

Date of endorsement by the SCMEE

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**STANDARD FORMAT FOR THE SUBMISSION OF PROPOSALS FOR GFCM
FISHERIES RESTRICTED AREAS (FRA) IN THE MEDITERRANEAN**

Name of the FRA:

Continental slope of the Eastern Gulf of Lions (CoSEGoF)
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Submitted by (Institution, Scientists, GFCM Members...):

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1 EXECUTIVE SUMMARY (maximum 500 words)

Supply a summary of the information contained in sections 2 to 8, including the expected results.

Part of the fishing fleets of northern Catalonia (Spain, NW Mediterranean) and Sète (France) exploit the fishing resources of the Gulf of Lions. This is a relatively well known fishery, with its main target species being hake (*Merluccius merluccius*), which is exploited using trawlnets (both countries), longlines (Spain) and gillnets (France). Assessments of this species are regularly presented to SCSA and point to heavy growth overexploitation and likely recruitment overexploitation. The remaining spawning fraction of the hake stock appears to be limited to the most inaccessible areas on the continental slope of the Gulf of Lions, where it is only lightly exploited. Its preservation from full commercial exploitation is considered vital for avoiding the intensification of recruitment overexploitation and the associated collapse of the fishery.

The current proposal reveals key findings of a study carried out in the Gulf of Lions, in which results indicate that the continental slope of the Eastern Gulf of Lions acts as a refuge for large spawners of several commercially important species, including hake. Based on this finding, and with fishing activities expected to shift to areas further out on the continental shelf in future years due to the dismal state of stocks closer the shore, the current proposal suggests that a fisheries restricted area be established on the continental slope of the Eastern Gulf of Lions in order to protect one of the last refuges for large spawning adults of hake and other important fish species. The suggested management measure would be to prohibit any kind of demersal fishing, towed or not, including trawl gears, bottom and midwater longlines, bottom nets (gillnets, trammelnets) and traps in the proposed zone. This measure is expected to result in major socio-economic benefits, since preserving the area would preserve the source of recruits supporting the current demersal fishery in the Gulf of Lions and even further south, in Northern Catalonia.

2 AREA IDENTIFICATION

2.1 GFCM GEOGRAPHICAL SUBAREA

http://www.icm.csic.es/rec/projectes/scsa/SAC_Geographical_SubAreas_2007.pdf

GSA7

2.2 NAME OF THE FRA

Continental slope of the Eastern Gulf of Lions

2.3 GEOGRAPHIC LOCATION

2.3.1 General location

North Western Mediterranean, on the eastern part of the continental slope of the Gulf of Lions, in international waters.

2.3.2. Precise location of the proposed core area: provide geographical coordinates

(latitude and longitude in degrees, minutes and seconds) for the vertex of a polygonal area.

(42°40'N, 4°20'E), (42°40'N, 5°00'E), (43°00'N, 4°20'E), (43°00'N, 5°00'E)

