JOINT RECOMMANDATIONS ON DISCARDS MANAGEMENT PLANS FOR SPECIES DEFINING THE FISHERIES

(Art. 15 Basic Regulation)

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MEDAC

MEDITERRANEAN ADVISORY COUNCIL

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General Overview

Article 15 of Regulation 1380/2013 envisages the gradual introduction of the landing obligation for all catches, according to a clearly identified schedule. The landing obligation for small pelagic fish species caught with purse seine and pelagic trawl nets is already in force, the next deadline is the 1st January 2017 "for species defining the fisheries". The identification of these species proved very complicated and was resolved thanks to the Member States whose General Directors of the relevant ministries prepared letters to communicate the target species which identify the fisheries.

The MEDAC therefore, on the basis of the work carried out in the recent past in the context of the opinion for a joint recommendation on the landing obligation for small pelagics, and with reference to requests for cooperation received from Member States concerned, hereby proposes an opinion for a joint recommendation for the start, as of 1st January 2017, of the landing obligation for certain demersal target species, divided into three main areas

- Western Mediterranean Sea (FR, IT, SP) red mullet and hake;
- Adriatic Sea (HR, IT, SI) red mullet, hake and common sole;
- Central-Eastern Mediterranean Sea (CY, GR, IT, MT) red mullet, hake and deep rose shrimp.

The plan is structured as follows: a descriptive part (I) which describes the four target species, including information on statistical and biological data available and a proactive part (II) which aims to provide all the available information for the preparation of joint recommendations for management plans for the species defining the fisheries.

The opinion that follows is thus presented to the Member States, which - if they agree – can pass it on, including any changes deemed appropriate, to the European Commission.

I. GENERAL DESCRIPTION

1. Legal Framework related to the Landing Obligation

Article 15 of Regulation (EU) 1380/2013, in force since 1st January 2014, dictates that all catches of species subject to catch limits and, in the Mediterranean, catches of species subject to minimum sizes as defined in Annex III of Regulation (EC) No. 1967/2006, must be brought and retained on board fishing vessels, registered, landed and counted against the quotas, if applicable, unless they are used as live bait.

Therefore, for the Mediterranean EU countries, the obligation will begin:

a) at the latest from 1st January 2015 for:

- Small pelagics: Anchovy (Engraulis encrasicolus), sardine (Sardina pilchardus), Mackerel (Scomber spp.), Horse mackerel (Trachurus spp.) [as they have a minimum landing size in Reg.1967/06];

• large pelagic species: Bluefin tuna (Thunnus thynnus) [as they are subject to a catch limit – quota]

b) from 1st January 2017 for the species that define the fishery

c) no later than 1st January 2019 for all other species in the fishery that are not subject to letter a) [which have a minimum size in Reg.1967/06], namely:

• Demersals: European seabass (Dicentrarchus labrax), Annular seabream (Diplodus annularis), Sharpsnout bream (Diplodus puntazzo), White seabream (Diplodus sargus), Common seabream (Diplodus vulgaris), White grouper (Epinephelus spp.), Sand steenbras (Lithognathus mormyrus) hake (Merluccius merluccius), Mullet (Mullus spp.), Axillary seabream (Pagellus acarne), Blackspot seabream (Pagellus bogaraveo), Wreckfish (Polyprion americanus), Common sole (Solea vulgaris), Gilthead seabream (Sparus aurata), unless scientific evidence demonstrates high survival rates, "taking into account the characteristics of the gear, fishing practices and the ecosystem" (Art. 15 , paragraph 4 , letter b);

• Crustaceans: Norway lobster (Nephrops norvegicus), Common lobster (Homarus gammarus), Spiny lobster (Palinuridae), Mediterranean Rose Shrimp (Parapenaeus longirostris), unless scientific evidence demonstrates high survival rates, "taking into account the characteristics of fishing gear, practices and the ecosystem" (Article 15 , paragraph 4 , letter b);

• Bivalve molluscs: Great scallop (Pecten jacobaeus), Carpet shell clam (Venerupis spp.), Clam (Venus spp.). Unless scientific evidence demonstrates high survival rates, " taking into account the characteristics of the gear, fishing practices and ecosystem" (article 15, paragraph 4, letter b);

Paragraph 4 of Article 15 defines the cases in which the landing obligation does not apply:

a) species for which fishing is prohibited, provided that they are identified as such in a legal act of the Union adopted in the context of the CFP;

b) species for which scientific evidence demonstrates high survival rates, taking into account the characteristics of the gear, fishing practices and the ecosystem;

c) catch falling under the de minimis exemptions;

d) fish damaged by predators (Art. 9 Reg. 812/2015)

Paragraph 5 states that details of implementation of the landing obligation in each Member State must be indicated in specific multi-annual plans, with particular reference to the various fishing activities, the species covered by the landing obligation, including indications of any exemptions from the landing obligation for species recognized as having a high survival rate. The key issue is to lay down provisions for the application of the de minimis exemptions, calculated up to 5% "of the total annual catch of all species covered by the landing obligation". The de minimis exemption applies in the following cases:

i) where it is scientifically demonstrated that it would be extremely difficult to increase gear selectivity;

or

ii) to avoid disproportionate costs that may result from handling by-catch, that is, everything that results from the landing obligation, boxing on board, landing, creating a new supply chain for products not destined for human consumption, etc., in the case of fishing gear for which by-catch does not represent more than a certain percentage of the total annual catch by the gear in question. The percentage is established in the framework of the multi-annual plan however, for a transitional period of four years (Art. 15, par.5), the rate may be increased by two percentage points in the first two years of implementation of the landing obligation for fisheries, and one percentage point in the following two years.

For species subject to the landing obligation, catches of specimens that are below the minimum reference size for conservation (as listed in Annex III of Reg. (EC) 1967/2006), may only be used for purposes other than direct human consumption, such as fish meal, fish oil, animal feedstuffs, food additives, pharmaceuticals and cosmetics.

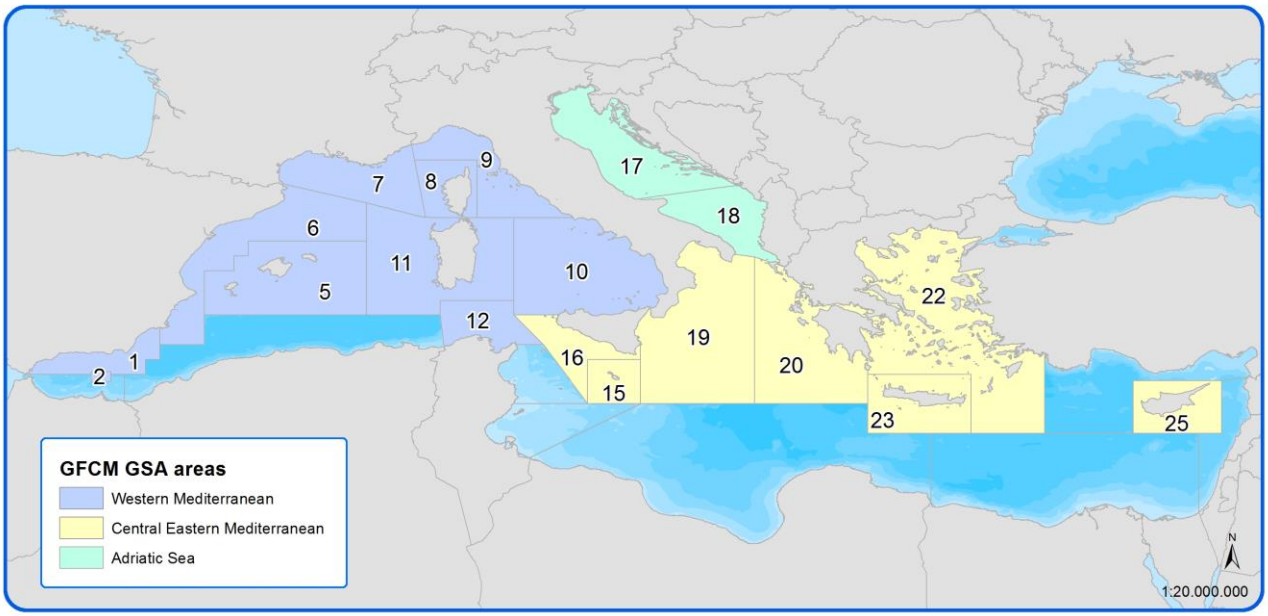
On the contrary, for species not subject to the landing obligation referred to in paragraph 1 (for example, those for which the obligation will come into force from January 1, 2019) specimens caught that are below the minimum reference size for conservation are not retained on board, but must be returned to the sea immediately. Lastly, in order to monitor compliance with the landing obligation, Member States shall provide a detailed and accurate documentation of all fishing operations as well as their capacity and adequate equipment on board, such as monitors and closed-circuit television systems (CCTV) etc.

