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Identification of the priority species and shared stocks in the
Mediterranean Geographical Sub-Area 18 (Southern Adriatic Sea)

Paper presented at the GFCM-SAC Sub Committee on Stock Assessment
(Antalya, Turkey, 13-16 October 2008)

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Abstract

This paper aims at contributing to test the criteria for the definition of priority species and shared stocks as formulated by the 10th GFCM SAC meeting. The paper represents the output of the AdriaMed Working Group (WG) on demersal fisheries resources (Rome, March 2007) and the follow up to the AdriaMed WG on demersal fisheries resources (Kotor, June 2008). On the basis of the available information in the Adriatic Sea Geographical SubArea (GSA) n. 18 the paper provides: a) a list of priority species for fishery assessment and management at Country and large basin level (Southern Adriatic) in the Adriatic GSA n° 18 (Albania, Montenegro and Italy waters); b) a list of the main fishery stocks shared among the national waters of Albania, Italy and Montenegro.

1. Background

The contribution of the Adriatic experts to the discussion on the definition of priority species and shared stocks has been commenced since the first Working Groups on Shared Demersal and Small Pelagics Fisheries Resources of the Adriatic Sea organized by the FAO AdriaMed Project in 2000 (AdriaMed, 2000; Mannini et al. 2001). In that occasion the experts identified and prepared a list of species whose stocks should be regarded as shared by the Adriatic Sea countries. The list was then presented and endorsed by the 26th General Fisheries Commission for the Mediterranean (FAO GFCM, 2001). Thenceforth the discussion at Mediterranean level, has continued and during the 9th session of the GFCM Scientific Advisory Committee (SAC), the AdriaMed Project was requested, in support of the GFCM activities and in particular to the Sub Committee on Stock Assessment (SCSA), to perform the task of identifying criteria for the updating of the SAC priority species and shared stocks lists, for all the Adriatic Geographical SubAreas (GSAs).

Moreover, during the 31st Session of the GFCM (Rome, January 2006, GFCM 2007), the SAC invited the Commission to adopt as a GFCM Resolution: i) the list of priority species; and ii) the list of shared stocks as updated by the SCSA. The resolution was not approved until the criteria for the definition of priority species and shared stocks were identified.

The Adriatic scientists to contribute to this discussion and under the coordination of the Project, agreed during the AdriaMed WG on shared demersal fisheries resources (Rome, March 2007) to identify, list and propose a series of criteria for the definition of priority species and shared stocks, and to prepare a document to be circulated among the experts for discussion. The final document, agreed upon by all the Adriatic experts, was prepared and then presented at the GFCM Sub Committee meeting on Stock Assessment (Kavala, September 2007, AdriaMed 2007a, 2007b) and later at the 10th GFCM SAC in Cyprus (FAO GFCM, 2008). During the meeting the SAC endorsed the criteria identified for the priority species making a distinction between criteria oriented to the conservation of particular species and criteria related to the management of the main exploited species. With respect to shared stocks, the SAC discussed the criteria to be used in the identification

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of shared stocks, as presented in the AdriaMed contribution (AdriaMed 2007b) and further agreed on the four (4) criteria to be taken into account^{1*}. Accordingly the Committee recommended to update the list of priority species by GSAs and the list of shared stocks on the basis of the criteria agreed by the SAC and with the contribution of the regional projects.

This paper aims at contributing to the discussion of the concept, analysing the available information for the identification of: a) a list of priority species for fishery assessment and management at Country and large basin level (Southern Adriatic) in the Adriatic GSA n° 18 (Albania, Montenegro and Italy waters); b) a list of the main fishery stocks shared among the national waters of Albania, Italy and Montenegro.

2. Introduction

According to the SAC Glossary the “shared stocks” are the “*Stocks fished by two or more countries*”. In the Mediterranean, despite the fact that the relevance of shared fishery resources is widely recognised, the list of priority shared fishery stocks would require a more deeper reading both in terms of consistency and homogeneity, as was discussed at length during the 31st session of the GFCM. The list of shared stocks is usually updated during each session of SAC, the last being that of October 2006 (GFCM, 2006). The need to identify and harmonize the criteria for the identification of shared stocks was underlined during the tenth session of SAC (FAO GFCM, 2008), during which the following was recommended for the SAC 2007 Preliminary Workplan: “**Priority species and shared stock lists: -to identify criteria to update the SAC priority species and shared stocks lists, for all GSAs, including for the Black Sea**”.

In the following paragraphs both the mentioned tasks will be approached according the rules and criteria reported in the AdriaMed scientific contributions papers (2007a, 2007b), with the aim to obtain for the GSA 18 one list for the priority species and one list for the shared stocks accepted by all the Countries involved.