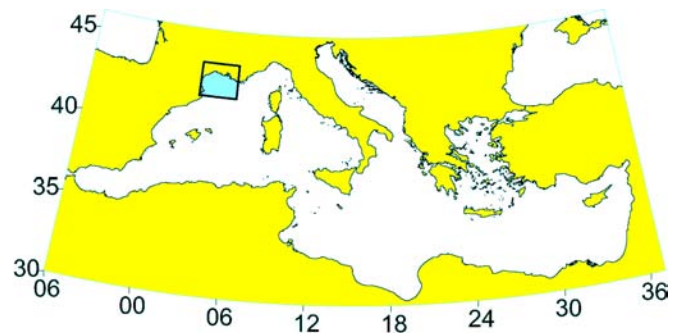
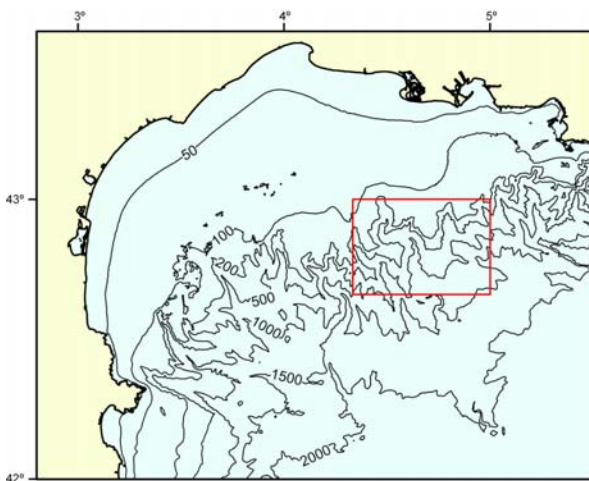
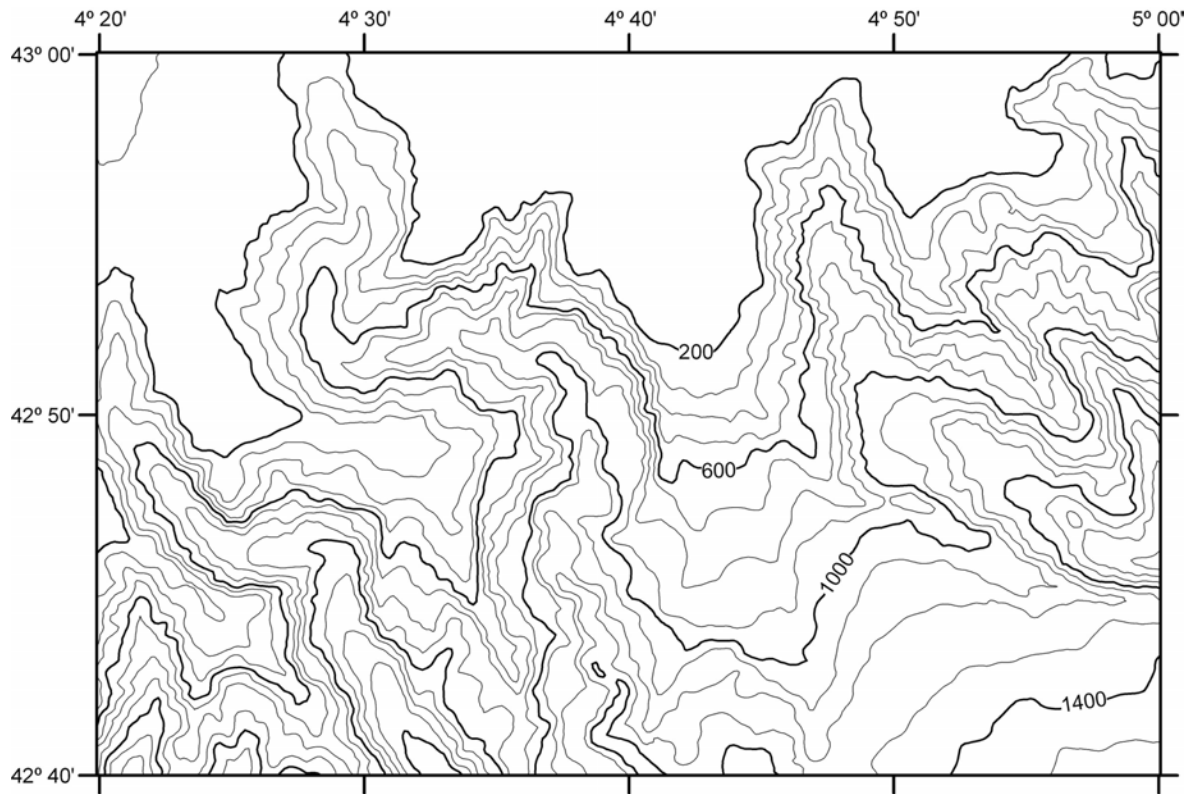
The area proposed matches exactly the study area described and characterized in the work by Massuti *et al.* (2008).

2.3.3. Buffer area (if applicable) , provide geographical coordinates

(latitude and longitude in degrees, minutes and seconds) for the vertex of a polygonal area.

No buffer area is proposed

2.3.4. Location Map: include geographical coordinates of the core and buffer areas, bathymetry, and the boundary of international waters. Add a global reference map of the Mediterranean with the location of the site.



2.3.5. Depth range (in m; specify core and buffer area, if applicable)

100 m to 1500 m

2.4 SURFACE AREA (in ha and km²; specify core and buffer area, if applicable)

205100 ha, 2051 km² 598 sq miles

3 SITE DESCRIPTION

3.1 MAIN PHYSICAL FEATURES

3.1.1. Geology/Geomorphology

Give a brief description of the geological aspects; processes of sedimentation and erosion observable in the area and other geomorphologic features or geological risks. Indicate bibliographical sources.

The proposed zone is located in the Gulf of Lions, a tectonically-passive margin extending from the Pyrenean mountains of northern Spain to the Alps of eastern France. It was formed by Oligocene-Aquitanian rifting followed by the opening of a micro-ocean separating the Corsica-Sardinia block from the southern French margin (Le Pichon et al., 1971; Séranne et al., 1995). Because of the young age of this passive margin, its subsidence rate and the associated accommodation space for sediments are significant. As a result, a thick (up to 2 km at the shelf edge and 10 km in the deep basin) pile of sediment accumulated during the Neogene (Berne and Gorini, 2005).