2. Geographical Scope

In order to have several MS involved a sub-regional approach has been identified:

- Western Mediterranean (GSAs 1, 2, 5, 6, 7, 8, 9, 10, 11, 12;)
- Adriatic Sea (GSAs 17,18);
- Central-Eastern Mediterranean (GSAs 15, 16, 19, 20, 22, 23,25;)

GRAPH 1: GEOGRAPHICAL SUBAREAS SUBJECT TO THE DISCARDS MANAGEMENT PLAN



3. Species identification, statistical data and MS involved

The species with a minimum landing size in the Mediterranean that are subject to the landing obligation from January 1, 2017, pursuant to art. 15 point 1b, proved especially difficult: several attempts, also using the STECF document (Landing Obligation - Part 6 (Fisheries targeting demersal species in the Mediterranean Sea) (STECF-15-19), did not produce adequate results for the drafting of a plan. These issues were discussed in two MEDAC sessions, precisely at Almeria and Split. The solution was found, thanks to the Member States involved according to the geographical division described under chapter 3. The target species that define the fisheries have been identified following their commercial value and amount of landings registered in the DCF.

Species with a minimum landing size in the Mediterranean that are subject to the landing obligation from January 1, 2017, pursuant to art. 15 point 1b.

- all the geographical areas: hake (Merluccius merluccius) - red mullet (Mullus spp.)
- GSA 17- GSA 18: hake (Merluccius merluccius) - red mullet (Mullus spp.) - common sole (Solea solea)
- GSAs 15, 16, 19, 20, 22, 23,25: hake (Merluccius merluccius) - red mullet (Mullus spp.) - deep rose shrimp (Parapenaeus longirostris)

All the letters received by the Italian Administration, respectively, can be found in the summary below:

- Ref.146/2016 of April 22, 2016: the PESCAMED meeting identified the following target species for the Western Mediterranean: hake, red mullet;
- Ref.148/2016 of April 22, 2016: Italy and Croatia identified the following target species for the Adriatic Sea: hake, red mullet and common sole. Also Slovenia joined Italy and Croatia (ref.172/2016 of May 13, 2016);
- Ref.167/2016 of May 5, 2016: the SudEastMed meeting identified the following target species for the Ionian Sea: hake, red mullet and deep rose shrimp.

4. Biological data of the species involved

4.1. **Mullus barbatus** (Linnaeus, 1758)

SPECIES DESCRIPTION

The body of Red mullet is long strong, and laterally slightly flat. The head is relatively short; the snout is short as well, with a steep anterior profile. The eyes are positioned near the top of the head. The mouth is small, positioned low on the head. There are two barbels under the mouth aperture. They have a sensory function and are used in searching for prey. The colour is uniformly pink, the back is darker and the belly is white. The fins are without any well-defined coloration

DISTRIBUTION

The red mullet is distributed in the eastern Atlantic - from the North Sea and England to Senegal and in the Mediterranean and the Black Sea

This is a benthic species, found mostly on muddy bottoms in depth range of 5 to 250 m. Although the species is widely distributed, the relative index of the population abundance decreases with depth.

BIOLOGICAL DATA

According to Jardas (1996), red mullet grows up to about 30 cm (about 0,5 kg). The usual total length in catches is 10 to 20 cm. On average, females have greater body length than males. They also grow faster, which can be already noticed in the first year of their life. Therefore, almost all the bigger specimens are females (28 to 29 cm). Males do not grow more than about 20 cm.

Red mullet reaches sexual maturity in the first year of life at lengths between 10 and 14 cm.

Reproduction in April to August at depths between 10 and 55 m on sandy or muddy bottoms.

There are some distinct differences in the growth dynamics between males and females. Females are 1 to 2 centimeters longer than males of the same age.

The most intensive spawning occurs at depths of 60 to 70 m. After the spawning, post larvae move towards shallower water (30-40 m) and coast. Larvae, post larvae and juveniles up to 4-5 cm of total length are pelagic. Afterwards, individuals move towards sandy coastal areas and become demersal. They concentrate particularly near river mouths and sometimes enter rivers for several hundreds of meters. Later, they start their dispersion towards sandy, muddy and gravel grounds at depths between 10 and 250 m. The sex ratio is extremely variable, depending on the different zones studied. Županović (1963) demonstrated, through analysis of the literature, that in the eastern Mediterranean, including the Adriatic Sea, females predominate while an inverse situation is observed in the Western Mediterranean.

The red mullet is a carnivorous species. The bulk of its food is made of endo-, meso- and epi-biontic sea organisms.

4.2. **Mullus surmuletus** (Linnaeus, 1758)

SPECIES DESCRIPTION

The body of the surmullet is moderately compressed, possessing a pair of stout barbels under the chin, the length of which is greater than that of pectoral fins; opercle without spine; snout less steep, anterior head profile parabolic; maxilla at most reaching below anterior eye margin; small villiform teeth in lower jaw; upper jaw toothless (see remarks); teeth also present on roof of mouth (vomer and palatines). First dorsal fin with 7 - 8 spines, the first minute; second dorsal fin with I + 8 soft rays; 33 to 37 scales in lateral line. Colour reddish, usually with a darker red longitudinal stripe from eye to caudal fin and 3 yellow-brown lines on lower sides; first dorsal fin with dark markings.

Habitat and biology

Benthic species on gravel and stones in shallow waters (1 - 460 m), usually 5-60 m. Gregarious fish. Feeds predominantly on small bottom-living invertebrates (crustaceans, worms, molluscs, etc.). Reproduction in February to May at depths between 30 and 70 m. In the Western Mediterranean, *M. surmuletus* occurs in shallow waters with rough bottoms at 10-50 m. It occurs in deeper waters with muddy bottoms between 50 and 200 m. In the eastern Mediterranean, size depends on depth and smaller individuals are found in shallower and warmer waters.

4.3. **Merluccius merluccius** (Linneaus, 1758)

SPECIES DESCRIPTION

The body of European hake is long and cylindrical. The widest part is behind the head. The mouth is large. There are two dorsal fins. The first one is short and triangular and the second one is long. The anal fin is similar in shape and size to the second dorsal fin. The ventral fins are placed before the pectoral ones. The caudal fin is cut in a straight line.

DISTRIBUTION

European hake inhabit the north-eastern Atlantic from Norway to Mauritania and the entire Mediterranean; in the Black Sea the species lives only along the southern coasts.

