



DEEPFISHMAN

**Case Study 3 b
Red black-spot seabream in the eastern Mediterranean sea**

Socio-economic study

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1 Introduction

The species under study in this report is the red black-spot seabream (*Pagellus bogaraveo*) and specifically the stock residing in the Agriculture Organization of the United Nations' General Fisheries Commission for the Mediterranean (FAO-GFCM) Sub-area 20 in the eastern Ionian Sea Food (see Figure 1). Adult red black-spot seabream inhabit depths ranging around 300-700 meters, while young specimens are generally found in waters less than 100 meters of depth.

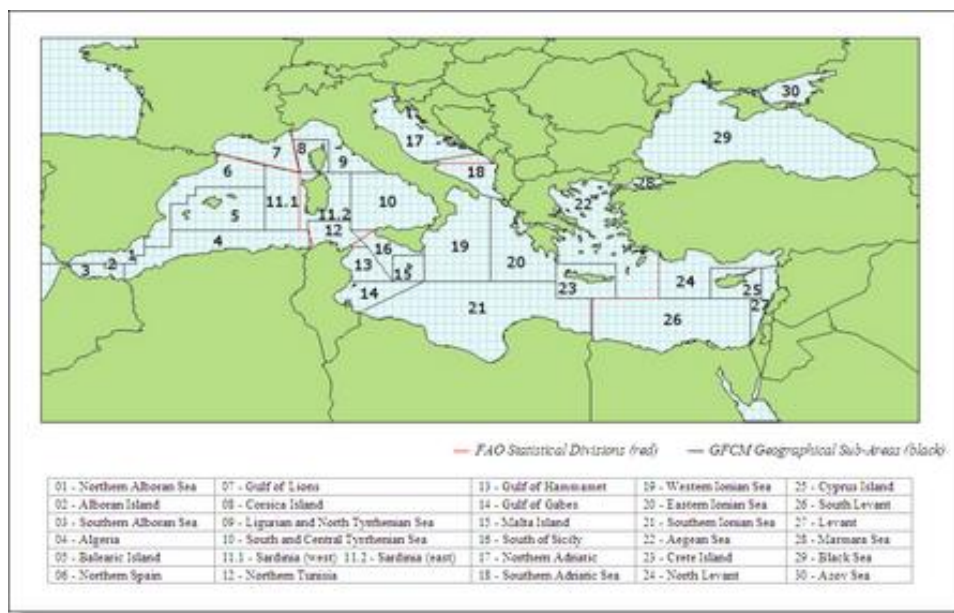


Figure 1 FAO-GFCM sub-areas map.
Source: Deepfishman Case Study 3 b Report (2010).

Figure 2 shows a presence map of red black-spot seabream in the study area, as inferred from scientific surveys and commercial fishing monitoring, depicts the wide distribution of the species both on the continental shelf, as well as the continental slope.