3. Methodology

3.1 Priority species

The list of priority species for the GSA 18 was compiled mainly according to management (including development) criteria in line with the methodology followed by the Adriatic experts in 2007 (AdriaMed, 2007a) and it comes from the integration/harmonization of the information provided by the three national Countries Albania, Italy and Montenegro.

The fishery species landing biomass and the fishery species average market price were used as parameters for the preparation of the national and GSA 18 related lists. The sources of data are basically the respective statistical data collection systems (i.e. IREPA for Italy), but other reliable information can be suitable also (i.e. data from research projects). The use of two different parameters (instead of one, for example the revenue) is useful to give the right importance to some species low in quantities but high in market price.

¹ i) Population. Identified by genetic and/or morphometric methods; ii) Exploitation. The population should be currently exploited; iii) Fleet. The fleets of different GFCM countries are currently exploiting the population. iv) GSA. The fishing activities are carried out and catches produced in one or more GSA(s).

A weighting procedure was used to classify the landings data as well as the average prices by fishery species (AdriaMed, 2007). The weighting was adopted as the landings and price data from the different Countries are inhomogeneous (according to the different collection and retrieve systems); moreover, the different purchasing power in Albania, Italy and Montenegro can affect the market price at Country level and consequently the comparison of data at GSA level.

Each value of the two variables was grouped according to a six chosen categories. The attribution to a single category was defined as: Poor (score = 0); Very Low (score = 1); Low (score = 2); Medium (score = 3); High (score = 4) and Very High (score = 5) (AdriaMed, 2007a).

The procedure used at Country level was:

- First Step: collect all the available data on the fishery landings (total tonnes by species and year) and on the average prices (average price by species and year);
- Second step: order the species according to the landings (decreasing) and to the average price (decreasing);
- Third Step: divide the species in six categories according to the decreasing values (both for the landings and for the average prices), and attribute the relative scores (Very High = 5; High = 4; Medium = 3; Low = 2; Very Low = 1; Poor = 0);
- Fourth Step: calculate the mean score for each species = $1/2$ [landing score + price score].

According to the method, three national lists of priority species were provided. The lists are homogeneous in the score ranges (from 0 to 5) and thus they can be combined.

The GSA final list originates from the weighting of each national list, according to specified factors. In fact, Albania, Italy and Montenegro have a different impact for the purpose of fishery management at basin level. The consistency and composition of fishery fleets differs each other (AdriaMed, 2004), as well as the respective extension and availability of fishery areas. Consequently two weighting factors were adopted: the consistency of the national fishing fleets (as an index of fishing capacity) and the national coastline length (as an index of fishing area and resource availability).

The result of this merging exercise is the list of priority species for the whole GSA 18 for fisheries management purpose. In addition, some species were added according to the conservation criteria useful for the sustainable exploitation of fishery resources (AdriaMed, 2007a).

3.2 Shared Stocks

The identification of the main shared stocks in the GSA 18 was carried out on the basis of the concepts and criteria reported in the AdriaMed scientific contribution presented during the 10th SAC meeting (AdriaMed, 2007b) and the criteria endorsed by the GFCM SAC (FAO GFCM, 2008). In the following table the conditions (criteria) to be verified to define a stock as shared are listed:

Shared stocks: Criteria	Shared stocks: Tools to verify the criteria
Population.	Identified by genetic and/or morphometric methods;
Exploitation.	The population should be currently exploited;
Fleet.	The fleets of different GFCM countries are currently exploiting the population;
GSA.	The fishing activities are carried out and catches produced in one or more GSA(s).

In the next paragraphs, according to the indication of the 10th GFCM SAC that only priority species should be included in the shared stocks list (FAO - GFCM, 2008), the exercise to identify the potential shared stocks in the South Adriatic Sea, on the basis of the list of priority species identified for GSA 18, is presented (AdriaMed, 2007b).

4. Results

4.1 Priority species

The Albanian, Italian and Montenegrin national lists came from the elaboration of data retrieved by the Albanian official statistics (Directorate of Fishery Policies - Ministry of Environment, Forestry and Water Administration), IREPA (IREPA, 2007), and MONSTAT (MONSTAT, 2007; Regner et al., 2007), sources respectively.

According to the explained methodology, the resulting tables for Albania (table 1), Italy (table 2) and Montenegro (Table 3) are reported below.

Table 1. GSA 18 Albanian priority species list (elaboration from the national statistical database - Directorate of Fishery Policies - Ministry of Environment, Forestry and Water Administration).