Habitat:

This nectobenthonic species is most abundant at depths between 100 and 200 m, where the catches are mainly composed of juveniles.

In daylight, the European hake stay on the bottom and move vertically to higher strata at night. In addition to circadian migrations, there are also horizontal migrations as a consequence of searching for food.

European hake prefer muddy bottoms, but are well distributed on other types of bottom as well (muddy-sandy and sandy bottoms).

BIOLOGICAL DATA

According to Jardas (1996), European hake can grow to 130 cm of total length. However, its usual length in trawl catches is from 10 to 60 cm. This is a long-lived specie; it can live more than 20 years.

The spawning period is very long and varies with populations: in the Mediterranean it occurs in December-June and between 100 and 300 m depth. Up to age 3, juveniles live on muddy bottoms, moving toward the coast at age 3. In the Mediterranean, males mature at 26-27 cm, females at 36-40 cm. Females grow faster than males. At the end of 2 years, the fish reach 24-25 cm; at 20 years: 79 cm for males and 100.5 cm for females. The Mediterranean stock grows slower. The fecundity is reported as 2 to 7 million eggs per female.

Adults feed mainly on fish (small hakes, anchovies, sardines and gadoid species) and squids. The young feed on crustaceans (especially euphausiids and amphipods).

TABLE 1: SUMMARY TABLE OF EUROPEAN HAKE (MERLUCCIUS MERLUCCIUS) LIFE HISTORY FOR THE MEDITERRANEAN SEA AND NORTH EAST ATLANTIC OCEAN.

Life Stage	Season	Location	Temp (°C)	Depth (m)
Eggs	Eggs are found all year round but concentrate after spawning peaks	Offshore, on the shelf edge	10.5-13.0	Eggs produced after spawning at the shelf edge or upper 150m
Larvae	All year round with peaks which follows the fluctuation in spawning activity Adriatic sea: October-June with peak in January and February	Continental shelf waters, the larger they are, the shallower they leave	< 10.8*	Adriatic: 40-200,
			10-13*	peak 50-100
			12.8-13.8	50-60*
				50-150*
Early Juveniles	Adriatic sea: Spring and Autumn	Close to the bottom with daily vertical migration: closer to the bottom	12.6-15.6	50-250, 70-200*
	Thyrrenian sea: summer		13.5-14	

	Ligurian sea: spring and autumn	during daylight and more in the water column at night	11.5-13*	
	Greek waters: November-Dicember late summer - late autumn			
Adults	Taken all year round	Taken offshore, on the shelf and on part of the slope	Taken from bottoms temperatur e ranges from 12 to 16.5°C	40-800 m but they are caught mainly between 100 and 300 m
Spawning Adults	All year round with peaks	Shelf break and upper slope, mainly in canyons and rocky bottoms	10-13	150-300
	Adriatic sea: winter and summer;			
	Western Mediterranean: a major peak in Autumn and a minor peak in summer;			
	Northern Tyrenian sea: winter & spr/sum;			

**North Eastern Atlantic*

Source: http://www.faoadriamed.org/html/Species/MerlucciusMerluccius.html

4.4. **Solea vulgaris** (Quensel, 1806) *(Sin. Solea solea Jordan & Gross, 1889)*

SPECIES DESCRIPTION

The body of the Common sole is egg-shaped and flat. The maximum body height is equal to 1/3 of the total length. The eyes are on the right side, the upper one slightly anterior to the lower one. Both pectoral fins are well developed, the left one being somewhat smaller than the right one. The dorsal fin begins anterior to the eyes, by the mouth. The last rods of the dorsal and the anal fins are connected to the caudal fin, which is round.

The colour on the eyed side of the body is greyish-brown to reddish-brown, with large and diffused dark spots. The pectoral fin has a blackfish spot at its distal half. The posterior margin of the caudal fin is generally dark.

DISTRIBUTION

This common sole species lives in the eastern Atlantic, from Scandinavia to Senegal and in the entire Mediterranean. It is rare in the Black Sea.

Habitat:

It is a demersal and sedentary species, living on sandy and muddy bottoms, mostly in rivers and near the river mouths and also digging into sea bottoms.

BIOLOGICAL DATA

Size:

The maximum length of this species in the Adriatic is 30 cm. Jardas (1996) reported a maximum length of 47 cm, measured on a specimen found at the Pula fish market in 1957. According to Tortonese (1975), the maximum age is about 20 years, while Fisher et al. (1987) and Jardas (1996) reported longevity up to 24 years in females and 27 years in males.

Spawning:

In the Mediterranean Sea, the reproduction of common sole occurs from December to May, with two peaks in February, and in the Adriatic from November to March or from autumn to early winter.

Although it occurs in the entire area of this species distribution, there are some regions with a higher concentration of reproducers, like the western coast of Istria.

Length at maturity is 25 cm. The age of the first maturity is 2 years and 3 to 5 years. Females having a weight of 300 g have about 150000 eggs, while those weighting 400 g have about 250000 eggs; eggs are pelagic. The male-female ratio is approximately 1:1.

Hatching occurs after eight days and larva measures 3 to 4 mm. Eye migration starts at 7 mm length and ends at 10-11 mm length. Benthic life begins after seven or eight weeks (15 mm) near coastal and brackish waters.

Feeding behaviour:

The fish feed night and day on remains buried in the substrate. Food includes mostly invertebrates and small fish; polichaetes worms, molluscs, small crustaceans and small echinoderms.

4.5. **Parapenaeus longirostris** (Lucas, 1847)

SPECIES DESCRIPTION

The deep-water rose shrimp is a large decapod crustacean. It has a pink-orange carapace with a reddish rostrum. On the carapace, there is a long furrow beginning near the eyes and present on the entire length of the carapace. The telson ends with three sharp, hard little teeth. The female gonads vary in colour, from white to dark green, depending on the stage of maturity.

DISTRIBUTION

This species is distributed in the eastern Atlantic from Angola to Portugal and in the West Atlantic from Guyana to Massachusetts. It inhabits the entire Mediterranean. *Parapaeneus longirostris* can be found at depths between 20 and 700 m, but it is common and abundant on sandy-muddy bottoms between 100 and 400 m.

BIOLOGICAL DATA

Size:

Maximum total length 160 mm (male), 186 mm (female), usually shorter 140 mm (male), 160 mm (female). The growth rate differs between the sexes. Size distribution and growth parameters indicate a life cycle of 3-4 years.

Reproduction:
In the Mediterranean Sea, both sexes of P. longirostris reach maturity in the first year of life. After being spawned, the planktonic larval phases (nauplius, zoea and mysis) develop; the postlarva, similar to adults, reaches the sandy-muddy bottoms on the continental shelf and begins the bentho-pelagic cycle.

Feeding behaviour:
The adult specimens feed on small fish, cephalopods and crustaceans. They also look for food in the sediment, such as polichets, bivalves, echinoderms and mostly foraminifers.

5. Composition of catches, landings and discards – Country by Country overview

Composition of catches, landings and discards will be described statistically starting from the most western Country to the eastern side of the EU Mediterranean Member States.

5.1. Spain

The Spanish fleet in the Mediterranean is a very mixed and multispecies fishery. More than 50% are small scale fleet, 8,7 meters' length average, that fish less than 90 days per year. Next fleet in importance is the trawling fleet, 20 meters' length average targeting mainly hake, mullet, nephrops and shrimps that are more than 60% of the catches value in the Mediterranean.

The reason for discarding is mainly the size of the species and damaged fish but always in very small quantities per vessel and per port.

Different data sources show discards of hake between 4 and 11% depending on the season and discards for mullet from 0,2% to 1%.

