

The inventory of benthic flora of the Bay Boka Kotorska (southern Adriatic)

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Seasonal collections, winter months excluded, of benthic flora in the bay of Boka Kotorska (southern Adriatic) were made over a 5-year period to 1990. A total of 242 taxa and stages of benthic algae (150 taxa or 62% of Rhodophyta, 48 taxa or 20% of Phaeophyta and 44 taxa or 18% of Chlorophyta) and 2 species of marine phanerogames (Posidonia oceanica and Cymodocea nodosa) were determined. The R/P ratio is 3.1. A comparison of the algal flora from the adjacent open region (Montenegro coast) shows some differences. Phytogeographical relations were also studied.

INTRODUCTION

Surveys of the benthic flora and vegetation of the bay Boka Kotorska were made between 1985 and 1990 to provide better knowledge of the composition and distribution (vertical and horizontal) of almost unknown plant settlements of this rather peculiar part of the Adriatic.

The literature on the composition and distribution of benthic flora and vegetation of this bay is very poor. LINARDIĆ (1940, 1949) reported this area as the southernmost location where from the species *Fucus virsoides* was recorded in his papers on this species distribution along the eastern Adriatic coast. Subsequent biocoenological (KARAMAN and GAMULIN-BRIDA, 1970; STJEPČEVIĆ and PARENZAN, 1980) and algological papers (SOLAZZI, 1971) reported a total of 47 taxa of benthic algae and three species of marine phanerogams for this part of the Adriatic.

This is the first report of a comprehensive survey of taxa of benthic algae and marine phanerogams of the bay of Boka Kotorska. It is

based on a partly worked out collection phyto-benthic material from the entire study area of this part of southern Adriatic.

MATERIAL AND METHODS

The study area includes all the parts of the bay Boka Kotorska, the inner, rather enclosed part (the bays of Kotor, Morinj and Risan) and outer, more open part (the bays of Tivat and Herceg Novi) where 12 transects were laid out (Fig. 1). Samples were collected by SCUBA diving (direct method) from hard and mobile substrata of the supralittoral, mediolittoral and infralittoral at different depth intervals (0-0.5 m; 0.5-1 m; 1-5 m; 5-10 m; 10-15 m; 15-20 m; 20-25 m).

The settlements of *Cystoseira barbata*, *Cystoseira compressa*, *Cystoseira crinitophylla*, *Cystoseira schiffnerii* and *Cystoseira spinosa* and marine phanerogams *Posidonia oceanica* and *Cymodocea nodosa* were separately sampled for phytocoenological analyses from 400