Fishery Resource	Priority Overall Score
<i>Nephrops norvegicus</i>	4.5
<i>Mullus barbatus</i>	4.5
<i>Parapenaeus longirostris</i>	4.3
<i>Merluccius merluccius</i>	4.3
<i>Loligo vulgaris</i>	4.3
<i>Solea</i> spp.	4.0
<i>Octopus vulgaris</i>	3.8
<i>Penaeus kerathurus</i>	3.8
<i>Sepia officinalis</i>	3.5
<i>Lophius</i> spp.	3.5
<i>Dentex dentex</i>	3.5
Sparidae	3.3
<i>Aristaomorpha foliacea</i>	3.3
<i>Dicentrarchus labrax</i>	3.3
<i>Zeus faber</i>	3.0
<i>Trigla lucerna</i>	3.0
Squaliformes	2.8
<i>Arnoglossus laterna</i>	2.8
<i>Pagellus erythrinus</i>	2.8
<i>Boops boops</i>	2.8
<i>Mullus surmuletus</i>	2.5
<i>Eledone moschata</i>	2.5
Raiidae	2.5
<i>Sardina pilchardus</i>	2.5
<i>Diplodus vulgaris</i>	2.5
<i>Trisopterus minutus capelanus</i>	2.5
<i>Sarda sarda</i>	2.0
<i>Conger conger</i>	2.0
<i>Scomber</i> spp	2.0
<i>Squatina</i> spp.	1.8
<i>Scorpaena</i> spp.	1.3
<i>Engraulis encrasicolus</i>	1.0
<i>Engraulis encrasicolus</i>	1.0
<i>Uranoscopus scaber</i>	1.0

Table 2. GSA 18 Italian priority species list (elaboration from IREPA 2006 landings and prices report).

Fishery Resource	Priority Overall Score
<i>Nephrops norvegicus</i>	4.8
<i>Sepia officinalis</i>	4.5
<i>Parapenaeus longirostris</i>	4.3
<i>Merluccius merluccius</i>	4.0
<i>Octopus vulgaris</i>	4.0
<i>Mullus surmuletus</i>	3.8
<i>Lophius</i> spp.	3.5
<i>Mullus barbatus</i>	3.5
<i>Squilla mantis</i>	3.5
<i>Xiphias gladius</i>	3.5
<i>Chamelea gallina</i>	3.3
<i>Loligo vulgaris</i>	3.3
<i>Illex coindetii</i>	3.0
<i>Aristaomorpha foliacea</i>	2.8
<i>Eledone cirrhosa</i>	2.8
<i>Eledone moschata</i>	2.8
<i>Engraulis encrasicolus</i>	2.8
<i>Aristeus antennatus</i>	2.5
<i>Pagellus erythrinus</i>	2.5
<i>Penaeus keraturus</i>	2.5
<i>Sarda sarda</i>	2.5
<i>Solea</i> spp.	2.5
<i>Trigla lucerna</i>	2.5
<i>Boops boops</i>	2.3
Scophthalmidae	2.3
Rajidae	2.0
<i>Scomber japonicus</i>	2.0
<i>Seriola dumerili</i>	2.0
<i>Sardina pilchardus</i>	1.8
<i>Thunnus alalunga</i>	1.8
<i>Micromesistius poutassou</i>	1.5
Mugilidae	1.5
<i>Trisopterus minutus capelanus</i>	1.5
<i>Scomber scombrus</i>	1.3
<i>Spicara</i> spp.	1.0
Squaliformes	1.0
<i>Trachurus</i> spp.	1.0
<i>Merlangus merlangius</i>	0.8
<i>Thunnus thynnus</i>	0.8

Table 3. GSA 18 Montenegrin priority species list (elaboration from MONSTAT, 2007; Regner et al., 2007).

Fishery Resource	Priority Overall Score
<i>Lophius</i> sp.	4.5
<i>Merluccius merluccius</i>	4.0
<i>Mullus barbatus</i>	4.0
<i>Octopus vulgaris</i>	4.0
<i>Parapenaeus longirostris</i>	3.8
<i>Loligo vulgaris</i>	3.8
<i>Scomber japonicus</i>	3.5
Mugilidae	3.5
<i>Sparus aurata</i>	3.5
<i>Solea</i> spp.	3.5
<i>Sepia officinalis</i>	3.3
<i>Scomber scombrus</i>	3.0
<i>Eledone moschata</i>	3.0
<i>Citharus linguatula</i>	3.0
<i>Trachurus</i> spp.	2.8
<i>Lichia amia</i>	2.8
<i>Pagellus erythrinus</i>	2.8
<i>Zeus faber</i>	2.8
<i>Sardina pilchardus</i>	2.5
<i>Engraulis encrasicolus</i>	2.5
Rajidae	2.5
<i>Seriola dumerili</i>	2.5
<i>Nephrops norvegicus</i>	2.5
<i>Homarus gamarus</i>	2.5
<i>Sarda sarda</i>	2.3
<i>Euthynnus alletteratus</i>	2.3
<i>Sepia elegans</i>	2.3
<i>Spicara smaris</i>	2.0
<i>Boops boops</i>	2.0
<i>Lithognathus mormyrus</i>	1.8
<i>Sphyraena sphyraena</i>	1.5
Triglidae	1.5
<i>Mustelus</i> sp.	1.5
<i>Scorpaena notata</i>	1.5
<i>Scorpaena porcus</i>	1.5
<i>Illex coindetii</i>	1.3
<i>Merlangius merlangus</i>	0.8
<i>Trachinus</i> sp.	0.5

Each national list has been weighted on the basis of the two factors related to the respective fishing fleets and coastline lengths (refer to the methodology paragraph).