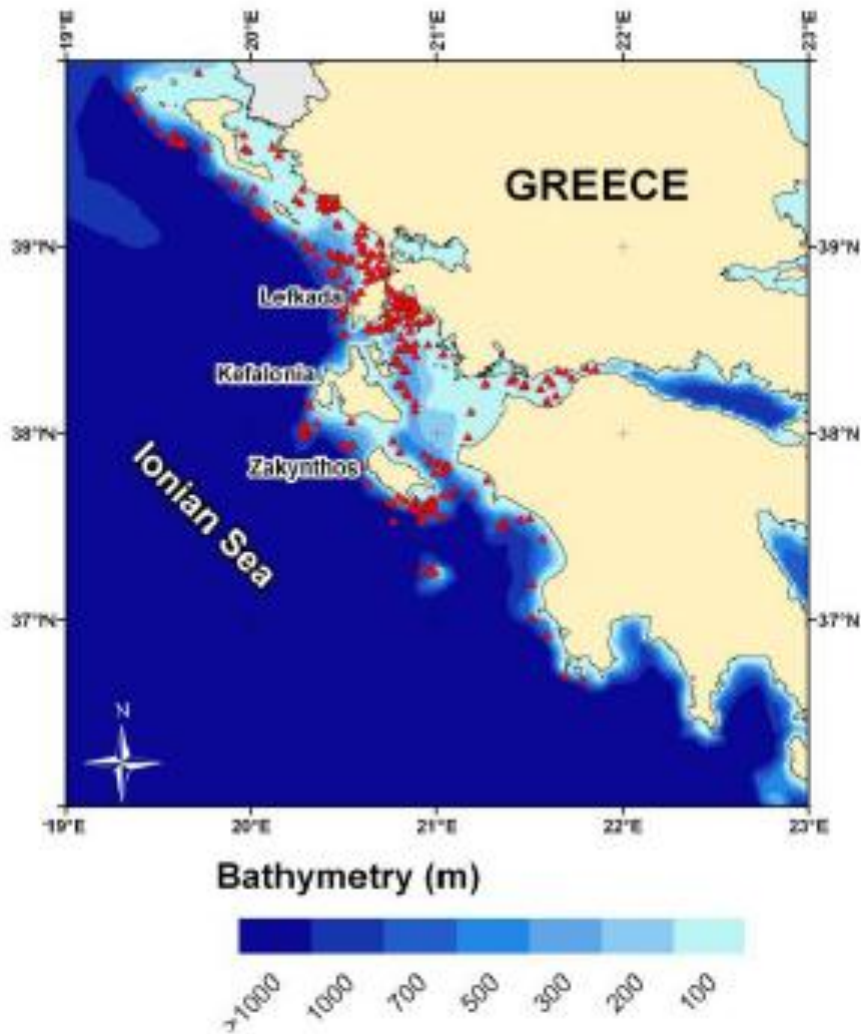


Figure 2: Presence map of red black-spot seabream in FAO-GFCM sub-area 20.
Source: Deepfishman Case Study 3 b Report (2010).

2 History of the fisheries

The fishery of red black-spot seabream in Greek waters was carried out from the beginning of the 1980's until the end of the 1990's by long lines. Afterwards, a new fishery with gill nets has been developed. Initially, catches were extremely high or around 46 kg per 1000 meters of netting where as for the sole trammel net metier catches were 9 kg per 1000 meters of netting (Petракis et al. 1998, Petракis 1999).

Not long after, catches started to decline. One reason, according to the fishermen, was intensive fishing. Upon tracing down the fish fishermen worked on the same place as long as the catches were good. Another important issue was the introduction of nets and the impact of

ghost-fishing. The fishing grounds are principally rough rocky banks at depths between 300 and 600 meters and the possibility of misplacing and losing parts of a net are high. These lost pieces of net, when having the floats attached, go on fishing, while those without floats cover the sea bottom and obstruct the access of various fish to food and/or shelter.

As a result of the declining catch, some fishermen gave up this métier while others decreased the mesh size resulting to a number of negative consequences such as increased quantities of discards, lower prices in the market, more pressure on the immature population and a reduction of the spawning stock.

3 Management

No genetic or morphometric studies to identify and delineate the stock have ever been conducted in the study area. Furthermore, no tagging experiments have been carried out and movements to and from adjacent areas (GSA 19 – West Ionian, GSA23 – Aegean Sea) may be occurring. Although red seabream is a valuable commercial species, little is known on its biology and stock status, due to lack of funds for scientific research on deep water species. As a result, further investigation is needed to delineate the stock reliably.

The recent historical trend in the stock, based on available landings data is contradictory. National Statistical Service of Greece (NSSG) trends are slightly declining from 1994 to 2004 (Mytilineou & Machias, 2007) with an increase afterwards, while EU-DCR NDCP annual landings estimation fluctuates between years (NDCP, 2008). On the other hand, experimental fishery independent surveys have shown an increasing trend in the species biomass from 2003 and afterwards (MEDITS survey).

