

EXPLOITATION OF BEDS OF TRUNCATE DONAX (*DONAX TRUNCULUS* L.) ALONG ADRIATIC COASTS OF ALBANIA

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Abstract

In Albania *Donax trunculus* L. fishery began in 1989 and it has been always carried out by hand rake. In August 1994, with the help of a boat geared with "metal rake", dredgings have been carried out in Durrës and Lales Gulf in order to obtain a first estimate of biomass index, and the possibility of fishing at depth never investigated until now.

Key-word : fisheries, bivalves, Adriatic Sea

Introduction

From the lake of Skoder, that represents the border between Albania and Jugoslavia, up to Vlore, the Adriatic Sea laps on a low and sandy coast with extended beaches separate by small capes. The Gulf of Drin, Lales Bay and the Gulf of Durrës are bordered by the capes of Rodonit, Palles, Durrës and Lagit. The infralittoral bottoms are incoherent, largely covered by the seagrass *Posidonia oceanica* Delile; the bottoms without vegetation, host beds of commercial bivalve molluscs, such as *Chamelea gallina* (L.), *Ensis siliqua* (L.), *Acanthocardia tuberculata* (L.), *Donax semistriatus* Poli and *D. trunculus* L.

The fishery of the latter two species, started in 1989, has represented, until October 1994 (episodes of cholera), the only economically profitable activity for the Albanian fishermen. But the harvest of truncate donax, if effected even by hand rake, due to the increasing number of fishermen and of the little littoral band on which it is practiced (0.5-1 m depth), could determine, to short term, a crisis in the availability of the resource. This has induced us to test the capability of developing this fishing activity, with tools fit to harvest *D. trunculus*, at greater depth than those allowed by the use of the hand rake.

Materials and methods

In August 1994, samples were collected by means of a "tellinara" boat 8.50 meters long with inboard 28 HP engine, geared with "metallic rake" (1, 2). The rake had an opening of 120 cm of width and 20 cm of height. The rake was 90 cm long and the grid had steel rods set at 7.5 mm from each other. The metallic basket ended with a nylon net with 19.5 mm mesh.

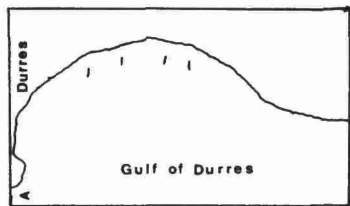
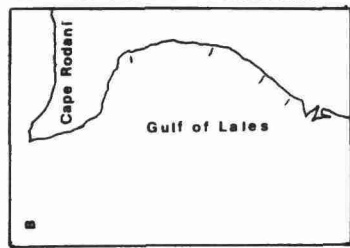


Fig. 1. Sampling transects.

In the Gulfs of Durrës and Lales (Fig. 1), the position of 32 sampling stations has been defined by means of G.P.S. set for a precision of 9 meters. Samples consisted of 50 m long dredgings, parallel to the coast, at 0.5 meter steps, until where the truncate donax occurred (-2 m), along eight transects perpendicular to the coast. Transects were spaced about 4 km from each other. An overall 2,000 m² surface was surveyed.

The maximum sampling depth was established following preliminary observations by SCUBA diving, which showed that there was no truncate donax deeper than -2 m, in both examined areas. The density data refer to 50 m² sampling surfaces.

The composition of the species in the samples was determined and the density and biomass index of the Donacidae were evaluated. The comparison among the data, mapped in both areas, was tested by the non-parametric test of Friedman. In addition, the morphometric parameters of truncate donax were evaluated.

Because of the lack of previous information on the mollusc density in the sampling sites, our sampling may be deemed random (3). The biomass index was calculated following the swept area formulas (4, 5),

in which the coefficient of catchability = 1 was applied, since we are dealing with commercial size (length \geq 20 mm) samples.

Results

The molluscs *D. trunculus*, *D. semistriatus*, *A. tuberculata* and *Mactra corallina* are the species most abundant, followed by the crustaceans, *Liocarcinus vernalis* (Risso) and *Portunus latipes* (Pennant) and echinoderms (Tab. 1).

Table 1 - Mean density and biomass of the species collected in the four transects of the Gulf of Lales and Gulf of Durrës.