The relative weight of each fishing fleet in the GSA 18 was calculated using the data reported in the document on the Operational Units in the Adriatic Sea prepared by AdriaMed in 2004 (AdriaMed, 2004; Accadia and Franquesa, 2006). The relative weight of the Albanian, Italian and Montenegrin national coastlines in the Southern Adriatic basin came from referenced information (Pano et al., 2007; Regione Puglia, 2008; HIRM – Navy Hydrographical Institute, 2007). The weighting factors by fleet, coastline and overall are listed in the Table 4.

Table 4. Relative weight of the national fleets and coastlines in the GSA 18.

Country	Fleet (number of fishing vessel operating in the GSA 18)	W-Factor	Coastline (km in the GSA 18)	W-Factor	Fleet + Coastline weighting factor
Albania	196	0.12	447	0.33	0.22
Italy	1281	0.75	599	0.45	0.60
Montenegro	221	0.13	293	0.22	0.17

The overall weighting factor per Country was used for each national priority species list. The resulting score values per fishery species and Country have been added to obtain the list for the whole GSA 18 (Table 5). The list includes the first fourths priority species in decreasing order plus a group of “sensible” species for the conservation purposes.

Table 5. Proposed list of the priority species for fishery management purposes in the GSA 18 (* = species regulated by international protection and conservation regimes or particularly sensible to the fishery exploitation).

Fishery resource	Mean score AL Weighted	Mean score IT Weighted	Mean score MNE Weighted	GSA 18 mean scores
<i>Nephrops norvegicus</i>	1.0	2.9	0.4	4.3
<i>Parapenaeus longirostris</i>	0.9	2.6	0.6	4.1
<i>Sepia officinalis</i>	0.8	2.7	0.6	4.0
<i>Merluccius merluccius</i>	0.9	2.4	0.7	4.0
<i>Octopus vulgaris</i>	0.8	2.4	0.7	3.9
<i>Mullus barbatus</i>	1.0	2.1	0.7	3.8
<i>Lophius</i> spp.	0.8	2.1	0.8	3.6
<i>Loligo vulgaris</i>	0.9	2.0	0.6	3.5
<i>Solea</i> spp.	0.9	1.5	0.6	3.0
<i>Mullus surmuletus</i>	0.6	2.3	0.0	2.8
<i>Eledone moschata</i>	0.6	1.7	0.5	2.7
<i>Pagellus erythrinus</i>	0.6	1.5	0.5	2.6
Triglidae	0.7	1.5	0.3	2.4
<i>Aristaemorpha foliacea</i>	0.7	1.7	0.0	2.4
<i>Penaeus kerathurus</i>	0.8	1.5	0.0	2.3
<i>Sarda sarda</i>	0.4	1.5	0.4	2.3
<i>Boops boops</i>	0.6	1.4	0.3	2.3
<i>Engraulis encrasicolus</i>	0.2	1.7	0.4	2.3
Rajidae *	0.6	1.2	0.4	2.2
<i>Squilla mantis</i>	0.0	2.1	0.0	2.1
<i>Xiphias gladius</i> *	0.0	2.1	0.0	2.1
<i>Sardina pilchardus</i>	0.6	1.1	0.4	2.0
<i>Illex coindetii</i>	0.0	1.8	0.2	2.0
<i>Scomber</i> spp.	0.4	1.0	0.6	2.0
<i>Chamelea gallina</i>	0.0	2.0	0.0	2.0
<i>Eledone cirrhosa</i>	0.0	1.7	0.0	1.7
<i>Seriola dumerili</i>	0.0	1.2	0.4	1.6
<i>Aristeus antennatus</i>	0.0	1.5	0.0	1.5
Mugilidae	0.0	0.9	0.6	1.5
<i>Trisopterus minutus capelanus</i>	0.6	0.9	0.0	1.5
Scophthalmidae	0.0	1.4	0.0	1.4
Squaliformes *	0.6	0.6	0.0	1.2
<i>Zeus faber</i>	0.7	0.0	0.5	1.1
<i>Trachurus</i> spp.	0.0	0.6	0.5	1.1
<i>Thunnus alalunga</i>	0.0	1.1	0.0	1.1
<i>Spicara</i> spp.	0.0	0.6	0.3	0.9
<i>Micromesistius poutassou</i>	0.0	0.9	0.0	0.9
<i>Dentex dentex</i>	0.8	0.0	0.0	0.8
<i>Dicentrarchus labrax</i>	0.7	0.0	0.0	0.7
Sparidae	0.7	0.0	0.0	0.7
<i>Thunnus thynnus</i> *	0.0	0.5	0.0	0.5
<i>Squatina</i> spp. *	0.4	0.0	0.0	0.4
<i>Mustelus</i> sp. *	0.0	0.0	0.3	0.3
<i>Acipenser gueldenstaedtii</i> *	0.0	0.0	0.0	0.0
<i>Acipenser stellatus</i> *	0.0	0.0	0.0	0.0
<i>Acipenser sturio</i> Barcelona *	0.0	0.0	0.0	0.0
<i>Anguilla anguilla</i> *	0.0	0.0	0.0	0.0
<i>Huso huso</i> *	0.0	0.0	0.0	0.0
<i>Isurus oxyrinchus</i> *	0.0	0.0	0.0	0.0
<i>Lamna nasus</i> *	0.0	0.0	0.0	0.0
<i>Palinurus elephas</i> *	0.0	0.0	0.0	0.0
<i>Prionace glauca</i> *	0.0	0.0	0.0	0.0