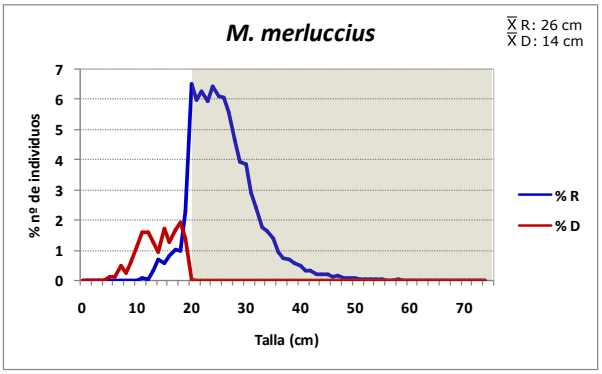
TABLE 2: SPANISH FLEET COMPOSITION

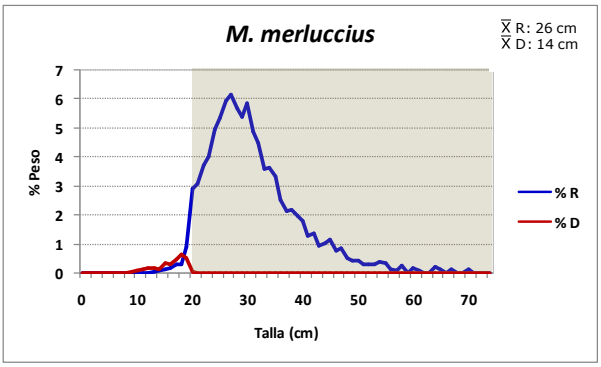
TYPE OF FISHING ACTIVITY	VESSELS	TOT GT	TOT KW	% FLEET	%GT	%KW	AVERAGE LENGH	AVERAGE AGE
Bottom trawler	653	38.645,06	119.986,63	27,59%	68,71%	53,99%	20,39	21
Small scale	1.385	5.859,63	50.505,51	58,51%	10,4%	22,73%	8,7	30
Tuna Seiners	6	1.612,36	5.843,38	0,25%	2,87%	2,63%	38,68	12
Purse seiner	223	8.140,29	37.783,49	9,42%	14,47%	17%	18	22
Set Longlines (LLD)	54	446,03	4.017,04	2,28%	0,79%	1,81%	10,94	26
Pelagic Longlines (LLS)	46	1539,44	4.097,62	1,94%	2,74%	1,84%	15,7	16
SUBTOTAL	**2367**	**56242,81**	**222.233,67**	**28,26%**	**37,99%**	**42,25%**	**13,06**	**26**

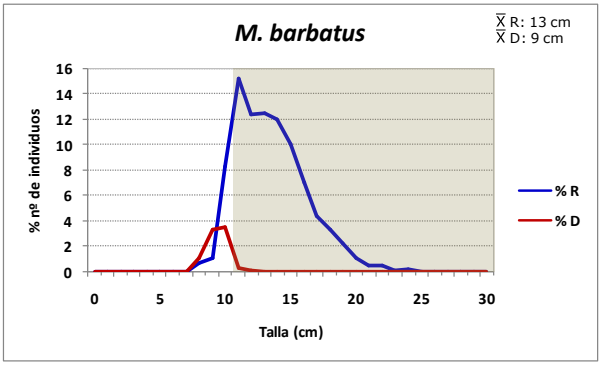
Source: Spanish national figures year 2014

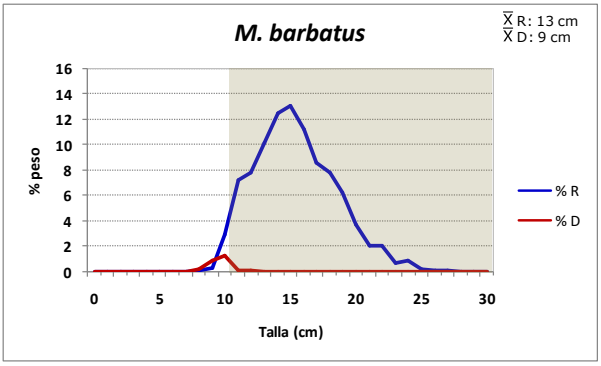
DISCARDS and LANDINGS

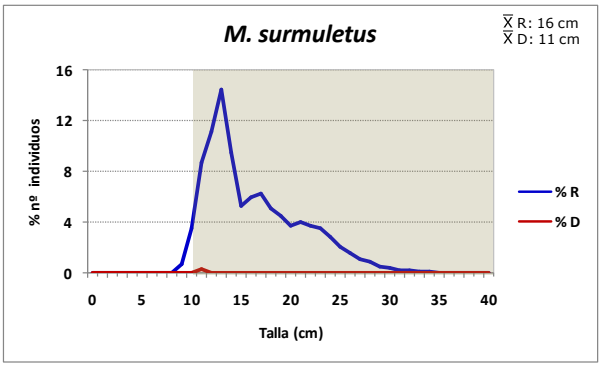
The following statistics show percentages of discards for each target species according to GFCM-SAC data











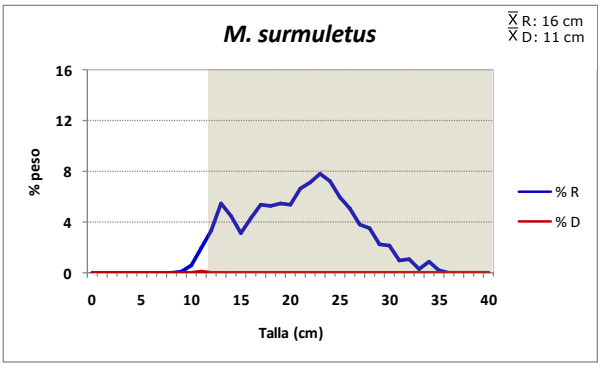


Table 3 and 4 show that hake, among those species identified as target species that define the fishery is the species with the higher discard rate, more than 7%. The volume catches of hake differs greatly between the different fisheries, in Spanish waters, but it is clear that trawl fishing is greatly predominant. This fishery generally operates mainly in intermediate waters, ranging from the platform to the slope. Similarly, the volume of discards of hake also differs widely between different fisheries, being in some cases not relevant due to the low-volume of the catches.

TABLE 3: YEARLY ESTIMATES OF UNDERSIZED DISCARDS (ANNEX III MED. REG.) OF 4 TARGET SPECIES.

Species	Scientific name	Fishery	Legal size	Landing tons	Total discards tons	Total discards %	Undersized discards tons	Undersized discards %
Hake	*Merlucius merlucius*	Bottom trawl	20 cm	3298	250	7.6	151	4,6
Rose Shrimp	*Parapenaeus longirostris*	Bottom trawl	20 mm	250	3	1,3	0	0,1
Red mullet	*Mullus barbatus*	Bottom trawl	11 cm	898	20	2,2	2	0,2
Surmullet	*Mullus surmuletus*	Bottom trawl	11 cm	534	6	1,0	0	0,0

Red mullet	*Mullus barbatus*	Trammel nets	11 cm	81	1	1,8	0	0,0
Surmullet	*Mullus surmuletus*	Trammel net	11 cm	149	5	3,0	0	0,0

Data source: https://datacollection.jrc.ec.europa.eu/dd/med/graphs

TABLE 4: SPAIN TOTAL CATCHES OF TARGETED SPECIES AND TYPE OF FISHING ACTIVITIES

	Hake	Red Mullet
CATCHES		
Annual Total Landings (Tons)	3.137,11	2.168,74
Total Landings (seasonal trend)		
Landings Ports	ANDALUCÍA(17) BALEARES (16) CATALUÑA(31) CEUTA(1) MELILLA(1) MURCIA(4) VALENCIA (22)	ANDALUCÍA(17) BALEARES (16) CATALUÑA(31) CEUTA(1) MELILLA(1) MURCIA(4) VALENCIA (22)
	TYPE of FISHING ACTIVITIES	
	Trawlers	
Number of fishing vessels	635	
	Gillnets	
Number of fishing fleet	1385	
	Set Longlines	
Number of fishing fleet	54	

5.2. France

In the Gulf of Lion (GSA 7), hake is exploited by French trawlers, French gillnetters, Spanish trawlers and Spanish longliners. Red mullet is exploited mainly by French and Spanish trawlers in this area. The trawl fishery is a multi-specific fishery but hake is one of the most important demersal target species for the commercial fisheries.