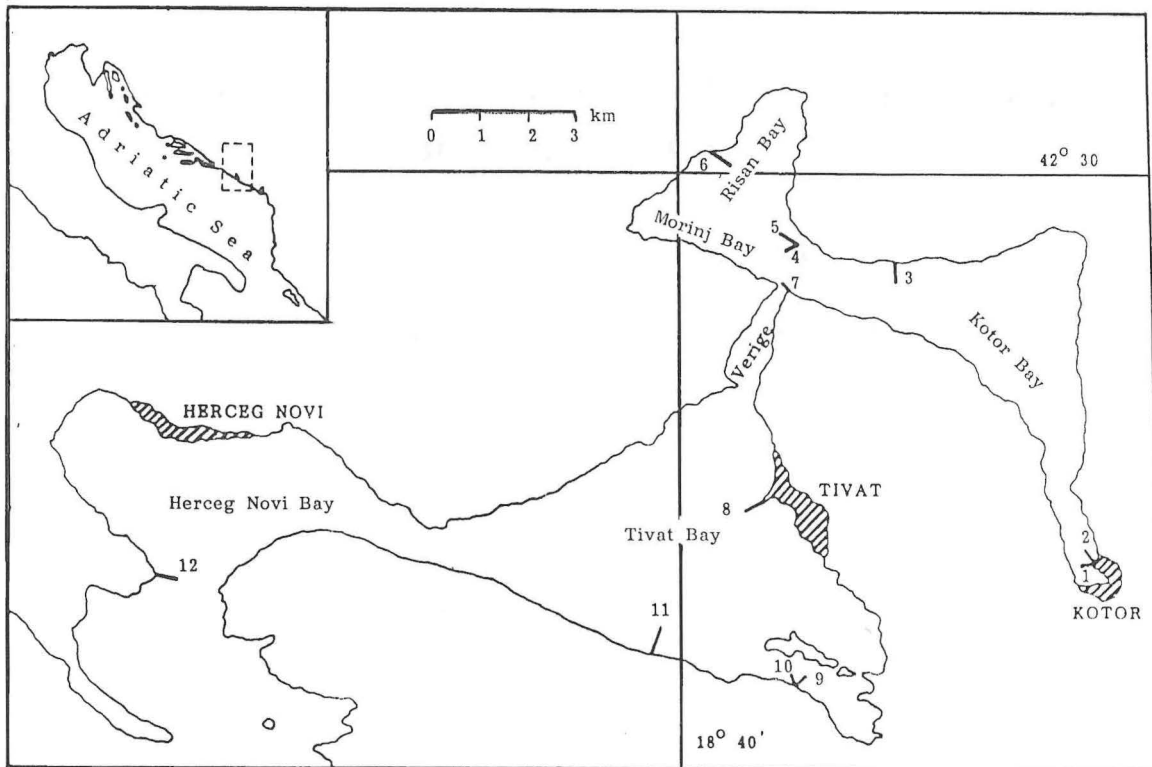


Fig. 1. Studied transects (—————) in the Boka Kotorska bay.

cm² (20 cm x 20 cm) quadrats. Collected material was preserved in 4% formalin solution. Determination was carried out by binocular loupe and microscopy. Collection of floral material has so far been limited to three seasons (spring, summer and autumn), so that collections from the coldest part of year are still to be made.

For classification and identification of classes and orders the categorization by PARKE and DIXON (1976), BOUDOURESQUE *et al.* (1984), BOUDOURESQUE and PERRET-BOUDOURESQUE (1987), VAN DEN HOEK *et al.* (1988), PERRET-BOUDOURESQUE and SERIDI (1989) and RIBERA *et al.* (1992) have been followed. The older and recent literature was also consulted for determination of collected algal material among others HAUCK (1885), FUNK (1928, 1955), HAMEL (1931-1939), FELDMANN -MAZoyer (1940), FELDMANN (1942), ERCEGOVIĆ (1948, 1949, 1952, 1955a, 1955b, 1956, 1957, 1963), HAMEL and LEMOINE (1952), KYLIN (1956), BLIDING (1960, 1963, 1986), VAN DEN HOEK (1963), ZINOVA (1967), ŠPAN (1972), GIACCONE (1972-1973, 1978), GIACCONE and

BRUNI (1973), GIACCONE and BRYCE-DERNI (1972), GIACCONE *et al.* (1985), BRESSAN (1974), CODOMIER (1971), BOUDOURESQUE and DENIZOT (1975), KORNMANN and SAHLING (1977), COPPEJANS (1983).

GIACCONE *et al.* (1985) separated benthic algae and marine phanerogams in the following phytogeographic regions: M (Mediterranean), A (Atlantic including Ab - Atlantic-boreal, At - Atlantic-tropical and Abt - Atlantic-boreal-tropical taxa), C (cosmopolitan), SC (subcosmopolitan), AP (Atlantic-Pacific including APo - Atlantic-Pacific taxa of wide distribution, APt - Atlantic-Pacific-tropical and APtc - Atlantic-Pacific-tropical-cold taxa), IA (Indo-Atlantic including IAo - Indo-Atlantic-taxa of wide distribution, IAAt - Indo-Atlantic-tropical and IAAtc - Indo-Atlantic-tropical-cold taxa), IP (Indo-Pacific), CB (circumboreal), CT (circumtropical) and AE (endemic-Adriatic).

The taxa *Cystoseira erica-marina* Valiante, *Cystoseira squarrosa* De Notaris, *Cystoseira selagenoides* Valiante, *Cystoseira stricta* (Montagne) Sauvage and *Zostera sp.*, reported by

KARAMAN and GAMULIN-BRIDA (1970), SOLAZZI (1971) and STJEPČEVIĆ and PARENZAN (1980) were not included in the list. We did not record these taxa of *Cystoseira* and it is hardly possible that they could occur in the Boka Kotorska bay. The phanerogam *Zostera* sp. was also excluded since it was determined up to the level of genus.

RESULTS AND DISCUSSION

A total of 242 taxa and stages of benthic algae and two species of marine phanerogams (*Posidonia oceanica* and *Cymodocea nodosa*) are reported on the basis of so far partial analysis of collected algal material from the bay of Boka Kotorska (see ANNEX). They belong to three divisions (Rhodophyta, Phaeophyta and Chlorophyta), five classes (Bangiophyceae, Florideophyceae, Fucophyceae, Chlorophyceae and Ulvophyceae), 28 orders, 144 genera,

211 species, 2 subspecies, 20 varieties, 6 forms and 3 stages.

Rhodophyta division are dominant in number and percentage, with 150 taxa or 62%, followed by Phaeophyta, with 48 taxa or 20% and Chlorophyta with 44 taxa or 18%.