4.2 Shared Stocks

The identification of the main and potential shared stocks was related to the species included in the GSA 18 priority list and referring at the list proposed by the ninth session of the GFCM – SAC (FAO, 2006).

The highly migratory species (consisting primarily of the major tuna species, according to the FAO reported information – Munro et al., 2004) are excluded from the exercise because they have to be considered as “shared” among all the Mediterranean Countries due to their highly migratory behaviour in nature (AdriaMed 2007b).

The first step to test the criteria for the definition of shared stocks, as indicated by the 10th GFCM SAC (FAO GFCM, 2008) is to identify for each species, a common population based on genetical, morphological and biological features.

Some of the Adriatic listed species have been analysed in the past years on the basis of a research programme carried out in the framework of the AdriaMed Project, aimed at exploring the genetic population units by using a DNA molecular markers (Guarniero et al., 2004). *Sardina pilchardus*, *Engraulis encrasicolus*, *Merluccius merluccius*, *Mullus barbatus*, *Pagellus erythrinus*, *Sepia officinalis*, *Loligo vulgaris*, *Eledone cirrhosa*, *Eledone moschata*, *Parapenaeus longirostris* and *Nephrops norvegicus* highlighted high levels of genetic homogeneity in the Adriatic clearly suggesting the occurrence of single population (Tinti et al., 2002; Garoia et al., 2004a; 2004b; Guarniero et al., 2003; Guarniero et al., 2004). *Solea vulgaris* seems to be slightly differentiated mostly according to the Albanian samples (Guarniero et al., 2002) while the Adriatic stock of *Lophius budegassa* appeared to be genetically heterogeneous (Garoia et al., 2003; Guarniero et al., 2004).

With regard to the morphological and biological features most of the demersal species listed for the GSA 18 seems to be not affected by the location (latitudinal and longitudinal) and environmental factors (Vrgoc et al., 2004). No significant difference in the morphological and biological parameters of *Sardina pilchardus* and *Engraulis encrasicolus* have been found among Adriatic areas (Sinovic, 2000), although the abundance and distribution of the Adriatic small pelagics stocks can be affected by the environmental features (Regner, 1996).

The successive step is to verify whether if the population is currently exploited and if the fishing fleets of different GFCM countries are currently exploiting the population. Trends in abundance can be useful to verify this criteria, e.g. trends of abundance for some demersal species in the GSA 18 estimated with data came from trawl surveys carried out in the Albanian, Italian and Montegrin waters during the 2001-2007 period (AdriaMed, 2007c) (Figure 1). Estimations of fishery mortality and exploitation rate for most of the demersal listed species don't highlight any relationship with the different areas of the Adriatic Sea, being affected by the large variability in the values apart from the geographic zones (Vrgoc et al., 2004).