After 2009, because of the large decline of small pelagic fish species in the area, the trawlers fishing small pelagic have diverted their effort on demersal species, this can explain the high levels of catches since 2010. It is important to notice an important decrease in numbers of French

trawler fleets since 1998, reducing the number of boats by 50 %, following management measures taken in 2011 and over in 2013 (reduction by 30% of the number of trawlers in 3 years).

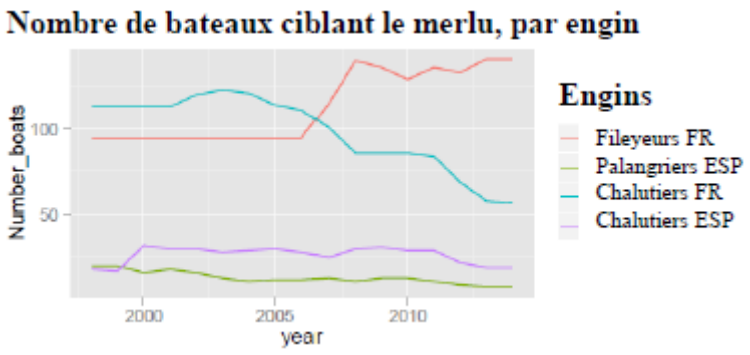
French case:

The French trawler targeting demersal species in the Gulf of Lion (37.1.2 zone) use bottom otter trawls (OTB) or twin trawls (OTT) and target a wide variety of demersal species (about sixty) (Cornou et al. 2015). In 2014, fishery vessels were distributed over 14 harbours. The main harbours are Port-la Nouvelle, Le Grau du Roi, Sète and the Grau d'Agde.

Fleet description:

- The trawler practice is exclusive of any other activity
- The practice of pair trawl is forbidden
- Vessels characteristics are:
    - Maximum overall length: 25m
    - Minimum overall length: 18m or 16m depending on perpendicularity
    - Maximum power: 316 kW
- Gear characteristics:
    - Winch to take off the cable in order to board the trawl.
    - A portal to raise the cod-end above the after deck and empty the catches
    - Trawl drums to store the trawls
    - Divergent panels for horizontal opening
    - Positioning devices, tracking system, fish acoustic detection as sonars and depth sounder
    - Demersal species mesh size: 40mm (square mesh) or 50mm (diamond mesh).

FIG 2. EVOLUTION OF VESSELS NUMBER TARGETING HAKE IN AREA GSA7



Period and fishing areas

A – Fishing periods

In Continental Mediterranean, trawling takes place throughout the year. Trawling is prohibited on Saturdays, Sundays and public holidays (Order 99-162 amended by prefectural decree 221 of 6 March 2001). Apart from these days, it is prohibited in waters between the mouth of the Grand

Vallat, in Anse Boumandiel and the eastern limit of the Bouches du Rhône department from 8:00pm to 4:00am1.

It is forbidden for trawlers exploited from a Languedoc Roussillon fishing port to leave the port at least before 3:00am as part of its maritime fishing activity2. Because of accumulated national and local rules, the number of days of maximum output per ship is limited to 200 days per year.

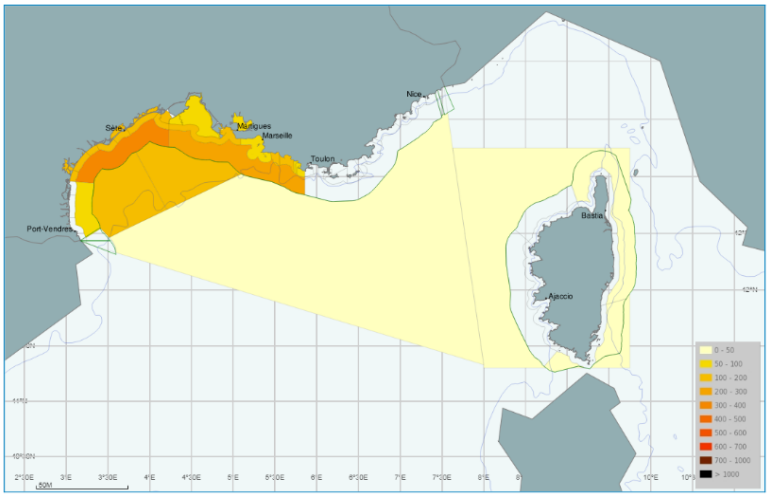
B – Fishing areas

This fishery operates in national and international waters, from the Spanish border to the right of La Ciotat, and on the set of Corsica as well. The main fishing area is located on the shelf of the Gulf of Lion. Trawling is prohibited beyond 1000m depth (Recommendation GFCM/2005/1 Recommendation GFCM/2006/3, Recommendation GFCM/33/2009/1 and memo DPMA/PMWS/N2006-9612). Trawling is also prohibited within 3 nautical miles of the coast, with the exception of two sectors:

- Between Marseille and La Ciotat , trawling is permitted from the isobath of 100m when that depth is reached within three miles of the coast.
- In the waters of the Bouches-du-Rhône's department, trawling is permitted in the Gulf of Fos in an area from the right of the buoy Piemanson to the right of the crown cap beyond 1.5 nautical miles of the coast when the depth is above 50m.

It is prohibited to trawl in protected habitats, above coralligenous habitats and maerl beds and above protected habitats such as seagrass beds mentioned in Article 4 of Regulation (EC) No 1967/2006.

FIG 3. RÉPARTITION GÉOGRAPHIQUE DE L'ACTIVITÉ EN MÉDITERRANÉE (SIH).



[1] Arrêté du 13 juin 2002 du préfet de la région PACA
[2] Déliberation n°11/2011 du Conseil du CRPMEM – arrêté préfectoral n°2011/216-001 du 04/08/2011

C - Fishing effort

It is obligatory being in detention of a European fishing license and a European Authorization of Fishing (EAF) to practice professional trawling. They allow bottom trawl targeting demersal species and/or trawl targeting pelagic species.
This authority is granted to a ship owner for a specified ship. The number of license is 73.
Fishing effort is calculated in fishing days.
A fishing day is any continuous period of twenty-four hours or less during which a fishing vessel is present in the Mediterranean Sea and absent from harbour or, where appropriate, deploying its fishing gear.
The attribution and the counting of fishing days are made for a management period that corresponds to a calendar year from 1 January to 31 December.
The effort quota attributed to all French ships holders of the European fishing authorization for the practice of professional trawling in the Mediterranean for the year 2016 is 14 726 (Order of 23 March 2016 amending the decree of 28 January 2013 establishing a fishing effort regime for professional trawling in the Mediterranean Sea by French vessels), regardless of the specified gear used.

Currently, due to the situation of anchovy and sardines' stocks in the area GSA7 (which are respectively "low biomass" and "ecological imbalance"), the majority of ships are likely to target demersal species during the year.

