FISH FAUNA OF THE GENOA-QUINTO *POSIDONIA OCEANICA* BED (LIGURIAN SEA, NORTH-WESTERN MEDITERRANEAN)

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Abstract

The fish assemblage associated with the *Posidonia oceanica* bed of Genoa-Quinto (Ligurian Sea) was censused by SCUBA diving from October 1995 to May 1996 using the visual census method. It comprised 28 species (9 families) and was numerically dominated by planktivorous species (*Chromis chromis, Spicara smaris, Spicara maena* and *Boops boops*), while Labridae and Sparidae were the most speciose families. Among Labridae, *Coris julis* and *Symphodus ocellatus* were the most abundant species, while Sparidae (*Boops boops* excepted) were quite scarce. The possible influence of several factors in governing fish community structure is discussed.

Key-words: fishes, Posidonia, coastal systems, Ligurian Sea

Introduction

Posidonia oceanica beds represent one of the most complex and productive systems in the littoral zone of the Mediterranean Sea (1) supporting a very diversified invertebrate fauna (2) and a rich fish community (3). Seagrass meadows are reported to provide shelter and food to juvenile fishes of commercial interest (4; 5; 6). In the last decades, a number of studies was devoted to the fish fauna of P. oceanica in the Mediterranean; these investigations were carried out both in marine reserves (7; 8; 9; 10) and in other coastal areas (11; 12; 13).

The present study is aimed to provide information about the structure and species composition of the fish community inhabiting a *P. oceanica* bed from an urbanized coast: Genoa-Quinto, next to Genoa city.

Materials and methods

The study area was localized off Genoa city (Genoa-Quinto, Ligurian Sea: 44° 23.1', 9° 0.7'E; Fig. 1) in a *P. oceanica* bed settled on coarse sand and rocky substrate and showing a shoot density of 342 shoots/m^2 at about 10 m depth, where the transects were placed. The studied meadow, extending from about 6 m to 28-30 m depth (14), was represented by large patches of *P. oceanica* interspersed with sand and rocky formations rich in crevices and colonized by photophilic arborescent algae.
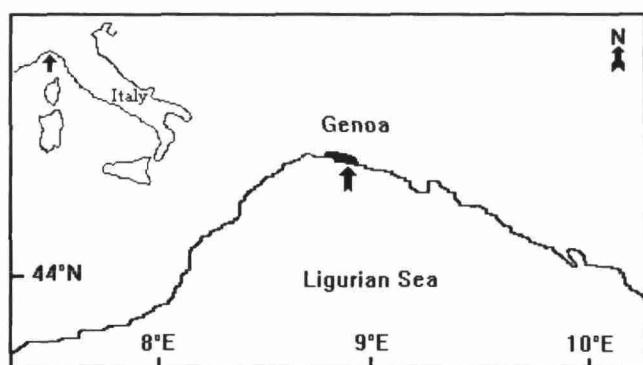

Figure 1 : Location of the sampling area.

Data on abundance and size of recorded fishes were collected using the SCUBA visual census methodology according to Harmelin-Vivien *et al.* (15). A total of 11 censuses (replicated 2-4 times by different observers) were carried out, between 10 a.m. and 3 p.m., along transects 25 m long and 6 m width (150 m^2) from October 1995 to May 1996. Each censused individual was classified as small, medium and large according to the maximum recorded total length (16). Counts were made according to abundance classes following a geometrical progression with a base 2 (1, 2-5, 6-10, 11-30, 31-50, 51-100, 101-200, 201-500, >500). Density was expressed as number of individuals/150 m^2; frequency of occurrence (number of census in which a given species was recorded/number of total censuses performed in percent) was reported for each species. The assignment of feeding-guilds to each species was made according to the classification of Bell and Harmelin-Vivien (17): 1) Herbivores; 2) Microcarnivores; 3) Mesocarnivores (Type 1: all Labridae); 4) Mesocarnivores (Type 2); 5) Macrocarnivores.

Results

The whole recorded fish community comprised 28 species belonging to 9 families (Tab. 1) and was dominated by Labridae (11 species, 39.3 % of the total censused species) and Sparidae (8 species, 28.6 %), which together accounted for up to 65 % of the total censused species. The number of species per census was variable without any particular trend and ranged between 11 and 21 with an average of 16.5 ± 3.1 species.

Table 1 : List of species censused at Genoa-Quinto site. Freq. (%): frequency of occurrence; Abundance: mean (standard deviation); Feeding guilds: see "Materials and Methods".

Families	Species	Freq. (%)	Abundance m (s.d.)	Feeding guilds
Centracanthidae	*Spicara maena*	100.0	62.2 (88.2)	2
	Spicara smaris	45.5	92.8 (143.2)	2
Gobidae	*Gobius bucchichii*	9.1	0.1 (0.3)	4
Labridae	*Coris julis*	100.0	54.0 (22.3)	3
	Labrus merula	36.4	0.3 (0.6)	5
	Labrus viridis	36.4	0.3 (0.6)	5
	Symphodus cinereus	36.4	0.7 (1.0)	3
	Symphodus doderleini	63.6	0.8 (0.9)	3
	Symphodus mediterraneus	54.5	0.9 (0.7)	3
	Symphodus melanocercus	90.9	1.5 (1.2)	3
	Symphodus ocellatus	100.0	14.2 (18.9)	3
	Symphodus roissali	90.9	1.2 (1.0)	3
	Symphodus rostratus	90.9	2.3 (1.7)	3
	Symphodus tinca	72.7	2.2 (1.7)	3
Mullidae	*Mullus surmuletus*	63.6	0.7 (0.8)	4
Muraenidae	*Muraena helena*	9.1	0.1 (0.3)	5
Pomacentridae	*Chromis chromis*	100.0	326.2 (153.1)	2
Scorpaenidae	*Scorpaena porcus*	9.1	0.1 (0.3)	5
Serranidae	*Serranus cabrilla*	100.0	5.8 (3.5)	5
	Serranus scriba	63.6	1.5 (1.7)	5
Sparidae	*Boops boops*	9.1	22.7 (75.4)	2
	Dentex dentex	18.2	0.1 (0.2)	5
	Diplodus annularis	100.0	2.4 (1.9)	4
	Diplodus sargus	36.4	0.3 (0.5)	4
	Diplodus vulgaris	100.0	5.3 (3.1)	4
	Oblada melanura	18.2	0.1 (0.3)	2
	Pagrus pagrus	27.3	0.4 (0.7)	5
	Spondyliosoma cantharus	18.2	2.2 (5.2)	4
Total abundance: m (s.d.)			**601.4 (244.6)**	
Species richness (n)			**28**	

The most frequent species were *Spicara maena, Chromis chromis, Coris julis, Symphodus ocellatus, Serranus cabrilla, Diplodus annularis* and *D. vulgaris*, which were observed in all samplings, while *Gobius bucchichi, Muraena helena, Scorpaena porcus* and *Boops boops* were the least frequent species.

The abundance of the whole fish population exhibited strong fluctuations, from 174.5 to 1007.0 ind./150 m^2 (mean value = 601.4 ± 244.6) due to the presence of more or less numerous groups of planktivorous and gregarious species. The most abundant species (Tab. 1) were *Chromis chromis, Boops boops, Spicara smaris* and *S. maena*; their pooled abundance data accounted for 83.9 % of the whole censused stock. The most abundant Labrids, *Coris julis* and *Symphodus ocellatus*, accounted for 13.0 % of censused specimens. The least abundant species were *Oblada melanura, Gobius bucchichi, Muraena*