The main source of sediment to the modern Gulf of Lions is the Rhone River, which provides $2.2\text{-}5 \times 10^6$ tons of sediment annually (Zuo et al., 1991; Courp and Monaco, 1990). This is approximately equivalent to 80% of the total sediment input to the Gulf. Six smaller, western rivers (Hérault, Orb, Aude, Agly, Tech, Têt) supply most of the remainder of the Holocene sediment.

The Gulf of Lions' continental shelf is crescent-shaped and has a maximum width about 70 km, with the shelf-break found at approximately 120 m depth. Modern sands extend from the shoreline to ~30 m water depth, the mid-shelf is characterized by a mud deposit and reworked Pleistocene sands are exposed on the outer shelf deeper than 90 m (Courp and Monaco, 1990; Certain et al., 2005). The continental slope is characterized by an intricate network of submarine canyons that coalesce into two primary channels on the deep slope. These canyons formed progressively since the Middle-Late Pliocene, probably in relation with increasing sea-level changes and sediment supply (Lofi, 2002).

The proposed zone comprises three of these submarine canyons named (from East to West) Estaque, Grand-Rhône et Petit-Rhône and a small part of Marti Canyon (Fig. 2). Such canyons often exhibit very important slopes, attaining in some cases more than 20° , and local areas around the canyon heads with cliffs. The zones inter-canyons are less rough with slopes of $2^\circ\text{-}3^\circ$ between 180 and 2000 m. The sediment of the slope is mainly muddy.

Numerous studies have shown that, at present, sediment is actively escaping the Gulf of Lions' shelf via submarine canyons, with very important consequences for the biological populations inhabiting these slope environments (Company et al., 2008).

3.1.2. Other interesting physical or chemical features: Such as hydrodynamics, frontal areas, upwelling, etc than support the proposal.

On spawning of *M. merluccius* and marine circulation

Ichthyoplankton surveys and adult gonadal analysis carried out off the Catalan coast allow to determine the close association between spawning grounds of *Merluccius merluccius* and the shelf-break (Olivar *et al.*, 2003; Recasens *et al.*, 2008), spawning being concentrated at the 100-200 m isobaths. Adult distribution in the Gulf of Lions suggested that in peak spawning periods the adults, especially females, move towards the edge of the shelf (Recasens *et al.*, 1998) Mature female Mediterranean hake are present all the year round, but the peak of reproductive activity is concentrated from August to December in the Catalan Sea.

Surveys of the vertical distribution of *Merluccius merluccius* eggs and larvae evidenced that although they may appear along the upper 200 m of the water column, they are mainly located below the thermocline, from 50 to 100 m of the water column (Sabatés, 2004; Olivar *et al.*, 2008). This vertical pattern is consistent with those found for species in Atlantic waters (Coombs and Michell, 1982; Motos *et al.*, 2000) and also to other hake species around the world: *M. productus* (Kendall and Naplin, 1981), *M. capensis* (Olivar *et al.* 1988).

The general circulation of the NW Mediterranean is dominated by a current along the continental slope (Allain, 1960; Millot, 1990). This current is produced by a geostrophic adjustment of a shelf-slope front separating less dense shelf waters from those in open sea, and its influence reaches down to 300-400 m (Millot, 1987; Font *et al.*, 1988). The total transport associated with this current is variable, from 0.8 to 1.2 Sv (Albérola *et al.*, 1995; Castellón *et al.*, 1990). Typical surface velocities at the jet are around 30 cm/s, but occasionally can reach more than 50 cm/s. Current speed decreases with depth but is still greater than 5 cm/s at 300 m and around 10-15 cm/s between 100 and 200 m (Albérola *et al.*, 1995; Salat, 1995).

While the current path is centered along the shelf break (Salat, 1996), it presents some oscillations (Sabatés *et al.*, 2001; Flexas *et al.*, 2002), eddies (Rubio *et al.*, 2005) and other mesoscale instabilities (Wang *et al.*, 1988; Petrenko, 2003).