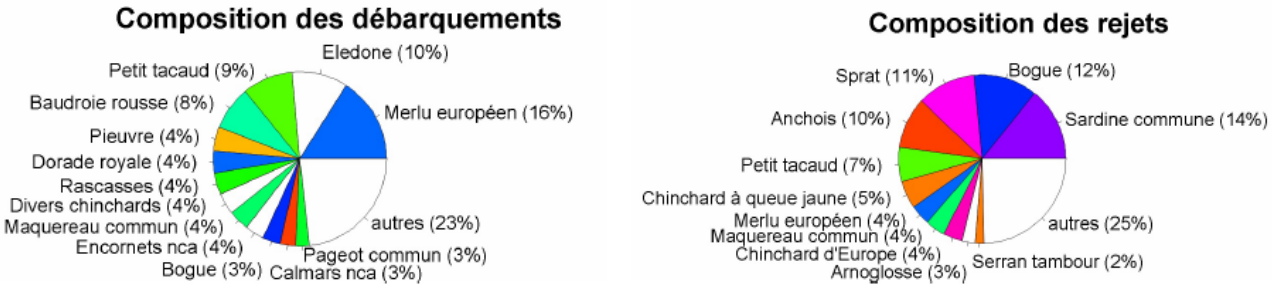
France implements in international waters, in its exclusive economic zone and its territorial waters GFCM management measures and European regulations in the restricted fishing area in the Gulf of Lion (FRA zone) (Recommendation GFCM/2005/1, GFCM/2006/3, GFCM/33/2009/1 and DPMA/PMWS/N2006-9612 note).

It is important to recognize that measures to reduce Mediterranean trawlers fishing effort have been made these past few years as part of the national management plan (Regulation (EC) No 1967/2006). Since 1998, there has been a considerable reduction in the trawl fleet with a reduced number of ships by 50%.

<u>Composition of catches, landings and discards</u>

According to 2014 French national data (Obsmer 2014, Cornou et al. 2015), vessels using trawls on GSA7 and targeting demersal species have an estimated discard rate of 14.3% [12 to 16.7]. When targeting demersal species, catches and landings are composed of a wide variety of species. Hake is the most landed specie (16% of landings, Fig 3) and represents 4% of total releases.

FIG 4. SPECIFIC COMPOSITION BY WEIGHT OF LANDINGS AND DISCARDS IN 2014 FOR FISHING OPERATIONS TARGETING DEMERSAL SPECIES



Discards (14.3% of the total catch) involve many species, whether or not subject to minimum size. The main causes of discards are:

- Species without commercial interest (Bug, sprat...)
- Pre dated or damaged species (sardines, anchovies)
- Undersized species

Hake discards represents 4% [3 to 5.2] and red mullet discard represent 3.6% [2.2 - 5.7].

TABLE 5: FRANCE TOTAL CATCHES OF TARGETED SPECIES AND TYPE OF FISHING ACTIVITIES

	Hake	Red Mullet
	CATCHES	
Annual Total Landings (Tons)	1659	584
Total Landings (seasonal trend)	1659	584
Landings Ports	French coast	French coast
TYPE OF FISHING ACTIVITIES		
	Trawlers	
Number of fishing vessels	93	48
	Gillnets	
Number of fishing vessels	772	761
	Longlines	
Number of fishing vessels	80	72

5.3. Italy

The following tables show the composition of the Italian fleet targeting demersal species and with the data collected thanks to a recently presented project financed by the Italian Administration (*Progetto coordinato, 2016 Ministero delle politiche agricole alimentari e forestali: « Indagine conoscitiva sullo scarto della pesca alle specie demersali nei mari italiani: valutazioni propedeutiche per l'implementazione delle disposizioni comunitarie in tema di obbligo di sbarco » (Basic Reg. 1380/2013, Art. 15*) it provides thorough information on discards and its percentage.

TABLE 6: TOTAL CATCHES AND TYPE OF FISHING ACTIVITIES, ITALY (2014)

	TARGET SPECIES	
	Hake	Red Mullet
CATCHES		
Annual Total Landings (Tons)	2803,8	2534,8
Total Landings (seasonal trend)	829,9 (apr-giu)	672,2 (ott-dic)
Landings Ports	Around 800	
TYPE of FISHING ACTIVITIES		
	Trawlers	
Number of fishing vessels	773	
	Gillnets	
Number of fishing fleet	736	
	Longlines	
Number of fishing fleet	2780	

Source: Italian Administration DCF data 2014

TAB. 7 – ITALIAN FLEET INVOLVED IN DEMERSAL FISHERIES: NUMBER OF VESSELS, NUMBER OF WORKERS, TOTAL LANDINGS AND ITS VALUE, FOR GSA AND TYPE OF GEAR DCF DATA, 2014

WESTERN MEDITERRANEAN

	GSA 9		GSA10		GSA 11	
	Trawler	polyvalent passive	Trawler	polyvalent passive	Trawler	polyvalent passive
Nr vessels	300	1329	246	2257	179	1166
nr.employed	823	1706	755	3626	444	2024
tot landings	7293	4092	4405	7465	2145	3835
value (mln €)	60	35	32	52	16	29

SOUTH-EASTERN MEDITERRANEAN

	GSA 16		GSA 19	
	Trawler	polyvalent passive	Trawler	polyvalent passive
Nr vessels	409	690	225	1239
nr.employed	1878	1160	689	2289
tot landings	13385	1959	2657	5020
value (mln €)	95	18	28	36

ADRIATIC

	GSA 17			GSA 18	
	Trawler	polyvalent passive	Rake trawl	Trawler	polyvalent passive
Nr vessels	648	1790	57	414	481
nr.employed	1810	2500	178	1105	770
tot landings	19348	79526	16	10555	1487
value (mln €)	102	45	11	63	12

Data source: DCF, annual average of 2012-2014

Table 8 below shows the total landings and the amount of discards in tons and the percentage of discards are below the minimum landing size. In line with the data reported for Spain, hake is the specie with the highest discard percentage, even if it varies from GSA to GSA. The nets requirement to allow for escape of hake juveniles have been deeply discussed during several

MEDAC meetings and scientific evidence showed that to avoid catch of juveniles, net requirements will be unsustainable for trawlers.

On the contrary, data show that discards of deep-water rose shrimp is close to nothing throughout the Mediterranean.

TABLE 8: TOTAL LANDINGS AND DISCARD IN TONS ONLY FOR TRAWLERS (AVERAGE OF THE VALUE BETWEEN 20012-2014)

		Western Mediterranean			South-Eastern Mediterranean		Adriatic	
SPECIES	**Bottom Trawl**	GSA 9	GSA10	GSA 11	GSA 16	GSA 19	GSA17	GSA 18
M. merlucius	Total Landing (t)	902,8	359,8	138,9	1390,8	284,3	1919,2	2161,1
	Total discard (t)	234,1	48,8	58,8	47,2	13,8	46,8	117,2
	Discards %	20,6	12	29,7	3,3	4,6	2,4	5,1
	% discards < MLS	18,3	12	25,4	2,7	4,6	0,2	5,1
M. barbatus	Total Landing (t)	775,1	289	121,2	474,3	174,2	1911,2	1513,7
	Total discard (t)	87,7	8,4	54,8	12,5	3,2	335	194,4
	Discards %	10,2	2,8	31,1	2,6	1,8	14,9	11,4
	% discards < MLS	6,5	2,4	30,4	1,2	1,8	0,4	11,1
M. surmuletus	Total Landing (t)	51,2	51	104	na	39,7	41,8	na
	Total discard (t)	10	0	17,4	na	0	0	na
	Discards %	16,6	0	14,3	na	0	0	na
	% discards < MLS	3,3	0	4,3	na	0	0	na
P. longirostris	Total Landing (t)	586,1	16,7	26,3	na	72,7	645,5	579,1
	Total discard (t)	27,6	0	0	na	0,4	0	5,6
	Discards %	4,5	0	0	na	0,5	0	1
	% discards < MLS	1,2	0	0	na	0,4	0	0,4

Data source: DCF, annual average of 2012-2014

For almost all the species included in the provisions of Reg. 1380/2013, the discards (if any) are catches below the minimum landing size.