Comparison of the structure studied benthic flora to that of the open coastal area of the Montenegro (ŠPAN and ANTOLIĆ, 1983) shows considerable differences. Numbers and percentages of Rhodophyta (202 taxa or 66%) and Phaeophyta (60 taxa or 20%) are higher whereas those of Chlorophyta (42 taxa or 14%) are lower in the open area. The R/P ratio (the number of taxa of Rhodophyta to that of Phaeophyta) is 3.4.

The R/P quotient in the bay of Boka Kotorska is relatively high, 3.1. However, it will probably be lower after the collection and interpretation of phytobenthic material in winter when increase in the number of taxa of Phaeophyta is very likely.

Table 1. Flora of benthic algae and marine phanerogams of Boka Kotorska Bay, their numbers (N) and percentages (%) in different phytogeographic regions.

Division Phyt.reg.	RHODOPHYTA		PHAEOPHYTA		CHLOROPHYTA		ANGIOSPERMAE		TOTAL	
	N	%	N	%	N	%	N	%	N	%
M	35	14.3	12	4.9	3	1.2	1	0.4	51	20.9
Ab	36	14.8	8	3.3	5	2.1	1	0.4	50	20.5
At	5	2.1	1	0.4	2	0.8	—	—	8	3.3
Abt	17	7.0	2	0.8	9	3.7	—	—	28	11.5
A	58	23.8	11	4.5	16	6.6	1	0.4	86	35.3
APo	5	2.1	3	1.2	2	0.8	—	—	10	4.1
APt	1	0.4	—	—	—	—	—	—	1	0.4
APtc	—	—	3	1.2	2	0.8	—	—	5	2.1
AP	6	2.5	6	2.5	4	1.6	—	—	16	6.6
IAo	6	2.5	1	0.4	2	0.8	—	—	9	3.7
IAt	1	0.4	—	—	1	0.4	—	—	2	0.8
IAtc	3	1.2	1	0.4	—	—	—	—	4	1.6
IA	10	4.1	2	0.8	3	1.2	—	—	15	6.2
C	16	6.6	7	2.9	9	3.7	—	—	32	13.1
SC	17	7.0	5	2.1	—	—	—	—	22	9.0
CB	—	—	—	—	2	0.8	—	—	2	0.8
CT	6	2.5	3	1.2	5	2.1	—	—	14	5.7
IP	1	0.4	—	—	1	0.4	—	—	2	0.8
EAD	1	0.4	2	0.8	1	0.4	—	—	4	1.6
TOTAL	150	61.6	48	19.6	44	18.0	2	0.8	244	100.0

Most determined benthic algae and marine phanerogams belong to the Atlantic (86 taxa or 35.3%), cosmopolitan and subcosmopolitan (54 taxa or 22.1%) and Mediterranean (51 taxa or 20.9%) phytogeographic region. The rest of 52 taxa belong to the following phytogeographic regions: Atlantic-Pacific (16 taxa or 6.6%), Indo - Atlantic (15 taxa or 6.2%), circumtropical (14 taxa or 5.7%), endemic - Adriatic (4 taxa or 1.6%), Indo - Pacific (2 taxa or 0.8%) and circumboreal (2 taxa or 0.8%) (Table 1).

ACKNOWLEDGEMENTS

We are particularly grateful to Duško Daňuš, the diver of the Club for Underwater Activities "Delfin", Split, who performed collections of phytobenthic material.

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Accepted: April 2, 1991

ANNEX – Taxonomic list of collected and determined taxa of benthic algae and marine phanerogams of the Boka Kotorska Bay.