Based on the above mentioned information, it can be assumed that an important part of the larvae that originated from a spawning activity within the FRA will be transported towards the Catalan shelf and upper slope, like it has been shown for other species in the region (Sabatés *et al.*, 2001). Therefore, according to the current speeds, the journey from the FRA to the Catalan shelf for larvae originated from a spawning activity at depths between 100 and 200 m would take not more than 15-20 days, actually 18.6 days, assuming a current speed of 10 cm/s at the referred depths and a total path of 160 km. The straight distance from the centre of the proposed FRA to Cap Creus is 60 NM (~110 km)

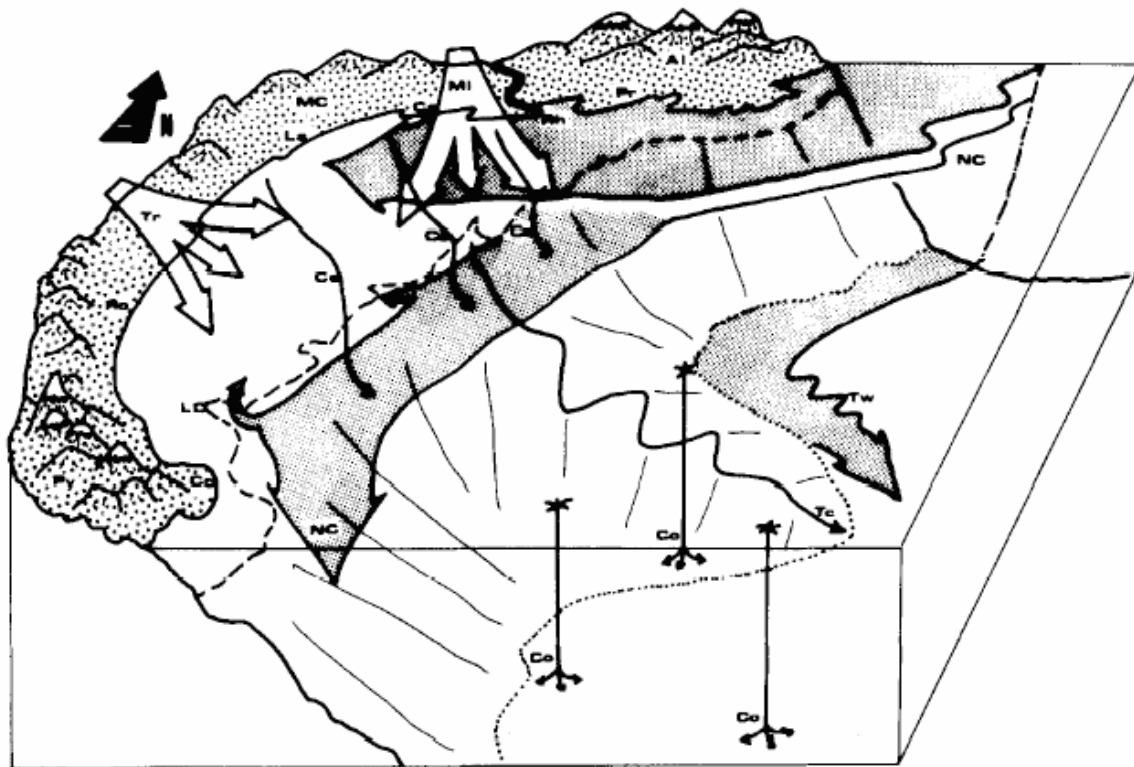


Fig. 1. Schematic view of the Gulf of Lions representing mountains (Py, Pyrenees; MC, Massif Central; Al, Alps), winds (Mi, Mistral; Tr, Tramontane), regions (Ro, Roussillon; La, Languedoc; Ca, Camargue; Pr, Provence), rivers (Rh, Rhône), canyons (LD, Lacaze-Duthiers), capes (CC, Cap de Creux), and phenomena such as: the general circulation (NC, Northern Current); Tc, turbidity currents; Tw, topographic waves; and dense water formation [through chimneys offshore (Co) and cascading on the shelf (Cs)].

3.2 BIOLOGICAL FEATURES

3.2.1. Habitats: A brief description of the dominant marine habitats including pelagic ones if applicable

See 3.1.1. and 3.1.2

3.2.2. List of regionally important species

List here those marine species protected by international agreements (specify the agreement) and/or included in the GFCM priority list. If applicable, give the IUCN category. Any other species may be listed if it is clearly considered of regional importance given its high representation in the area. For each species state:

a) its relative abundance as Common (C), Uncommon (U) or Occasional (O), b) Its regional status as rare (r), endemic (e) and/or threatened (t), and

c) its status as an important resident population (R), or important for its breeding (B), feeding (F), wintering (W) or migratory passage (M)

Accurate data on fish assemblages in the area was obtained during scientific cruises performed by Massuti *et al.* (2008). A total of 88 fish species were recorded, of which 12 are priority species for GFCM. Up to 17 species account for 90% of the biomass caught. 12 species are of commercial importance and 6 of high economic importance: *Lophius piscatorius*, *Nephrops norvegicus*, *Aristeus antennatus*, *Merluccius merluccius*, *Trigla lyra* and *Lepidorhombus boscii*.