Gulf of Lales		g/50 m ²				Individuals / 50 m ²			
weight:	depth:	0.5	1	1.5	2	0.5	1	1.5	2
<i>Donax trunculus</i>		1,382.795	675.483	100.895	167.445	652.500	290.000	38.250	69.500
<i>Donax semistriatus</i>		0.000	2.220	2.388	5.700	0.000	0.500	1.250	3.500
<i>Nasarius mutabilis</i>		1.384	13.768	17.008	23.448	1.250	11.250	12.500	19.500
<i>Mactra corallina</i>		0.000	29.970	69.618	46.065	0.000	3.750	8.250	8.250
<i>Mactra glauca</i>		0.000	5.743	54.380	16.828	0.000	2.000	12.750	4.500
<i>Chamelea gallina</i>		12.230	54.025	94.800	181.335	4.750	18.000	23.000	59.000
<i>Acanthocardia tuberculata</i>		0.000	1.358	2.558	12.510	0.000	0.750	1.000	3.500
<i>Liocarcinus vernalis</i>		26.298	50.213	78.995	51.228	7.000	15.250	25.750	20.000
<i>Portunus latipes</i>		12.513	6.430	0.428	0.928	7.000	5.250	0.250	0.750
Hermit crabs		8.143	16.183	25.508	36.573	6.500	12.000	17.250	27.000
<i>Astropecten jonstoni</i>		0.000	0.000	0.000	5.240	0.000	0.000	0.000	0.750
<i>Echinocardium cordatum</i>		0.000	0.000	1.160	2.200	0.000	0.000	0.500	1.250

Gulf of Durrës		g/50 m ²				Individuals / 50 m ²			
weight:	depth:	0.5	1	1.5	2	0.5	1	1.5	2
<i>Donax trunculus</i>		1,344.913	441.448	58.623	23.748	603.750	170.500	23.500	9.250
<i>Donax semistriatus</i>		0.000	2.755	4.405	0.000	0.000	2.250	4.500	0.000
<i>Nasarius mutabilis</i>		6.635	30.958	72.373	53.353	4.350	22.250	49.500	35.750
<i>Mactra corallina</i>		1.188	80.333	226.138	273.313	0.250	5.000	22.750	27.500
<i>Mactra glauca</i>		13.053	95.360	252.983	283.805	2.000	14.500	41.000	37.750
<i>Chamelea gallina</i>		0.673	9.005	28.358	105.840	0.500	3.750	10.750	33.500
<i>Acanthocardia tuberculata</i>		0.000	0.000	23.413	14.775	0.000	0.000	0.500	0.500
<i>Liocarcinus vernalis</i>		1.480	5.773	19.870	6.765	1.050	3.750	12.750	4.250
<i>Portunus latipes</i>		4.488	0.838	1.610	0.000	4.250	0.750	1.250	0.000
Hermit crabs		12.970	20.978	72.313	55.968	9.650	13.750	55.000	42.000
<i>Astropecten jonstoni</i>		1.560	0.000	1.043	5.438	0.300	0.000	0.250	1.250
<i>Echinocardium cordatum</i>		0.000	7.463	13.255	2.090	0.000	0.500	0.750	0.500

In both Gulfs of Durrës and Lales (overall examined area = 200m²), we report the values of the index of abundance (number and weight) of the species collected, the diversity's index of Shannon - Weaver, and the evenness index, by sampling depth (Tab. 2). We could observe that the H' index increases with the reduction of the *D. trunculus* facies. H' \leq 0.33 linked to the most littoral band of fine sands, while at 1.5 m - 2 m of depth H' \geq 2.33, the species *Chamelea gallina*, *Mactra glauca* and *M. corallina* become more abundant.

Table 2 - Overall biometric indices per depth stratum in terms of number of individuals (n) in terms of weight(w); sampled area in each stratum = 200 m². S = number of species; N = number of specimens; W = weight of specimens; H' = Shannon-Weaver's diversity index; e = evenness index.

Gulf of Durrës		S	N	W	H' _n	e _n	H' _w	e _w
Depth m								
0.5		9	2,504	5,548.0	0.30	0.01	0.27	0.09
1		10	956	2,779.6	1.58	0.48	1.77	0.53
1.5		12	892	3,097.6	2.77	0.77	2.60	0.73
2		10	768	3,300.4	2.66	0.80	2.33	0.70

Gulf of Lales		S	N	W	H' _n	e _n	H' _w	e _w
Depth m								
0.5		6	2,716	5,773.6	0.32	0.13	0.33	0.13
1		10	1,436	3,413.6	1.21	0.36	1.26	0.38
1.5		11	564	1,750.8	2.78	0.80	2.73	0.79
2		12	872	2,198.0	2.62	0.73	2.58	0.72

The density of *D. trunculus* decreases rapidly as depth increases. In the Gulf of Durrës, at 0.5 meters, it presents mean values of 603.75 \pm 544.65 (s.d.) specimens/ 50 m², while at 1 m it is reduced to 170.5 specimens/ 50 m². Table 3 shows that about 75 % of density was found at - 0.5 m, whe-