	Phyt. reg.		Phyt. reg.
Division: RHODOPHYTA		<i>Griffithsia schousboei</i> Montagne	Abt
Class: BANGIOPHYCEAE		<i>Gulsonia nodulosa</i> (Ercegović)	
		J. Feldmann et G. Feldmann	M
Order: Erythropeltiales		<i>Lejolisia mediterranea</i> Bornet	CT
		<i>Monosporus pedicellatus</i> (Smith) Solier in Castagne	
<i>Erythrotrichia carnea</i> (Dillwyn) J. Agardh	C	var. <i>pedicellatus</i>	APo
<i>Erythrotrichia investiens</i> (Zanardini) Bornet	Ab	var. <i>tenuis</i> G. Feldmann	M
Order: Porphyridiales		<i>Pleonosporium borneri</i> (Smith) Nägeli	Abt
		<i>Pterothamnion crispum</i> (Ducluzeau) Nägeli	SC
<i>Stylonema alsidii</i> (Zanardini) Drew	C	<i>Ptilothamnion pluma</i> (Dillwyn) Thuret in Le Jolis	Ab
		<i>Seirospora apiculata</i> (Meneghini)	
Class: FLORIDEOPHYCEAE		G. Feldmann-Mayozer	M
Order: Acrochaetiales		<i>Seirospora interrupta</i> (Smith) Schmitz	Ab
		<i>Spermothamnion flabellatum</i> Bornet ex	
<i>Acrochaetium daviesii</i> (Dillwyn) Nägeli	APo	Bornet et Thuret	M
<i>Acrochaetium virgatulum</i> (Harvey) Born	Ab	<i>Spermothamnion johanis</i> G. Feldmann-Mazoyer	M
<i>Rhodochorton hauckii</i> (Schiffner) Hamel	M	<i>Spermothamnion repens</i> (Dillwyn) Rosenvinge	Ab
Order: Bonnemaisoniales		<i>Sphondylothamnion multifidum</i> (Hudson) Nägeli	Ab
		* <i>Spyridia filamentosa</i> (Wulfen) Harvey in Hooker	C
<i>Falkenbergia rufolanosa</i> (Harvey) Schmitz (stadium)	C	<i>Wrangelia penicillata</i> C. Agardh	APt
Order: Ceramiales		<i>Dasya corymbifera</i> J. Agardh	Abt
		<i>Dasya hutchinsiae</i> Harvey in Hooker	Ab
<i>Algaothamnion byssoides</i> (Arnott ex Harvey in Hooker)		<i>Dasya ocellata</i> (Grateloup) Harvey in Hooker	Abt
Boudouresque et Perret-Boudouresque	Ab	<i>Dasyopsis plana</i> (C. Agardh) Zanardini	Ab
<i>Aglaothamnion tenuissimum</i> (Bonnemaison)		<i>Dasyopsis spinella</i> (C. Agardh) Zanardini	Ab
Feldmann-Mazoyer	M	<i>Heterosiphonia crispella</i> (C. Agardh) Wynne	SC
<i>Anotrichium barbatum</i> (Smith) Nägeli	Abt	<i>Acrosorium uncinatum</i> (Turner) Kylin	
<i>Antithamnion cruciatum</i> (C. Agardh) Nägeli		var. <i>venulosum</i> (Zanardini) Boudouresque et al.	M
var. <i>cruciatum</i>	Abt	<i>Apoglossum ruscifolium</i> (Turner) J. Agardh	Abt
var. <i>profundum</i> Feldmann-Mazoyer	Abt	<i>Arachnophyllum confervaceum</i> (Meneghini)	
<i>Callithamnion corymbosum</i> (Smith) Lyngbye	Abt	Zanardini	M
<i>Callithamnion granulatatum</i> (Ducluzeau) C. Agardh	Ab	<i>Hypoglossum hypoglossoides</i> (Stackhouse)	
<i>Ceramium bertholdii</i> Funk	M	Collins et Harvey	
* <i>Ceramium ciliatum</i> (Ellis) Ducluzeau	Ab	var. <i>hypoglossoides</i>	Ab
<i>Ceramium circinatum</i> (Kützing) J. Agardh	Abt	var. <i>profundum</i> Ercegović	EAD
<i>Ceramium codii</i> (Richards) G. Mazoyer	IAo	<i>Myriogramme tristomatica</i> (Rodriguez ex Mazza)	
<i>Ceramium diaphanum</i> (Lightfoot) Roth		Boudouresque	M
var. <i>diaphanum</i>	SC	<i>Nithophyllum punctatum</i> (Stackhouse) Greville	IAo
var. <i>strictum</i> (Kützing) Feldmann-Mazoyer	Ab	<i>Radicilingua adriatica</i> (Kylin) Papenfuss	M
* <i>Ceramium echinotum</i> J. Agardh	Ab	<i>Radicilingua thysanorhizans</i> (Holmes) Papenfuss	Ab
<i>Ceramium flaccidum</i> (Harvey ex Kützing) Ardissonne	C	<i>Taenioma nanum</i> (Kützing) Papenfuss	Ab
<i>Ceramium ordinatum</i> Kützing	M	<i>Brongniartella byssoides</i> (Goodenough et Woodward)	
<i>Ceramium rubrum</i> (Hudson) C. Agardh		Schmitz	Ab
var. <i>barbatum</i> (Kützing) J. Agardh	Ab	* <i>Chondria dasyphylla</i> (Woodward) C. Agardh	SC
<i>Ceramium tenuissimum</i> (Lyngbye) J. Agardh	SC	<i>Chondria tenuissima</i> (Goodenough et Woodward)	
<i>Composothamnion thuyoides</i> (Smith) Schmitz	Abt	C. Agardh	IAo
<i>Crouania attenuata</i> (Bonnemaison ex C. Agardh)		<i>Dipterosiphonia rigens</i> (Schousboe ex C. Agardh)	
J. Agardh	SC	Falkenberg	At
<i>Griffithsia opuntioides</i> J. Agardh	Ab	<i>Halopithys incurvus</i> (Hudson) Batters	Abt
<i>Griffithsia phyllamphora</i> J. Agardh	M	<i>Herposiphonia secunda</i> (C. Agardh) Ambronn	
		f. <i>secunda</i>	CT
		f. <i>tenella</i> (C. Agardh) Wynne	CT
		<i>Janczewskia verrucaeformis</i> Solms-Laubach	M