SPECIES	Rel. Abundance (C) (U) (O) In biomass	Rel. Abundance % In biomass	Regional STATUS (r) (e) (t)	Local STATUS (R) (B) (F) (W) (M)	GFCM priority species
<i>Galeus melastomus</i>	C	16.42%			
<i>Micromesistius poutassou</i>	C	12.92%			+
<i>Lophius piscatorius</i>	C	11.88%		B	+
<i>Nephrops norvegicus</i>	C	7.56%		B	+
<i>Lepidopus caudatus</i>	C	5.16%		B	
<i>Trachurus trachurus</i>	C	5.06%			+
<i>Aristeus antennatus</i>	C	5.03%		B	+
<i>Merluccius merluccius</i>	C	4.44%		B	+
<i>Helicolenus dactylopterus</i>	C	3.98%			
<i>Chimaera monstrosa</i>	C	3.07%			
<i>Trigla lyra</i>	C	2.70%			
<i>Phycis blennoides</i>	C	2.39%			
<i>Trachyrincus scabrus</i>	C	2.23%			
<i>Capros aper</i>	C	2.19%			
<i>Conger conger</i>	C	1.86%			
<i>Caelorinchus caelorhincus</i>	C	1.74%			
<i>Lepidorhombus boscii</i>	C	1.58%			
<i>Centrophorus granulosus</i>	C	1.56%			
<i>Trachurus picturatus</i>	C	1.01%			
<i>Lophius budegassa</i>	U	0.55%			+
<i>Pagellus bogaraveo</i>	U	0.16%			+
<i>Palinurus mauritanicus</i>	O	0.06%			+
<i>Mullus surmuletus</i>	O	0.01%			+
<i>Parapenaeus longirostris</i>	O	0.01%			+
<i>Eledone cirrhosa</i>	O	0.01%			+

3.2.3. Occurrence of biological and ecological processes relevant to fish resources (essential fish habitats)

The lower shelf and slope of the Gulf of Lions is a spawning zone for many fish species. The data from Massuti *et al.* (2008) shows that individuals from species particularly relevant to fisheries like hake, monkfish and Norway lobster occurring in the area are large adult specimens. The importance of the areas as a refuge for spawners and even megaspawners is reinforced by the fact it is still relatively untouched by commercial fleets.

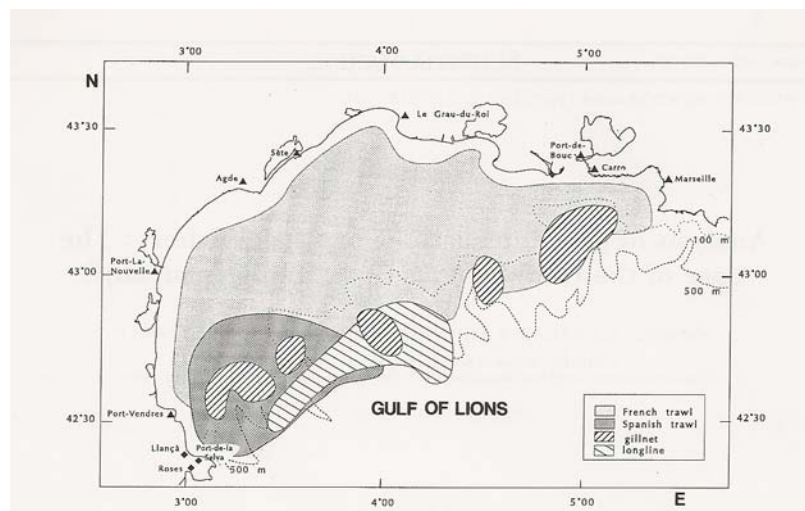
3.3 USE OF NATURAL RESOURCES

3.3.1. Current human use and development of fisheries

a) Briefly describe the current use of the area by artisanal, industrial and recreational fishing.

The zone proposed for protection has been occasionally exploited by French and Spanish fleets, such as trawlers of both countries and also French gillnet vessels and Spanish longliners.

In a paper by Aldebert *et al.* (1993) a chart on activity zones of the four fleets was presented. Since the allowed time at sea has not significantly changed since this publication, it may be assumed that the chart still represents the current fishing situation. It is important to note, however, that this map doesn't inform on the intensity of fishing activity. It only focuses on the geographical range covered by the different gears, even if fishing is infrequent, as is the case in the proposed area.