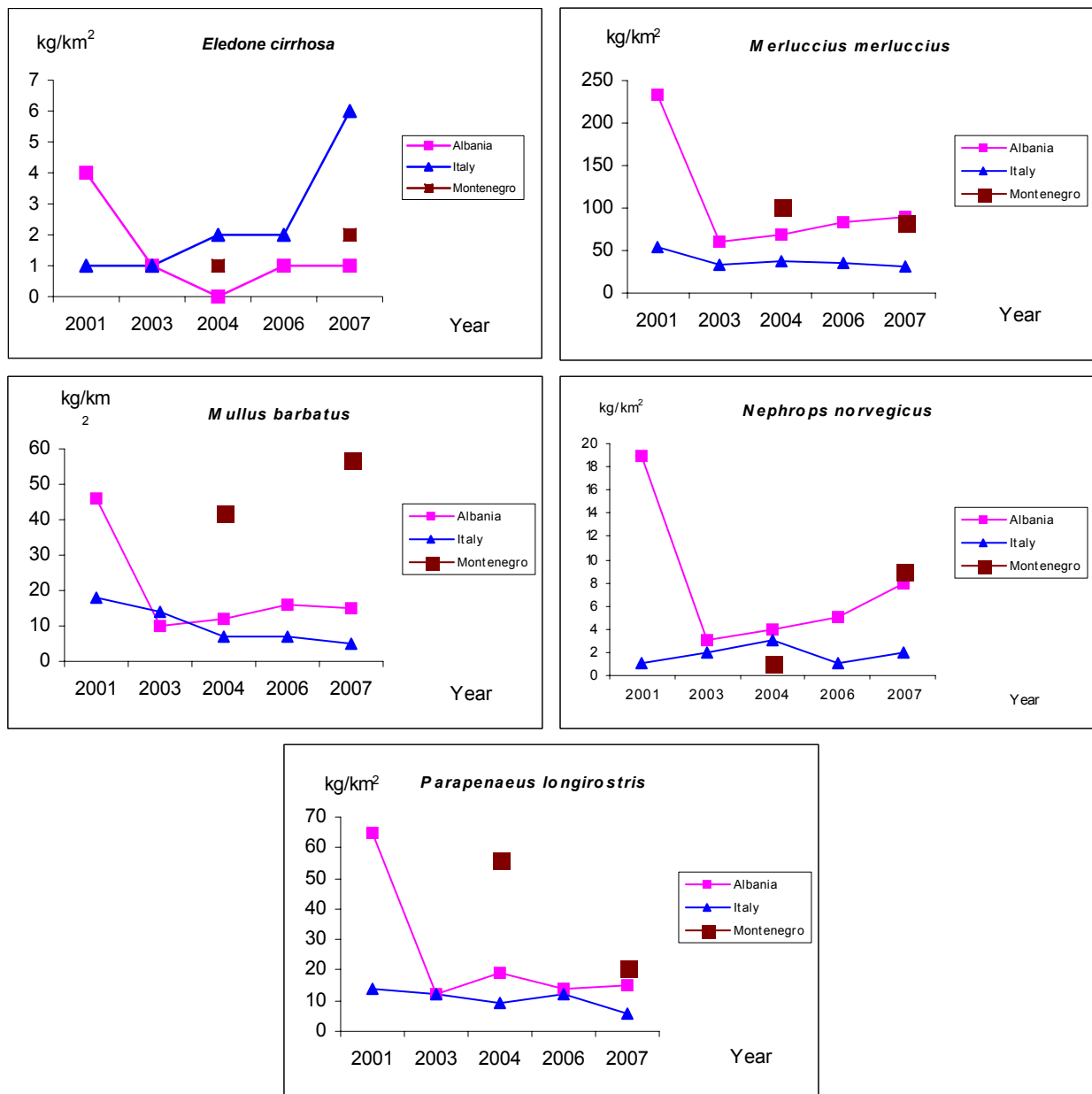


Figure 1. Abundance trends of some demersal species in the Albanian, Italian and Montenegrin waters (data from trawls surveys carried out in the 2001-2007 period).

As reported in the Figure 1, most of the species highlighted similar trends (although the different abundance index values) in the three areas. The exception is *Mullus barbatus* in the Montenegrin waters.

With regard to the small pelagics, although the local environmental features can affect the absolute abundance (Regner, 1996) no differences in the time trend can be appreciated among the Adriatic zones (Sinovicic, 2000).

A further step of the analysis is to verify the presence of the nurseries, spawning and distribution areas and whether they are totally or partially common between two or more national jurisdiction and international waters.

For some of the demersal species included in the “priority” list some distribution maps are available. The distribution maps reported in the Figures 2, 3 and 4 have been arranged using Medits Surveys data and kriging methods.