* <i>Laurencia obtusa</i> (Hudson) Lamouroux	C	Order: Gigartinales	
<i>Laurencia pinnatifida</i> (Gmelin) Lamouroux	SC		
<i>Lophosiphonia cristata</i> Falkenberg	CT	<i>Acrodiscus vidovichii</i> (Meneghini) Zanardini	M
<i>Polysiphonia elongata</i> (Hudson) Harvey	Abt	<i>Acrosymphyton purpuriferum</i> (J. Agardh) Sjøstødt	M
<i>Polysiphonia fruticulosa</i>		<i>Catenella caespitosa</i> (Withering) Irvine <i>in</i>	
(Wulfen <i>in</i> Jacquin) Sprengel	Ab	Parke et Dixon	SC
<i>Polysiphonia opaca</i> (C. Agardh) Zanardin	Ab	<i>Caulacanthus ustulatus</i> (Martens) Kutzing	SC
<i>Polysiphonia scopulorum</i> Harvey	IP	<i>Dudresnaya verticillata</i> (Withering) Le Jolis	Ab
<i>Polysiphonia sertularioides</i> (Grateloup) J. Agardh	IAtc	<i>Gigartina acicularis</i> (Roth) Lamouroux	C
<i>Rodriguezella strafforellii</i> Schmitz ex Rodriguez	M	** <i>Gracilaria armata</i> (C. Agardh) J. Agardh	At
* <i>Rytiphloea tinctoria</i> (Clemente) C. Agardh	IAt	* <i>Gracilaria bursa-pastoris</i> (Gmelin) Silva	SC
* <i>Vidalia volubilis</i> (Linnaeus) J. Agardh	At	<i>Gracilaria dura</i> (C. Agardh) J. Agardh	IAo
		* <i>Gracilaria verrucosa</i> (Hudson) Papenfuss	C
		<i>Halymenia floresia</i> (Clemente) C. Agardh	SC
		<i>Halymenia trigona</i> (Clemente) Codomier	M
		<i>Hypnea musciformis</i> (Wulfen <i>in</i> Jacquin)	
Order: Corallinales		Lamouroux	CT
<i>Amphiroa rigida</i> Lamouroux	SC	<i>Meredithia microphylla</i> (J. Agardh) J. Agardh	Ab
<i>Corallina granifera</i> Ellis et Solander	IAtc	<i>Nemastoma dichotoma</i> J. Agardh	M
<i>Corallina officinalis</i> Linnaeus	APo	<i>Peyssonnelia polymorpha</i> (Zanardini) Schmitz	SC
<i>Fosliella farinosa</i> (Lamouroux) Howe <i>in</i>		<i>Peyssonnelia rosa marina</i> Boudouresque et Denizot	M
Britton et Millspaugh		* <i>Peyssonnelia rubra</i> (Greville) J. Agardh	Abt
var. <i>farinosa</i>	C	* <i>Peyssonnelia squamaria</i> (Gmelin) Decaisne	M
var. <i>calleihamnioides</i> (Foslie) Chamberlain	C	* <i>Phyllophora nervosa</i> (De Candolle) Greville <i>ex</i> J.	
<i>Jania rubens</i> (Linnaeus) Lamouroux	C	Agardh	M
<i>Lithophyllum incrustans</i> Philippi	Ab	<i>Platoma cyclocolpa</i> (Montagne) Schmitz	Ab
<i>Lithophyllum racemus</i> (Lamarck) Foslie	M	<i>Plocamium cartilagineum</i> (Linnaeus) Dixon	SC
<i>Lithothamnion corallioides</i> Crouan et Crouan	Ab	<i>Rhodophyllis divaricata</i> (Stackhouse) Papenfuss	Ab
<i>Melobesia membranacea</i> (Esper) Lamouroux	IAo	<i>Sebdenia dichotoma</i> Berthold	M
* <i>Phymatolithon calcareum</i> (Pallas)		<i>Sebdenia rodrigueziana</i> (J. Feldmann) Codomier	M
Adey et Mc Kibbin	Ab	<i>Sphaerococcus coronopifolius</i> Stackhouse	Ab
<i>Pneophyllum lejolisii</i> (Rosanoff) Chamberlain	C	<i>Wurdemannia miniata</i> (Lamouroux)	
* <i>Pseudolithophyllum expansum</i> (Philippi)		Feldmann et Hamel	CT
Lemoine	At		
* <i>Spongites notarisii</i> (Dufour) Athanasiadis	Ab		
<i>Titanoderma confine</i> (Crouan et Crouan)		Order: Hildenbrandiales	
Boudouresque at Perret-Boudouresque	Ab	<i>Hildenbrandia rubra</i> (Sommerfelt) Meneghini	APo
<i>Titanoderma cystoseirae</i> (Hauck)			
Woelkerling <i>et al.</i>	Ab		
<i>Titanoderma pustulatum</i> (Lamouroux) Nägeli	C		
Order: Gelidiales		Order: Nemaliales	
<i>Gelidiella lubrica</i> (Kützing) J. Feldmann et Hamel	M	<i>Liagora viscida</i> (Forsskaal) C. Agardh	IAo
<i>Gelidiella pannosa</i> (Bornet <i>ex</i> J. Feldmann)			
J. Feldmann et Hamel	SC		
<i>Gelidium crinale</i> (Turner) Lamouroux <i>in</i> Bory	APo	Order: Rhodymeniales	
<i>Gelidium latifolium</i> (Greville)		* <i>Botryocladia botryoides</i> (Wulfen <i>in</i> Jacquin)	
Bornet <i>ex</i> Bornet et Thuret		J. Feldmann	Abt
var. <i>latifolium</i>	SC	<i>Botryocladia chiajeana</i> (Meneghini) Klyn	Abt
var. <i>hystrix</i> J. Agardh	M	<i>Botryocladia microphysa</i> Kylin	M
<i>Gelidium melanoideum</i> Schousboe <i>ex</i> Bornet		<i>Champia parvula</i> (C. Agardh) Harvey	C
var. <i>melanoideum</i>	M	<i>Chrysmenia ventricosa</i> (Lamouroux) J. Agardh	At
var. <i>filamentosum</i> Schousboe	M	<i>Chylocladia verticillata</i> (Lightfoot) Bliding	IAtc
* <i>Gelidium pectinatum</i> (Schousboe <i>ex</i> Montagne)		<i>Gastroclonium clavatum</i> (Roth) Ardissonne	M
Montagne	Ab	<i>Lomentaria chylocladiella</i> Funk	M
<i>Gelidium pusillum</i> (Stackhouse) Le Jolis		<i>Lomentaria linearis</i> (Zanardini) Zanardini	M
*var. <i>pusillum</i>	C	* <i>Rhodymenia ardissoni</i> J. Feldmann	Ab
var. <i>minusculum</i> W. van Bosse	C	<i>Rhodymenia ligulata</i> Zanardini	M
<i>Gelidium spathulatum</i> (Kützing) Bornet	Ab	** <i>Rhodymenia pseudopalmata</i> (Lamouroux) Silva	Abt
<i>Pterocladia capillacea</i> (Gmelin)			
Bornet <i>ex</i> Bornet et Thuret	SC		