The few available information about discards « for the species defining the fishery » in the previous years, shows that the discard percentage are stable or have slightly increased over time.

The fishery « rake trawl with depressor (rapido) » (TBB), the fishing gear used almost exclusively in the GSA 17, in the assessment of discards reported low values (table below). For the common sole, the target species of rake trawl with depressor, the discard is assessed to a percentage about 1% (in average 10 tons/year) for damaged catches. The by-catch related to hake resulted to be null, but the discard related to red mullet fishery is assessed around 13% of the total catches (about 7 tons/year).

TABLE 9: FISHERIES "RAKE TRAWL WITH DEPRESSOR" (RAPIDO TBB). ESTIMATED LANDINGS, TOTAL DISCARDS BELOW THE MINIMUM LANDINGS SIZE FOR THE DEMERSAL SPECIES INCLUDED IN THE ANNEX III OF THE REG. 1967/2006

SPECIES	Rapido (TBB_DEMSP)	GSA 17
M. merlucius	Total Landing (t)	23,3
	Total discard (t)	0
	Discards %	0
	% discards < MLS	0
M. barbatus	Total Landing (t)	45,9
	Total discard (t)	6,8
	Discards %	12,8
	% discards < MLS	0
S.Solea	Total Landing (t)	748,3
	Total discard (t)	9,6
	Discards %	1,3
	% discards < MLS	0

Data source: DCF, annual average of 2012-2014

As far as gillnets are concerned, the available data of discards related to the gillnets fisheries are fragmentary (table below). This is due to the fact that the data collection for this gears is more discontinuous. Only for red mullet in the GSA 9 and 18 the quantity of discards seems relatively high (4 and 5%), or for common sole in the GSA 9, approximately around 8% of discards.

TABLE 10: GILLNETS . ESTIMATED LANDINGS, TOTAL DISCARDS BELOW THE MINIMUM LANDINGS SIZE (MCRS), FOR THE DEMERSAL SPECIES INCLUDED IN THE ANNEX III OF THE REG. 1967/2006

SPECIES	Gillnets (GNS)	GSA 9	GSA10	GSA 11	GSA 16	GSA 19	GSA17	GSA 18
M. merlucius	Total Landing (t)	228,8	334	na	nd	100,9	1,2	nd
	Total discard (t)	2,2	32,4	nd	nd	0	0	nd
	Discards %	1	8,8	nd	nd	0	0	nd
	% discards < MLS	0	nd	nd	nd	0	0	nd
M. barbatus	Total Landing (t)	11,6	25,6	nd	nd	126,2	nd	19,6
	Total discard (t)	0,5	0	nd	nd	0	nd	1
	Discards %	4,1	0	nd	nd	0	nd	4,8
	% discards < MLS	0	0	nd	nd	0	nd	nd
M.surmuletus	Total Landing (t)	nd	38,1	nd	nd	117,5	nd	93,2
	Total discard (t)	nd	0	nd	nd	0	nd	0
	Discards %	nd	0	nd	nd	0	nd	0
	% discards < MLS	nd	0	nd	nd	0	nd	0
S. Solea	Total Landing (t)	13,1	nd	36,1	nd	4,6	516,7	8,4
	Total discard (t)	1,1	nd	0	nd	0	2,4	0
	Discards %	7,7	nd	0	nd	0	0,5	0
	% discards < MLS	0	nd	0	nd	0	0	0

Data source: DCF, annual average of 2012-2014

The assessment of the available data shows that the percentage of discards is negligible for the majority of the species included in the minimum landing size list and that define the fisheries (the percentage is close to zero or at list less than 2% of the total catch). As far as trammel nets are concerned, it seems that more relevant quantities of discards are estimated only for sea bream in the GSA9, 10 and 18 (10-12% of discard), as shown in the table below.

TABLE 11: TRAMMELNETS (GTR). ESTIMATED LANDINGS, TOTAL DISCARDS BELOW THE MINIMUM LANDINGS SIZE FOR THE DEMERSAL SPECIES INCLUDED IN THE ANNEX III OF THE REG. 1967/2006

SPECIES	Trammelnets (GTR)	GSA 9	GSA10	GSA 11	GSA 16	GSA 19	GSA17	GSA 18
M. merlucius	Total Landing (t)	nd	217,3	nd	nd	93,6	nd	6,6
	Total discard (t)	nd	0	nd	nd	0	nd	0
	Discards %	nd	0	nd	nd	0	nd	0
	% discards < MLS	nd	0	nd	nd	0	nd	0
M. barbatus	Total Landing (t)	68,9	39,7	nd	nd	43,8	nd	6,2
	Total discard (t)	0,8	0,1	nd	nd	0	nd	0,1
	Discards %	1,1	0,3	nd	nd	0	nd	1,2
	% discards < MLS	0	nd	nd	nd	0	nd	nd
M.surmuletus	Total Landing (t)	178,7	108,3	nd	nd	63,5	nd	31,5
	Total discard (t)	1,8	0	nd	nd	0	nd	1,5
	Discards %	1	0	nd	nd	0	nd	4,5
	% discards < MLS	0	0	nd	nd	0	nd	nd
S. Solea	Total Landing (t)	43,4	44,5	nd	nd	9,4	nd	nd
	Total discard (t)	0	0	nd	nd	0	nd	nd
	Discards %	0	0	nd	nd	0	nd	nd
	% discards < MLS	0	0	nd	nd	0	nd	nd

Data source: DCF, annual average of 2012-2014

5.4. Slovenia

As shown in the tables below, Slovenian landings of the species defining the fisheries in North Adriatic are very small. This is due to specific characteristics of fisheries in the Bay of Trieste (high presence of whiting) which is specific for Slovenian fisheries in comparison to North Adriatic fisheries in general.

Therefore, all catches of hake, red mullet and sole together only represent 12 % of total catches of Slovenian fishermen.

TABLE 12: SLOVENIAN ANNUAL CATCHES AND TYPE OF FISHING ACTIVITIES (AVERAGE ANNUAL CATCHES FOR 2012-2015)

	Hake	Red Mullet	Sole
CATCHES			
Annual Total Landings	1,06	4,90	12,88
Total Landings (seasonal trend)	/	/	/
Landings Ports	Small local ports – Koper, Izola, Piran (Strunjan, Seča, Piran)		
TYPE of FISHING ACTIVITIES	TYPE of FISHING ACTIVITIES		
	Bottom trawlers		
Number of fishing vessels	10	15	7
Gillnets/Trammelnets	Gillnets/Trammelnets		
Number of fishing fleet	0,57%(18/6)*	5,82 % (35/22)*	20 %(43/53)*
Longlines	Longlines		
Number of fishing fleet	0 % (0)	1 % (1)	0 % (0)

*The share of species concerned in all landings of this fishing gear for the period 2012-2015 is given – many other species are also caught

