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# The fish assemblage structure of the Berlengas Natural Reserve (Portugal)

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## Introduction

The Berlengas Natural Reserve (BNR) is an archipelago formed by 3 groups of islands (Berlenga, Estelas and Farilhões). It was created in 1981 and has a total area of 9560 hectares, 9456 of which marine. It is located 5 miles off Peniche, Portugal, and is characterized by a very rich, diverse and peculiar fauna in result of the influence of two distinct currents: the Atlantic on the North and the Mediterranean on the South.

However, very few scientific studies have been developed to assess the species that inhabit these waters (Azeiteiro *et al.*, 1997; Bengala *et al.*, 1997a, b, c; Metelo, 1999; Neto, 1999; Neto *et al.*, 1999), and the ones concerning fishes are scarce and exclusively related to the coastal area of Berlengas (Henriques, 1993; Rodrigues, 1993; Almeida, 1996, Rodrigues NV *et al.*, 2008).

## Methods and material

Thirteen sampling spots from the 3 groups of islands were defined in this study, and non-destructive methods, namely visual census techniques using SCUBA gear, were used to assess the fish communities of the archipelago.

On each spot, a team of two divers swam randomly during 20 minutes and registered all the fish species observed. Two collecting campaigns were done: August 2004 and July 2005.

## Results

A total of 48 species of 22 different families have been identified during the 2 campaigns.

Table I – Occurrence frequency of species in 2004 and 2005

FAMILY	SPECIES	2004	2005
Mugilidae	<i>Liza aurata</i>	69,2	41,7
	<i>Chelon labrosus</i>	38,5	25
Sparidae	<i>Sarpa salpa</i>	76,9	58,3
	<i>Boops boops</i>	53,8	50
	<i>Diplodus sargus</i>	76,9	75
	<i>Diplodus vulgaris</i>	100	91,7
	<i>Diplodus cervinus</i>	30,8	25
	<i>Pagrus pagrus</i>	7,7	0
	<i>Spondyllosoma cantharus</i>	46,2	41,7
	<i>Obolus melanura</i>	23,1	0
Labridae	<i>Labrus bergylla</i>	69,2	91,7
	<i>Labrus mixtus</i>	0	8,3
	<i>Centrolabrus exoletus</i>	23,1	41,7
	<i>Ctenolabrus rupestris</i>	30,8	16,7
	<i>Coris julis</i>	46,2	66,7
	<i>Symphodus</i> sp.	7,7	16,7
	<i>Gobiusculus flavescens</i>	46,2	58,3
Gobiidae	<i>Gobius xanthocephalus</i>	15,4	8,3
	<i>Pomatoschistus</i> spp.	0	8,3
	<i>Thorogobius ephippiatus</i>	23,1	0
Mullidae	<i>Mullus surmuletus</i>	15,4	25
Moronidae	<i>Dicentrarchus labrax</i>	23,1	8,3
Serranidae	<i>Serranus cabrilla</i>	38,5	50
Atherinidae	<i>Atherina presbyter</i>	7,7	8,3
Gadidae	<i>Pollachius pollachius</i>	23,1	8,3
	<i>Trisopterus luscus</i>	7,7	8,3
	<i>Phycis phycis</i>	7,7	33,3
Belontiidae	<i>Belone belone</i>	7,7	0
Carangidae	<i>Seriola rivoliana</i>	7,7	0
	<i>Trachurus trachurus</i>	23,1	33,3
	<i>Trachinotus ovatus</i>	7,7	0
Ammodytidae	<i>Gymnamodytes semisquamatus</i>	7,7	0
Ballistidae	<i>Ballistes carolinensis</i>	38,5	8,3
Blenniidae	<i>Parablennius gattorugine</i>	0	8,3
	<i>Parablennius pilicornis</i>	15,4	33,3
	<i>Parablennius ruber</i>	23,1	33,3
	<i>Lipophis pholis</i>	0	8,3
Tripterygiidae	<i>Tripterygion delaisi</i>	46,2	33,3
Triglidae	<i>Chelidonichthys lastoviza</i>	7,7	8,3
Gobiesocidae	<i>Lepadogaster lepadogaster</i>	7,7	0
Syngnathidae	<i>Syngnathus acus</i>	7,7	0
Scorpaenidae	spp.	30,8	16,7
Scombridae	<i>Scomber scombrus</i>	46,2	0
	<i>Scomber japonicus</i>	46,2	0
	<i>Sarda sarda</i>	7,7	0
Muraenidae	<i>Muraena helena</i>	7,7	8,3
Bothidae	<i>Arnoglossus laterna</i>	7,7	0

*Diplodus vulgaris* is the one with highest frequency (100% in 2004 and 91,7% in 2005) and Serro da Velha (Berlenga) was the spot where the number of species was highest (22 in 2004 and 17 in 2005).