Division: PHAEOPHYTA		<i>Sargassum salicifolium</i> J. Agardh	
Class: FUCOPHYCEAE		ssp. <i>linifolium</i> Špan comb. nov.	M
		<i>Sargassum vulgare</i> C. Agardh	CT
Order: Chordariales		Order: Scytosiphonales	
<i>Cladosiphon mediterraneus</i> Kützing	M	<i>Colpomenia sinuosa</i> (Martens ex Roth)	
<i>Elachista fucicola</i> (Velley) Areschoug	Ab	Derbes et Solier	C
<i>Elachista intermedia</i> Crouan et Crouan	Ab	<i>Hydroclathrus clathratus</i> (Bory ex C. Agardh) How	C
<i>Myriactula rigida</i> (Sauvageau) Hamel	M	Order: Sphacelariales	
<i>Myriactula rivulariae</i> (Suhr in Areschoug)		<i>Halopteris filicina</i> (Grateloup) Kützing	APtc
J. Feldmann	Ab	* <i>Halopteris scoparia</i> (Linnaeus) Sauvageau	SC
<i>Myriactula stellulata</i> (Harvey) Levring	Ab	<i>Sphacelaria cirrosa</i> (Roth) C. Agardh	SC
<i>Myrionema orbiculare</i> J. Agardh	APo	<i>Sphacelaria fusca</i> (Hudson) S. F. Gray	SC
<i>Spermatochnus paradoxus</i> (Roth) Kützing	Ab	<i>Sphacelaria plumula</i> Zanardini	Ab
<i>Stilophora rhizodes</i> (Turner) J. Agardh	SC	Order: Sporochnales	
Order: Cutleriales		<i>Nereia filiformis</i> (J. Agardh) Zanardini	At
<i>Aglaozonia chilosa</i> Falkenberg (stadium)	M	<i>Sporochnus pedunculatus</i> (Hudson) C. Agardh	APo
<i>Cutleria multifida</i> (Smith) Greville	SC		
* <i>Zanardinia prototypus</i> (Nardo) Nardo	APo	Division: CHLOROPHYTA	
Order: Dictyosiphonales		Class: CHLOROPHYCEAE	
* <i>Asperococcus bullosus</i> Lamouroux	C	Order: Chaetophorales	
<i>Arthrocladia villosa</i> (Hudson) Duby	Ab	<i>Phaeophila dendroides</i> (Crouan et Crouan) Batters	Abt
<i>Giraudia sphacelarioides</i> Derbes et Solier	IAtc	Class: ULVOPHYCEAE	
<i>Striaria attenuata</i> (Greville) Greville	APtc	Order: Caulerpales	
Order: Dictyotales		* <i>Halimeda tuna</i> (Ellis et Solander) Lamouroux	CT
<i>Dictyopteris polypodioides</i> (De Candalle) Lamouroux	C	<i>Pseudochlorodesmis furcellata</i> (Zanardini)	
* <i>Dictyota dichotoma</i> (Hudson) Lamouroux	C	Börgesen	APo
<i>Dictyota linearis</i> (C. Agardh) Greville	CT	* <i>Udotea petiolata</i> (Turra) Börgesen	At
** <i>Dilophus spiralis</i> (Montagne) Hamel	Abt	Order: Cladophorales	
<i>Dilophus fasciola</i> (Roth) Howe	IAo	<i>Anadyomene stellata</i> (Wulfen) C. Agardh	CT
* <i>Padina pavonica</i> (Linnaeus) Thivy	CT	* <i>Chaetomorpha aerea</i> (Dillwyn ex Dillwyn) Kützing	C
<i>Taonia atomaria</i> (Woodward) J. Agardh	Abt	<i>Chaetomorpha linum</i> (Müller) Kützing	C
Order: Ectocarpales		<i>Cladophora albida</i> (Hudson) Kützing	CB
<i>Ectocarpus siliculosus</i> (Dillwyn) Lynbye	C	<i>Cladophora coelothrix</i> Kützing	IAo
<i>Feldmannia irregularis</i> (Kützing) Hamel		<i>Cladophora dalmatica</i> Kützing	Abt
var. <i>irregularis</i>	C	<i>Cladophora echinus</i> (Biasoletto) Kützing	IP
var. <i>lebeliides</i> (Ercegović) Špan et Antolić		<i>Cladophora glomerata</i> (Linnaeus) Kützing	
comb. nov.	EAD	f. <i>glomerata</i>	APtc
<i>Ralfsia verrucosa</i> (Areschoug) J. Agardh	APtc	f. <i>marina</i> Ercegović	EAD
Order: Fucales		<i>Cladophora lehmaniana</i> (Lindenberg) Kützing	Ab
* <i>Cystoseira barbata</i> C. Agardh	M	<i>Cladophora pellucida</i> (Hudson) Kützing	Ab
<i>Cystoseira compressa</i> (Esper) Gerlof et Nizamuddin	Ab	<i>Cladophora prolifera</i> (Roth) Kützing	Abt
<i>Cystoseira corniculata</i> Hauck		<i>Cladophora socialis</i> Kützing	CT
ssp. <i>laxior</i> Ercegović	M	<i>Cladophora vagabunda</i> (Linnaeus) Van den Hoek	Abt
** <i>Cystoseira crinita</i> (Desfontaines) Duby	M	<i>Rhizoclonium riparium</i> (Roth) Harvey	Abt
<i>Cystoseira crinitophylla</i> Ercegović	M	Order: Codiales	
<i>Cystoseira schiffneri</i> Hamel		<i>Bryopsis corymbosa</i> J. Agardh	M
f. <i>schiffneri</i>	M	<i>Bryopsis duplex</i> De Notaris	Abt
f. <i>latiramosa</i> (Ercegović) Giaccone	M		
* <i>Cystoseira spinosa</i> Sauvageau	M		
* <i>Fucus virsoides</i> J. Agardh	EAD		
<i>Sargassum hornschurchii</i> C. Agardh	M		