The lack of knowledge regarding both the biological parameters of the stock as well as the impact of the fishery on the population, stand as the most significant obstacles in the managers' path to provide reliable fisheries advice.

To date there are no clearly defined management or assessment units and the species is not currently assessed since the species is not among the target species list of EU-DCR (National Data Collection Program applying to EU Data Collection Regulation COM 1543/2000). However, FAO-GFCM suggests that the eastern Ionian Sea should be considered as a separate management unit. On a state level, the organization responsible for managing the fisheries is the Greek Ministry of Rural Development and Food. Scientific advice is occasionally provided by FAO-GFCM and the European Union Scientific, Technical and Economic Committee for Fisheries (EU-STECEF).

In the past decade, long-liners have been re-entering the fishery, but gillnetters are though still responsible for the bulk of catches (NDCP, 2008). While bottom trawl landings are insignificant, trawlers are considered the prime source of mortality of the immature part of the population, discarding most of their red seabream catches. An illustrated version of the evolution of the fishery is depicted in Figure 3.

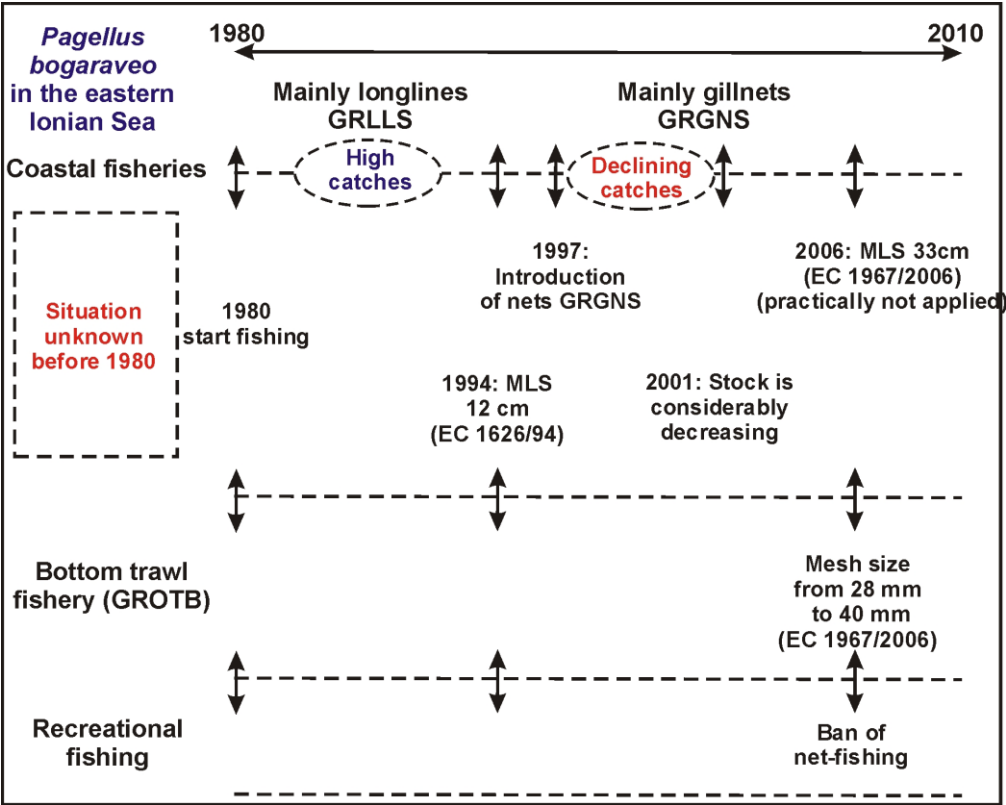


Figure 3 The Evolution of the fishery.
 Source: DEEPFISHMAN Case Study 3 b Report (2010).