Even if the fishing pressure in the proposed area is currently still very low, there is an expected increase in interest from fleets operating in the neighbouring ports to expand their range of activity to include this region, due to the rarefaction of fish resources in the traditional fishing grounds in the area. The area proposed is thought to act as a refuge for spawners (which would supply the fishery in the traditional areas with recruits) and its protection would be a precautionary measure to avoid the collapse of the associated groundfish fisheries.

b) Enter how many of the users depend on these resources, seasonality, and assessment of the social and economic importance of their use and of the perceived impact on the conservation of the area, in a score of 0-1-2-3 (meaning null, low, medium, high).

ACTIVITY AND CATEGORY	ASSESS IMPORTANCE OF		ESTIMATED No. of USERS	SEASONALITY
	SOCIO-ECONOMIC	CONSERV. IMPACT		
FISHING				
Artisanal	0 1 2 3	0 1 2 3		
Industrial	0 1 2 3	0 1 2 3		
Other:				
- Acuiculture				
-				

3.3.2. Current human use and development (except for fisheries)

a) Briefly describe the current use of the area for other economic sectors.

No use other than fisheries mentioned in 3.3.1

b) Enter how many of the users depend on these resources, seasonality, and assessment of the social and economic importance of their use and of the perceived impact on the conservation of the area, in a score of 0-1-2-3 (meaning null, low, medium, high).

ACTIVITY AND CATEGORY	ASSESS IMPORTANCE OF		ESTIMATED No. of USERS	SEASONALITY
	SOCIO-ECONOMIC	CONSERV. IMPACT		
OTHER ACTIVITES				
Tourism	0 1 2 3	0 1 2 3		
Transport	0 1 2 3	0 1 2 3		
Mining				
-				
-				

4 REGIONAL IMPORTANCE OF THE SITE

This Section aims at stressing the importance of the site for conservation at the regional scale.

4.1 PRESENCE OF ECOSYSTEMS/HABITATS OF PARTICULAR IMPORTANCE IN THE MEDITERRANEAN

No studies are available on deep-sea ecosystems in the area. However, the existence of rare deep-water corals such as *Lophelia pertusa* and *Madrepora oculata* is possible, given its recorded presence in similar areas in the western part of the Gulf of Lions.

4.2 PRESENCE OF HABITATS THAT ARE CRITICAL TO ENDANGERED, THREATENED OR ENDEMIC SPECIES

Name the habitat types and the species linked to it. Give information about its status (IUCN classification, etc.).

Not relevant

4.3 OTHER RELEVANT FEATURES

4.3.1. Educational Interest

E.g. particular values for activities of environmental education or awareness

Not applicable

4.3.2. Scientific Interest

Explain if the site represents a particular value for research.

It constitutes a relatively pristine bottom ecosystem and can provide clues to know and understand the functioning of the ecosystems of the Mediterranean slopes.

5 IMPACTS AND ACTIVITIES AFFECTING THE AREA

5.1 IMPACTS AND ACTIVITIES WITHIN THE SITE

5.1.1. Exploitation of natural resources

Assess if the current rates of exploitation of natural resources within the area (e.g. fishing, sand and mineral exploitation) are deemed unsustainable in quality or quantity, and try to quantify these threats, e.g. the percentage of the area under threat, or any known increase in extraction rates.

Only the exploitation levels of hake have been regularly assessed and the results presented to the GFCM corresponding bodies (SCSA). Hake is the most important species and target for most of the fishing operations in the Gulf of Lions lower shelf.

Since the first Franco-Spanish joint assessment of hake (Aldebert *et al.*, 1993), several assessments with longer data series and more sophisticated procedures (i.e. from LCA at the beginning to XSA the last assessment) have been carried out. In the SCSA sessions up to 4 (2001, 2003, 2005, 2006) joint Franco-Spanish (considering the mentioned 4 gears) Gulf of Lions hake assessments were submitted.

In all cases hake populations in the Gulf of Lions appeared to be heavily growth overexploited with serious indications of recruitment overfishing.

5.1.2. Threats to habitats and species

Mention any serious threats to the habitat (e.g. modification, disturbance, pollution) or to species (e.g. disturbance, poaching, introduced alien species...) within the area.

Fishing constitutes a very real threat to the proposed area since fishers are asking for being allowed to be more time at sea in order to reach this zone. If this were allowed, soon the continental slope that is the object of this document would be transformed into an overexploited zone, similar to the slope closer to harbors.