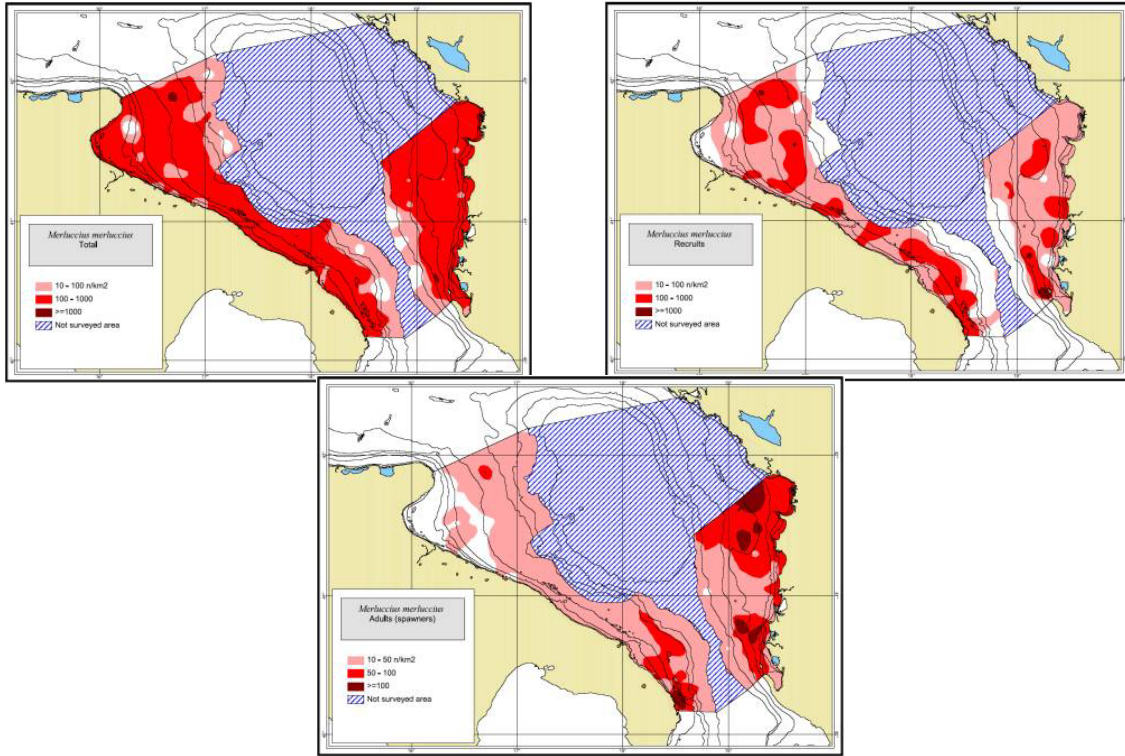


Figure 2. *Merluccius merluccius* distribution in the GSA 18: total, recruits and spawners maps.