All the aforementioned estimates are based on information including a great deal of uncertainty. The Greek fleet is comprised of circa 20,000 boats, which corresponds to about 20 per cent of all the EU fleet. These boats are registered in almost 200 different ports and land their catches in more than 1,200 ports. Of these boats, 94 per cent are less than 15 meters in length with 40 per cent being below 6 meters. Around 70 per cent of the boats have engines with less than 25 kW engine power. These vessels do not bear VMS devices and do not market their catches through official markets. As a result, monitoring is very difficult and data gathered in the EU-DCR framework concern just a small portion of the fleet, around 2 per cent, from which the total Effort/Landings is estimated by applying some raising algorithms (extrapolation).

Furthermore, red seabream is not amongst the 27 target species of the EU-DCR framework for Greek fishery data. It is a target species only in the experimental bottom trawl surveys (MEDITS). Hence, data gathering and estimation of total fleet, effort and production is a huge obstacle to confront. In addition, an unknown number of Italian trawlers are exerting their effort in the deep waters of the area. Information on their catches has not yet been available.

4 Fleet overview and ownership

The fleet taking part in the red black-spot seabream fishery can be divided into four segments; gillnetters, trammel netters, longliners and trawlers. The trammel net fleet is by far the most numerous, counting over 1,400 vessels in 2009. The fleet also included 263 gillnetters, 78 longliners and 20 trawlers. It should be noted that these vessels catch other species apart from red black-spot seabream. Gillnetters, trammel netters and longliners are on average smaller than trawlers.

Table 1 Descriptive statistics for the Greek gillnet fleet.
DEEPFISHMAN Case Study 3 b Report (2010).

	2003	2004	2005	2006	2007	2008
Vessels	535	113	172	150	225	263
Average Length (m)	10	10	10	9	10	10
Average Age (years)	24	25	26	23	22	23
Average Engine Power (KW)	13.8	13.8	13.6	13.7	14.8	15.4
Average size (GRT)	1.4	1.4	1.4	1.4	1.6	1.7

Table 2 Descriptive statistics for the Greek trammel net fleet.
DEEPFISHMAN Case Study 3 b Report (2010).

	2003	2004	2005	2006	2007	2008
Vessels	835	1,091	1,041	1,105	1,163	1,409
Average Length (m)	10	10	10	9	10	10
Average Age (years)	24	25	26	23	22	23
Average Engine Power (KW)	13.8	13.8	13.6	13.7	14.8	15.4
Average size (GRT)	1.4	1.4	1.4	1.4	1.6	1.7

Boats practicing gillnet and trammel net fisheries are categorized as “coastal boats bearing nets” and are indistinguishable in terms of capacity, size, age. As a result, figures in tables 1 & 2 above are similar.

Table 3 Descriptive statistics for the Greek longline fleet.
DEEPFISHMAN Case Study 3 b Report (2010).

	2003	2004	2005	2006	2007	2008
Vessels	10	18	43	37	40	78
Average Length (m)	9.6	10.0	9.9	9.7	9.7	9.4
Average Age (years)	25.4	21.1	21.9	21.3	20.8	19.8
Average Engine Power (KW)	17.4	17.1	17.0	16.7	17.2	17.2
Average size (GRT)	1.9	1.9	1.9	1.9	2.0	1.9

Table 4 Descriptive statistics for the Greek trawl fleet.
DEEPFISHMAN Case Study 3 b Report (2010).

	2003	2004	2005	2006	2007	2008
Vessels	30	20	20	21	20	20
Average Length (m)	23	23	23	23	23	23
Average Age (years)	23	24	24	26	24	25
Average Engine Power (KW)	284	282	276	279	270	272
Average size (GRT)	73	70	72	73	77	77

Gillnetters and longliners usually go one day trips, while trawl vessels go on 1-2 day trips. Boats are commonly owned by the skippers and are in most cases family businesses. Numerous regional fishermen cooperatives for artisanal fishery and one for trawlers are present in the area.