5.2 IMPACTS AND ACTIVITIES AROUND THE SITE

5.2.1. Pollution

Name and describe sources of pollution.

Not applicable

5.2.2. Other external threats, natural and/or anthropogenic

Briefly describe any other external threat to the ecological, biological, aesthetic or cultural values of the area (such as unregulated exploitation of natural resources, serious threats on habitats or species, pollution problems) likely to influence the area in question.

Not applicable

5.2.3. Sustainable development measures

Comment whether the area is covered by a management plan, or bordering upon a zone under such a plan.

Current measurements limit the time at sea in such a way that vessels cannot reach the FRA.

6 EXPECTED DEVELOPMENT AND TRENDS¹

This is not always easy to assess and thus, it is not obligatory to fill in this Section.

6.1 EXPECTED DEVELOPMENT AND TRENDS OF THREATS TO AND PRESSURES UPON THE AREA

Deal briefly with the development of economic activities within the area

An exacerbation of fishing pressure is expected in the area, particularly by larger fishing vessels from ports from the Gulf of Lions, in quest of higher fishing yields in the most inaccessible areas of the Gulf of Lions' slope. This would lead to a destruction of the last relevant spawning aggregations of hake, Norway lobster and other important fish species in the Gulf of Lions.

¹ By expected development and trends are meant the development, which is thought most likely to occur in the absence of any deliberate intervention to protect and manage the site.

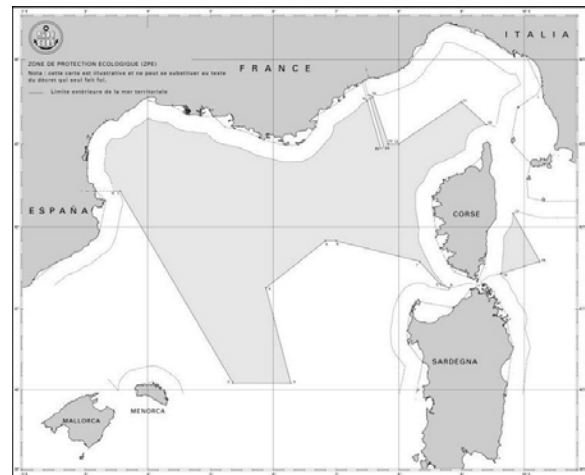
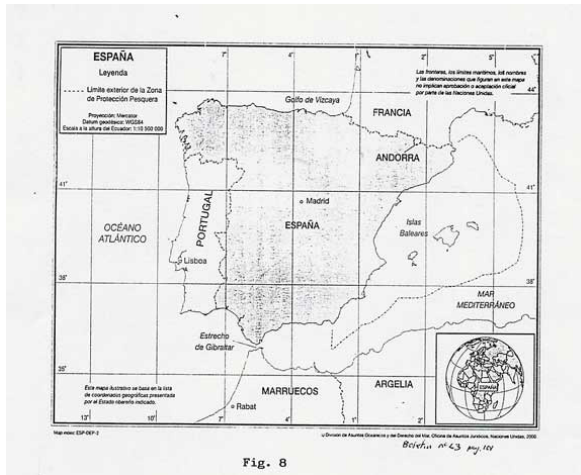
7 MANAGEMENT AND PROTECTION REGIME

7.1 LEGAL STATUS (if applicable)

7.1.1. Historical background of the management related to the area

This area is in international waters, outside of the Spanish Fishing Protected Area.

This area is inside the French “zone de protection écologique”



A part of the proposed FRA corresponds to a depth beyond 1000 m, recommendation GFCM/2005/1, however this recommendation prohibit the use of towed dredges and trawling, not longlining, gillnetting or any other system able to catch fish spawners.

7.1.2. Regulatory measures currently ruling the management on the site

Mention if the area, or part of it, has been designated and on what date, with an international conservation category.

In the chapter on legislation (item 9, later in this document) there is a list of laws affecting the area, regarding, the Spanish fishing protected zone and time at sea. Lacleta Muñoz (2004) deals with legal aspects.

7.1.3. Objectives

Name in order of importance the objectives of the area as stated in its legal declaration.

7.2 LEGAL BACKGROUND

Briefly mention if the area or part of it is subject to any legal claim, or to any file open in that connection within the framework of an international body.

The so-called Fisheries Protection Zone established by Spain in 1998 encompasses the westernmost part of the Gulf of Lions and lies completely outside the area proposed here for protection as FRA. Additionally, France has never accepted the limit of this Spanish FPZ within the Gulf of Lions.