<i>Bryopsis hypnoides</i> Lamouroux	C	<i>Bolbocoleon piliferum</i> Pringsheim	Aptc
* <i>Codium bursa</i> (Linnaeus) C. Agardh	Abt	<i>Ectochaete leptochaete</i> (Huber) Wille	Ab
* <i>Codium effusum</i> (Rafinesque) Delle Chiaje	IAo	<i>Enteromorpha compressa</i> (Linnaeus) Greville	C
* <i>Codium vermilara</i> (Olivii) Delle Chiaje	Atc	* <i>Enteromorpha intestinalis</i> (Linnaeus) Link	C
<i>Derbesia tenuissima</i> (Morris et De Notaris in Morris et De Notaris) Crouan et Crouan (stadium)	Ab	* <i>Enteromorpha linza</i> (Linnaeus) J. Agardh	C
<i>Halicystis parvula</i> Schmitz in Murray (stadium)	Ab	<i>Enteromorpha multiramosa</i> Bliding	M
Order: Dasycladales		** <i>Ulva lactuca</i> Linnaeus	C
* <i>Acetabularia acetabulum</i> (Linnaeus) Silva	IAt	<i>Ulva rigida</i> C. Agardh	C
<i>Dasycladus vermicularis</i> (Scopoli) Krasse	At	<i>Ulvella lens</i> Crouan et Crouan	Abt
		Division: ANGIOSPERMAE	
		Classe: MONOCOTYLEDONE	
Order: Siphonocladales		Order: Potamogetonales	
<i>Siphonocladus pusillus</i> (Kützinger) Hauck	M	* <i>Cymodocea nodosa</i> (Ucria) Acherson	Ab
* <i>Valonia macrophysa</i> Kützinger	CT	* <i>Posidonia oceanica</i> (Linnaeus) Delile	M
<i>Valonia utricularis</i> (Roth) C. Agardh	CT		
Order: Ulotrichales			
<i>Ulothrix subflaccida</i> Wille	APo		
Order: Ulvales		<i>Taxa of benthic algae and marine phanerogams reported by KARAMAN and GAMULIN-BRIDA (1970), SOLAZZI (1971), STJEPČEVIĆ and PARENZAN (1980) which we found (*) and didn't find (**).</i>	
<i>Acrochaete viridis</i> (Reinke) Nielsen	C		
<i>Blidingia minima</i> (Nägeli ex Kützinger) Kylin	CB		

