Ag.

#### PHAEOPHYTA

#### FUCOPHYCEAE

#### SCYTOSIPHONALES

#### SCYTOSIPHONACEAE

*Colpomenia sinuosa* (Mertens ex  
Roth) Der. et Sol.  
*Hydroclathrus clathratus* (Bory  
ex C. Ag.) Howe

#### CUTLERIALES

#### CUTLERIACEAE

*Styopodium schimperii*  
(Buchinger ex Kütz.) Verlaque et  
Boudour.

#### SPHACELARIALES

#### SPHACELARIACEAE

*Sphacelaria cirrosa* (Roth) C.  
Ag. (*S. hystrix* Suhr in Reinke)  
*S. f. mediterranea* Sauvageau  
*S. rigidula* Kütz. (*S. furcigera*  
Kütz.) *S. tribuloides* Menegh.

#### STYPOCAULACEAE

*Halopteris scoparia* (L.) Sauv  
[*Styopocaulon scoparium* (L.)  
Kütz.]

**DICTYOTALES**  
**DICTYOTACEAE**

*Dictyopteris polypodioides*  
(D.C.) Lam. [= *D. membranacea*  
(Stackh.) Batt.] *Dictyota dichotoma*  
(Huds.) Lam. var. *dichotoma*  
*D. ---* var. *intricata* (C. Ag.)  
Grev. (= var. *implexa* (Desf.) J.  
Ag.)  
*D. linearis* (C. Ag.) Grev.  
(= *D. divaricata* Lamour.)  
*Lobophora variegata* (Lam.)  
Womersley *Dilophus fasciola*  
(Roth) Howe.  
*D. mediterraneus* Schiffn. var.  
*mediterraneus* *D. ---* var.  
*crassus* Schiffn. *D. repens* (J.  
Ag.) J. Ag.  
(= *D. fasciola* var. *repens* (J.  
Ag.) Feldm.)  
*Padina pavonica* (L.) Lam.

**FUCALES**  
**CYTOSEIRACEAE**

*C. barbata* C. Ag. var. *barbata*  
[= *C. hoppii* C. Ag.]  
*C. compressa* (Esper) Gerloff et  
Nizamuddin (= *C. fimbriata*  
(Desf.) Bory) f. *compressa*  
*C. ---* var. *stricta* (Mont.) (= *C.*  
*stricta* Sauv. var. *stricta*)  
*C. crinita* (Desf.) Bory. f. *crinita*  
*C. elegans* Sauv.  
*C. schiffneri* Hamel f. *schiffneri*  
[= *C. discors* f. *discors* = *C. ---* f.  
*dubia* Ercegovic, =  
*C. ercegovicii* Giaccone f.  
*ercegovicii*, = *C. ---* f. *schiffneri*  
(Hamel) Giaccone]

*Cystoseira spinosa* Sauv. var.  
*compressa* (Ercegovic) Cormaci  
et al. (= *Cystoseira adriatica* var.  
*compressa* (Ercegovic)  
Giaccone)

**SARGASSACEAE**  
Kütz.

*Sargassum hornschurchii* C. Ag.  
*S. vulgare* C. Ag. var. *vulgare* [=  
*S. saliculifolium* Naccari = *S.*  
*vulgare* var. *diversifolium* Bory  
= *S. ---* var. *megalophyllum*  
(Mont.) Grun.]

**CHLOROPHYTA**  
**CHLOROPHYCEAE**  
**VOLVOCALES**  
**TETRASPORACEAE**

*Palmophyllum crassum*  
(Naccari) Rabenh.

**ULOTRICHALES**  
**CHAETOPHORACEAE**

*Achrochaete repens* Pringh.  
*Phaeophila dendroides* (P.L. et  
H.M. Crouan  
*Uronema confervicolum*  
Lagerheim

**ULVACEAE**

*Enteromorpha clathrata* (Roth.)  
Grev.  
*E. intestinalis* (L.) var.  
*intestinalis*  
*E. linza* (L.) J. Ag. var. *linza*

**CLADOPHORALES**  
**ANADYOMENACEAE**

*Anadyomene rhizoidifera* Joly et  
Pereira  
*A. stellata* (Wulf.) C. Ag.

**CLADOPHORACEAE**

*Cladophora pellucida* (Huds.)  
Kütz.  
*C. rudolphiana* (C. Ag.) Kütz.  
*C. sericea* (Huds) Kütz.  
*C. trichotoma* (C. Ag.) Kütz.  
*Cladophoropsis modonensis*  
(Kütz.) Reinbold

**VALONIAACEAE**

*Valonia utricularis* (Roth) C.  
Ag.

**BRYOPSIDALES**  
**BRYOPSIDACEAE**

*Bryopsis cupressina* Lam. (= *B.*  
*penicillata* Kütz.)  
*B. pennata* Lam.

**CAULERPACEAE**

*Caulerpa prolifera* (Forssk.)  
Lam.  
*C. racemosa* (Forssk.) J. Ag.

**CODIACEAE**

*Codium decorticatum* (Woodw.)  
Howe) (= *C. elongatum* (Turn.)  
C. Ag.) *C. tomentosum* (Huds.)  
Stackh.

**UDOTEACEAE**

*Flabellia petiolata* (Turra)  
Nizam.  
*Halimeda tuna* (Ellis et  
Solander) Lam.

**DASYCLADALES**  
**POLYPHYSACEAE**

*Acetabularia acetabulum* (L.)  
Silva  
*Dasycladus vermicularis*  
(Scopoli) Krasser  
(= *D. clavaeformis* (Roth)  
C. Ag.)

**MAGNOLIOPHYTA**

**LILIOPSIDA**

**ALISMATIDAE**

(=HELOBIAE, FLUVIALES)

**HYDROCHARITALES**

**HYDROCHARITACEAE**

*Halophila stipulaceae* Forssk.

**POTAMOGETONALES**  
**CYMODOCEACEAE**

*Cymodocea nodosa* (Ucria)  
Ascherson

**POSIDONIACEAE**

*Posidonia oceanica* (L.) Delile

**ZOSTERACEAE**

*Zostera marina* L.  
*Zosterella noltii* Horn



## Özet

Bu arařtırmada, Kuzey Kıbrıs Türk Cumhuriyeti deniz florası arařtırılmıřtır. Arařtırılan alan üst infralittoral zon olup 151 takson (Cyanophyceae 11, Rhodophyceae 81, Fucophyceae 27, Chlorophyceae 25, Liliopsida 5) tayin edilmiřtir.

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