7.3 LEGAL PROVISIONS FOR MANAGEMENT

7.3.1. Zoning regulating the area

Briefly state if the legal text protecting the area provides for different zones to allocate different management objectives of the area (e.g. core and scientific zones, fishing zones, etc) and in this case the surface area of these zones. Include a map as an annex.

7.3.3. Legal competencies

Legal competence and responsibility with regard to administration and implementation measures

The GFCM has full mandate to manage fisheries in the area proposed as FRA: international waters of the Gulf of Lions, NW Mediterranean. Fleets occasionally operating in the area or in neighboring areas are based in French and Spanish ports. Both fleets are subject to the rules of the EC Common Fisheries Policy, concretely to the management framework established by Council Regulation (EC) No 1967/2006 concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea.

7.3.4. Other legal provisions

Describe any other relevant legal provisions, such as those requiring a management plan or any other significant measures concerning the protection and management of the area.

8 OBJECTIVES OF THE FRA AND PROPOSED MANAGEMENT MEASURES

8.1 OBJECTIVES OF THE FRA

State the reasons that justify the designation of the FRA

The objective of proposing this FRA is to protect very important spawning stocks of several species of fishes of paramount importance in the North Western Mediterranean fisheries, affecting mainly France and Spain.

Justification

The presence of reserves of spawners is of paramount importance to guarantee the sustainability of fisheries, and the exploitation of such reserves would impact very negatively on the whole fishery. An example of what can result from the exploitation of spawners is demonstrated by the hake fishery of the Cap Breton canyon, where overfishing collapsed the stock, obliging the launch of an emergency plan in 2001 and a recovery plan in 2004.

Caddy (1990) noted that some of the most important Mediterranean fisheries are based (as opposed to the Atlantic Ocean) on the spawners refugia paradigm, meaning the existence of untouched of spawners that provide good recruitments to the fisheries of juveniles.

Froese (2004) presented the “three simple indicators” as the right way to manage fisheries: (i) Let them spawn, (ii) Let them grow and (iii) Let the mega-spawners live. The third one is important because of the quantity and quality of spawning produced by the old spawners (the so-called FOF, fat, old females) and this is what the present proposal is based on.

The cruises realized by Spain in the proposed zone (Massutí *et al.*, 2008) have demonstrated the presence of a Caddy’s refugium, affecting very important commercial species.

The scientists working on the North Western Mediterranean Fisheries know that a relatively untouched spawning stock must exist somewhere, otherwise they cannot explain the situation of “sustainable overfishing” on juveniles, because the recruitment sustaining that fishery appears to be more or less constant. The bottom characteristics and the hydrographic conditions of the zone proposed for FRA strongly suggest that this area is one of such refugia supplying recruits to the nearby fishery.

There are some precedents of the use of protected areas to address the management of hake. Argentina established a closed area (among other measures) in 1997 in order to recover the Argentinian hake (*Merluccius hubbsi*). However, as in the case of Cape Breton, the Argentinian hake fishery is based on old individuals (the Caddy’s “minimum size limit” paradigm). Mesh size is thus larger than 100 mm, and the closed area was established for protecting juveniles rather than spawners.

8.2 PROPOSED PROTECTION MANAGEMENT MEASURES FOR THE FRA

8.2.1. Management measures

Suggest management measures to be implemented in the FRA

Prohibit any kind of demersal fishing, towed or not, including trawl gears, bottom and midwater longlines, bottom nets (gillnets, trammelnets), traps, etc.

8.2.2. Monitoring, Control and Surveillance measures

Suggest measures to effectively enforce the FRA

- 1.- Limit (keep) the time at sea in such a way that vessels have no time to reach the zone and fish. Actually it is enough to maintain the current time at sea, avoiding expanding it.
- 2.- Provide the vessels able to reach the FRA with VMS in order to control their geographical position.

8.2.3 Socioeconomic impact(s) of the FRA

Prevision of the socioeconomic impact(s) of the proposed measures

Since the exploitation of the proposed FRA is currently very low, no major negative socio-economic impact is expected. A major benefit is expected since preserving the area would preserve the source of recruits supporting the current demersal fishery in the Gulf of Lions and even further south, in Northern Catalonia.

8.2.3.1. Economic evaluation of the ecosystems services (not only marketable)

Economic value of the goods and services that the ecosystem support

It may be assumed that a significant fraction of the market value of demersal fish landings obtained in the traditional fishing grounds in the Gulf of Lions are directly resulting from the preservation of the spawning populations in the area proposed as FRA.

9 OTHER RELEVANT INFORMATION

Bibliography

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