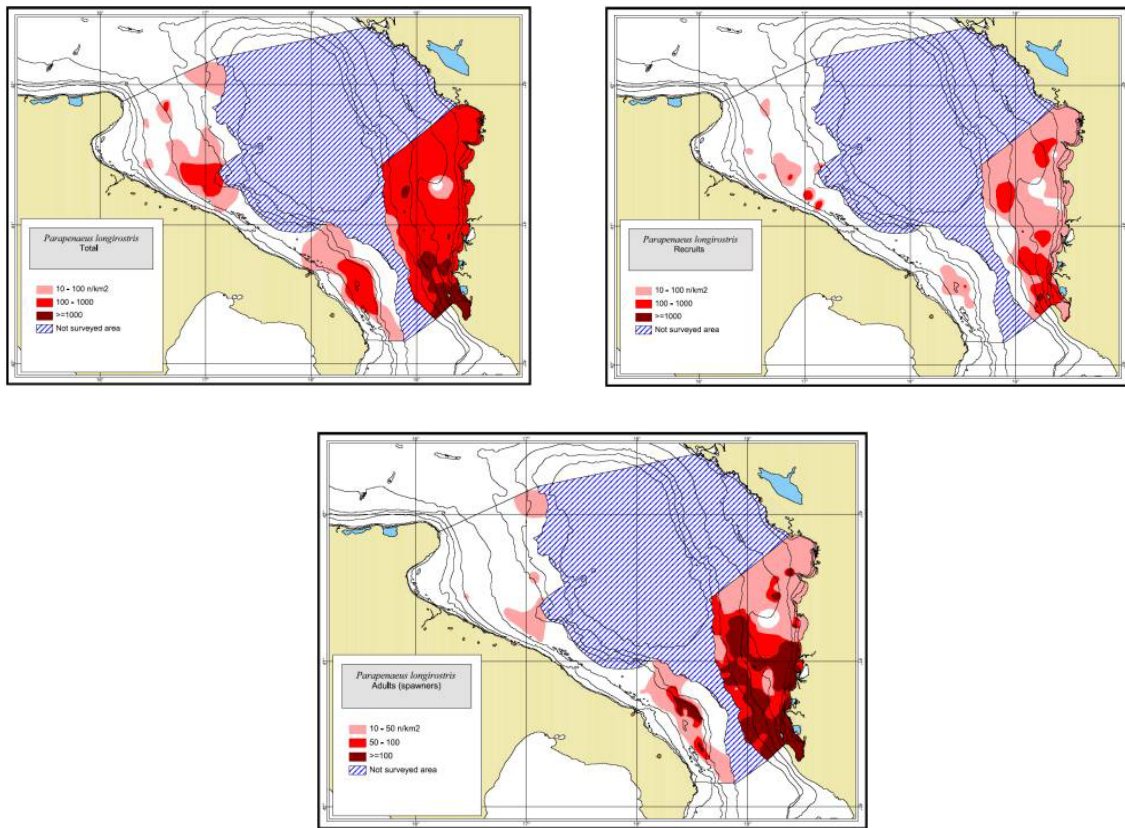


Figure 3. *Parapenaeus longirostris* distribution in the GSA 18: total, recruits and spawners maps.

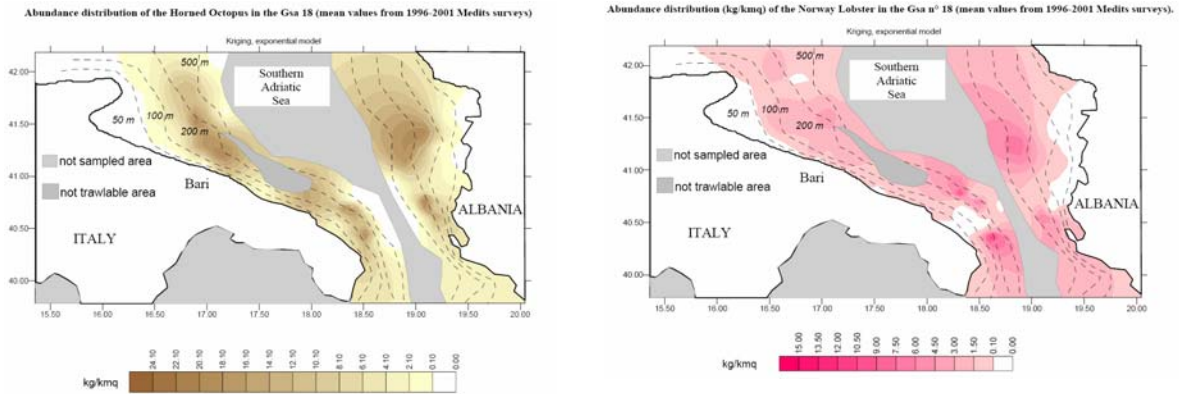


Figure 4. Distribution maps of *Eledone cirrhosa* (on the left) and *Nephrops norvegicus* (on the right) in the GSA 18.

According to the collected information and on the basis of the chosen criteria and tools the following list includes the species whose stocks could be considered shared in the GSA 18:

	Shared stocks: Criteria			
	Population.	Exploitation.	Fleet	GSA.
<i>Thunnus alalunga</i>	X	X		X
<i>Thunnus thynnus</i>	X	X		X
<i>Xiphias gladius</i>	X	X		X
<i>Isurus oxyrhincus</i>	X			
<i>Lamna nasus</i>	X			
<i>Engraulis encrasicolus</i>	X	X	X	X
<i>Sardina pilchardus</i>	X	X	X	X
<i>Eledone cirrhosa</i>	X	X	X	X
<i>Loligo vulgaris</i>	X	X	X	X
<i>Merluccius merluccius</i>	X	X	X	X
<i>Nephrops norvegicus</i>	X	X	X	X
<i>Parapenaeus longirostris</i>	X	X	X	X
<i>Eledone moschata</i>	X	X	X	X
<i>Mullus barbatus</i>	X	X	X	X
<i>Pagellus erythrinus</i>	X	X	X	X
<i>Sepia officinalis</i>	X	X	X	X
<i>Solea vulgaris</i>	X	X	X	X

- The Large Pelagic fishes included in the list proposed by the ninth session of the GFCM – SAC (FAO, 2006): *Thunnus alalunga*, *Thunnus thynnus*, *Xiphias gladius*, *Isurus oxyrhincus*, *Lamna nasus* (a priori “shared” because highly migratory species);
- The Small Pelagic fishes *Engraulis encrasicolus* and *Sardina pilchardus*;
- The demersal species as “fully shared” among the three Countries involved: *Eledone cirrhosa*, *Loligo vulgaris*, *Merluccius merluccius*, *Nephrops norvegicus*, *Parapenaeus longirostris*.

The demersal species as “partially shared” (two Countries only, Albania and Montenegro) because of bio-ecological behaviour: *Eledone moschata*, *Mullus barbatus*, *Pagellus erythrinus*, *Sepia officinalis*, *Solea vulgaris* (this last for population genetic features also). *Lophius* species are not considered because of the reported genetic heterogeneity.

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