5 Labor

In 2008, the total number of fishermen employed by vessels taking part in the target fishery (gillnets & longlines) amounted to approximately 1,000 individuals. This number decreased to 555 fishermen on average, during the 2003-2008 period. It must be kept in mind that these vessels also take part in other fisheries than the red black-spot seabream. It would therefore be desirable to be able to adjust these labour figures for participation in only the red black-spot seabream fishery, but that is not possible. Consequently, the importance of that fishery for local employment will be overestimated. Trammel net vessels employ the greatest number of fishermen which is not surprising considering the fact that those vessels are the most numerous. Gillnetters, trammel netters and longliners usually have a crew of 1-3, while trawl vessels have a crew of 5-6 members.

Table 5: Number of fishermen employed in the fishery by fishing gear type.
DEEPFISHMAN Case Study 3 b Report (2010).

	2003	2004	2005	2006	2007	2008
Trawl	165	110	110	116	100	100
Gillnet	802	169	343	270	450	789
Trammelnets	1,253	1,636	2,083	1,989	2,326	4,226
Longline	15	27	86	66	80	233
Total	2,235	1,942	2,622	2,440	2,956	5,348

6 Processing and markets

Landings of red seabream are sold on local markets for direct consumption, or transported to non-local markets of metropolitan areas such as Patra, Preveza, Mesolonghi and Athens. For the trawlers, landings there are sold in an open auction, while fish caught from nets and long-lines are usually sold to a single buyer such as fish merchants, restaurants, hotels or individuals. In all cases the market demand is for fresh fish. Estimated landings by fishing gear for the years 2003 to 2008 are presented in Table 6 and revenue in Table 7.

Table 6: Estimated landings by fishing gear type.
DEEPFISHMAN Case Study 3 b Report (2010).

	2003	2004	2005	2006	2007	2008
Trawl	1.3	1.5	1.5	1.3	1.0	1.0
Gillnets	95.3	91.1	147.2	106.6	144.0	82.6
Trammelnets	13.6	24.4	1.3	17.5	20.0	24.3
Longline	2.0	3.6	24.1	42.9	33.0	19.0
Total	112.2	120.6	174.2	168.3	198.0	126.9

Table 7: Revenue figures by fishing gear type.
DEEPFISHMAN Case Study 3 b Report (2010).

	2003	2004	2005	2006	2007	2008	2009
Trawl	219	414	270	212	196	200	252
Gillnet	881	4,468	3,092	2,436	2,515	1,256	2,441
Trammelnets	80	123	4	54	68	69	67
Long lines	1,010	1,101	2,028	4,020	3,242	982	2,064
Total	2,190	6,107	5,394	6,723	6,020	2,507	4,824

7 Financial performance

The financial performance of the trawl fleet on the one hand and gillnetters, trammel netters and longliners on the other is analysed in Tables 8 and 9 respectively. Net income is here defined as income minus variable costs other than fuel, fuel costs and fixed costs. This definition of net income does therefore not make allowance for wages. In order to assess the profitability of the fishery, it is therefore necessary to subtract wages and associated costs from net income. The information on wage costs is, however, unavailable.

Table 8: Financial performance of the trawl fleet.
Deepfishman Case Study 3 b Report (2010).

	2004	2005	2006	2007
Income	439,108	619,958	289,865	834,341
Variable cost	33,876	19,447	34,316	62,619
Fixed cost	4,431	5,351	4,594	2,236
Fuel cost	137,721	64,409	74,166	124,471
Net income	263,080	530,751	176,789	645,015

Table 9: Financial performance of the gillnet, trammel net and longline fleet.
Deepfishman Case Study 3 b Report (2010).

	2004	2005	2006	2007
Income	52,476	98,585	94,021	125,818
Variable cost	3,375	8,884	5,569	6,163
Fixed cost	423	493	441	665
Fuel cost	11,377	9,164	9,321	13,442

The income and costs figures refer to the whole fleet segments, and not just those vessels that take part in the red black-spot seabream fishery. Information on cost and revenue in that fishery *per se* is limited.

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