Inventar bentoske flore bokokotorskog akvatorija (južni Jadran)

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KRATKI SADRŽAJ

Sezonska istraživanja bentoske flore Bokokotorskog zaljeva, koja su započela 1985. godine, omogućila su bolje upoznavanje sastava i rasprostranjenja (dubinskog i horizontalnog) inače malo poznate flore toga zatvorenog dijela južnoga Jadrana.

Uzorkovanja su obavljena s pomoću samostalnih ronilaca na 12 transekata trasiranih u Kotorskom, Risanskom, Morinjskom, Tivatskom i Hercegnovskom zaljevu na čvrstim (hridinastim) i pomičnim (sedimentnim) dnima u bionomskim stepenicama supralitorala, mediolitorala i in-fralitorala. (Sl. 1).

Ukupno je do sada određeno 242 svojti bentoskih alga i 2 vrste morskih cvjetnica (*Posidonia oceanica* i *Cymodocea nodosa*; ANEX). S razdiobom u više sistematske kategorije alge su svrstane u 3 odjeljka (Rhodophyta, Phaeophyta i Chlorophyta), 5 razreda, 28 redova i 144 roda. S brojem i postotkom prevladavaju predstavnici iz odjeljka Rhodophyta (150 svojti ili 62%), a slijede oblici iz odjeljaka Phaeophyta (48 svojti ili 20%) i Chlorophyta (44 svojte ili 18%).

Odnos između broja svojti u odjeljcima Rhodophyta i Phaeophyta (količnik R/P) iznosi 3,1.

Rasčlamba dobivenih rezultata o pripadnosti flore pojedinim fitogeografskim regijama pokazuje da atlantskoj, kozmopolitskoj, subkozmpolitskoj i mediteranskoj regiji pripada 191 svojta ili 78,3% od ukupnog broja (242) određenih svojti bentoskih alga u Bokokotorskom zaljevu. Preostala 51 svojta ili 21,7% pripada atlantsko-pacifičkoj, indoatlantskoj, cirkumtropskoj, endemsko-jadranskoj, indopacifičkoj i cirkumborealnoj fitogeografskoj regiji (Tablica 1).