The community is constituted mainly on omnivorous (75%), followed by planktivorous (23%) and carnivorous (2%).



Figure 12 – Graphic representation of fishes trophic levels

## Discussion

The inexistence of data prior to the creation of the Natural Reserve makes it impossible to evaluate any possible changes in the fish communities but it will allow it in the future. Nevertheless, Rodrigues NV *et al.* (2008) refer the existence of, at least, 76 species of fishes for that area.

### Referências

- Almeida A (1996) Structure and spatial variability of the rocky fish fauna in the protected marine «Reserva Natural da Berlenga» (Portugal). Anq. Mus. Bocage, Nova Série, Vol. II, nº35: 633-642
- Azeiteiro U, Pardal M, Neto J, Metelo I & N Bengala (1997) Caracterização das comunidades planctónicas da Reserva Natural da Berlenga e seu possível padrão de migração. Estado preliminar. Relatório IMAR - Instituto do Mar (IC), Instituto da Conservação da Natureza (ICN) - Reserva Natural da Berlenga, 36 p
- Bengala N, Metelo I, Neto J & M Pardal (1997a) A ilha da Berlenga. Breve caracterização dos habitats marinhos da zona intermareal e submareal. Relatório IMAR, ICN - RN Berlenga, 21 p
- Bengala N, Metelo I, Neto J & M Pardal (1997b) Dinâmica anual das espécies chave da ilha da Berlenga. Relatório IMAR, ICN - RN Berlenga, 38 p
- Bengala N, Metelo I, Neto J & M Pardal (1997c) Variação sazonal das principais espécies de macroalgas da Reserva Natural da Berlenga. Relatório IMAR, ICN - RN Berlenga, 18 p
- Dobson H (1997) Mediterranean and Atlantic Fish guide. ICN, Frankfurt
- Henriques P (1993) Estrutura e variabilidade da comunidade ictológica do Carreiro da Fortaleza (Berlenga) e Bio-ecologia da reprodução de *Parablennius pilicornis* Cuvier, 1829 (Pisces: Blenniidae). Relatório de estágio/licenciatura de Recursos Faunísticos e Ambiente. Faculdade de Ciências de Lisboa, 39 p
- Metelo I (1999) Caracterização das comunidades de crustáceos da ilha da Berlenga. Dissertação de Mestrado, Dep. Zoologia, F.C.T.U. de Coimbra, 77p
- Neto J (1999) Variação espacial e temporal dos moluscos do substrato rochoso da ilha da Berlenga. Dissertação de Mestrado, Dep. Zoologia, F.C.T.U. de Coimbra, 95p
- Neto J, Bengala N, Metelo I & M Pardal (1999) Farilhões: breve caracterização do substrato rochoso da zona intermareal e submareal. Relatório IMAR, ICN - RN Berlenga, 21 p
- Rodrigues S (1993) Distribuição espacial e temporal da comunidade ictiofaunística da Baía da Fortaleza de S. João Baptista (Reserva Natural da Berlenga) e contribuição para a eto-biologia de *Tripterygion delaisi* (Clupeata: Blanche, 1970) (Pisces, Blenniidae, Tripterygiidae). Relatório de estágio. Licenciatura de Recursos Faunísticos e Ambiente. Faculdade de Ciências de Lisboa, 39 p
- Rodrigues NV, Maranhão P, Oliveira P & Alberto J (2008) Guia de Espécies Submarinas - Portugal, (Berlengas). (In press)



Figure 1 – Berlengas geographically

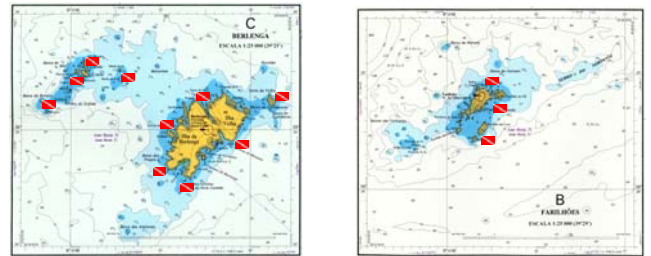


Figure 2 & 3 – Sampling spots.



Figure 4 – *Phycis phycis*



Figure 5 – *Labrus bergylla*



Figure 6 – *Seriola rivoliana*



Figure 7 – *Pagrus pagrus*



Figure 8 – *Scorpaena* sp.



Figure 9 – *Diplodus vulgaris*



Figure 10 – *Labrus mixtus*



Figure 11 – *Balistes capriscus*