TABLE 13: LANDINGS AND DISCARDS 2013

Gear	Sciname	Discards (t)	Landings (t)	% Discards
Bottom otter trawl	*Merluccius merluccius*	0	0,665	0,00
Set gillnet	*Merluccius merluccius*	0	0,181	0,00
Trammel net	*Merluccius merluccius*	0	0,004	0,00
Bottom otter trawl	*Mullus barbatus*	0,039	2,431	1,58
Set gillnet	*Mullus barbatus*	0	0,002	0,00
Bottom otter trawl	*Solea solea*	0	0,472	0,00
Purse seine	*Solea solea*	0	0,001	0,00
Set gillnet	*Solea solea*	0,04	1,647	2,37
Trammel net	*Solea solea*	0	12,188	0,00

Data source: https://datacollection.jrc.ec.europa.eu/dd/med/graphs

5.5. Croatia

TABLE 14: CROATIAN ANNUAL CATCHES AND TYPE OF FISHING ACTIVITIES (AVERAGE ANNUAL CATCHES FOR 2012-2015)

TARGET SPECIES			
	Hake	Red Mullet	Sole
CATCHES (kg)			
Annual Total Landings	769.791,35	1.164.996,98	274.863,00
Total Landings (seasonal trend) max catch	november	november	december
Landings Ports	198	199	138
TYPE of FISHING ACTIVITIES			
	Trawlers		
Number of fishing vessels	401	401	214
Landings Ports	142	141	83
Gillnets/Trammelnets			
Number of fishing fleet	527	483	430
Landings Ports	155	159	106
Longlines			
Number of fishing fleet	254	25	10
Landings Ports	85	18	7

TABLE 15: LANDINGS AND DISCARDS 2013

Gear	Sciname	Discards (t)	Landings (t)	% Discards
Bottom otter trawl	*Merluccius merluccius*	190,579	1.019,92	15,74
Bottom otter trawl	*Mullus barbatus*	162,369762	1.085,21	13,01
Trammel net	*Solea solea*	0	166,849	0,00

Source: https://datacollection.jrc.ec.europa.eu/dd/med/graphs

5.6. Cyprus

Cyprus fishing vessels operate only in the South-Eastern Mediterranean. Three are the main fisheries exercised by the Cyprus fishing fleet: bottom otter trawl fishery, demersal fishery with passive polyvalent gears, basically exercised by the small scale inshore fleet, and large pelagic fishery with surface longlines. As shown below in Table 16, bottom otter trawlers operate in different GSAs of the South-Eastern Mediterranean, with separate licenses for operating in Cyprus or international waters, while the demersal fishery with passive polyvalent gears is exercised only in Cyprus waters (GSA 25).

Of the four target species identified in the South-Eastern Mediterranean as those defining the fishery, with minimum conservation reference size, only two (red mullets) are target species for Cyprus; this is shown in Table 16.

TABLE 16: CYPRUS' ANNUAL CATCHES AND TYPE OF FISHING ACTIVITIES

Rose Shrimp (*Parapenaus longirostris*)	Hake (*Merluccius merluccius*)	Stripped red Mullet (Mullus *surmuletus)*	Red Mullet (*Mullus barbatus*)
LANDINGS (annual average of 2012-2014, DCF data)			
Negligible (<200 KG)	9 tons	42 tons	24 tons

Bottom otter trawl fishery landings (t) by GSA (annual average of 2012-2014, DCF data)			
	M. merluccius	*M. surmuletus*	*M. barbatus*
GSA 25	0.61	1.39	11.28
GSA 24	0.09	2.58	3.74
GSA 26	0.01	0.2	0.07
GSA 13	0.04	0.03	-
GSA 14	4.49	10.7	0
GSA 15	0.23	0.84	0.02
GSA 21	0.24	1.33	0.05

Demersal fishery landings (t) from polyvalent passive gears (mainly trammel net) (annual average of 2012-2014, DCF data)			
	M. merluccius	*M. surmuletus*	*M. barbatus*
GSA 25	4	25	9

Landing ports in Cyprus (GSA25)	19

TYPE OF FISHING ACTIVITIES			
Bottom otter trawlers (Vessel length 24-40m)			
	GSA 25 – CY waters	South-Eastern Mediterranean	
Number of fishing vessels (2014 DCF data)	2	5	
Polyvalent vessels with passive gear (mainly trammel net) in demersal fishery in GSA 25			
	Vessel length 0-6 m	Vessel length 6-12m	Vessel length 12-18m
Number of fishing vessels (2014 DCF data)	392	435	22

The bottom otter trawler fleet operating in territorial waters is composed of 2 trawlers, which receive licenses on an annual basis. An extended closed season for trawling is in place in territorial waters, from 1st of June until the 7th of November, since the 80's. A *Management Plan for the Bottom Trawl Fishery Within the Territorial Waters of Cyprus* is implemented since the end of 2011, based on Article 19 of Council Regulation (EC) 1967/2006 (Mediterranean Regulation). The national technical measures introduced in the Management Plan for the Bottom Trawl Fishery include the restriction of the number of licensed bottom trawlers to 2, and the restriction of 2 areas from fishing with trawl nets on a rotational basis (northwest part of Cyprus from 8 November – 15 February every year and southeastern part of Cyprus from 16 February-31 May every year). The mesh size of trawl nets, either in territorial or international waters, is 50mm diamond shape in accordance with the Mediterranean Regulation. Other provisions of the Mediterranean Regulation include minimum distance from the shore and minimum depth.

Concerning vessels below 12m length, engaged in the demersal fishery with polyvalent passive gears, it should be noted that Cyprus Fisheries Law divides their licenses into three (3) subcategories: vessels with fishing license category A', vessels with fishing license category B' and vessels with fishing license category C'. The vessels with license A' and B' are allowed to operate every day all year round, with a number of restriction measures on the use of fishing gears, according to the national and Union law. The vessels with license category C' have a limited fishing effort, with a maximum allowable of 70 working days and more strict measures on the use of fishing gears. Almost all licensed vessels with length 0-6m (see Table 16) belong to Category C'.

Table 17 below shows the total landings and the amount of discards in tons of the demersal target species with minimum reference size. The basic reason for discarding these species is the size below the minimum conservation reference size. As shown in the Table, discards (if any) are very low.

TABLE 17: CYPRUS LANDINGS AND DISCARDS (ANNUAL 2014 DCF DATA)

Fishery	Species	Discards (t)	Landings (t)	% Discards
Bottom otter trawl fishery	*Merluccius merluccius*	0,013	0,4	3
Polyvalent passive gear fishery	*Merluccius merluccius*	0,00	2,1	0,00
Bottom otter trawl fishery	*Mullus surmuletus*	0,00	2,85	0,00
Polyvalent passive gear fishery	*Mullus surmuletus*	0,00	31,164	0,00
Bottom otter trawl fishery	*Mullus barbatus*	0,008	11,6	0,1
Polyvalent passive gear fishery	*Mullus barbatus*	0,00	8,3	0,00

5.7. Greece

Greek demersal fisheries are characterised by high diversity, both in terms of catch composition and the structure of the sector. The fisheries are typically multispecies, with a large variety of fishing gears being employed to exploit the stocks. Although catches are composed of more than 100 commercial species, their bulk comprise 5 to 8 species, including hake, red mullets, and shrimps. Generally, fishing vessels exploiting the demersal stocks can be classified in two major fleet categories: (a) bottom trawlers and (b) artisanal or small-scale coastal vessels that mainly fish by means of various types of gillnets and longlines (TABLE 18).

TABLE 18: GREECE ANNUAL CATCHES AND TYPE OF FISHING ACTIVITIES

TARGET SPECIES			
	Hake	Red Mullet	Rose Shrimp
CATCHES			
Annual Total Landings*(tns)	**2430**	**1915**	**2282**
Total Landings (seasonal trend)			
Landing Ports	**1000+**	**1000+**	**236**
TYPE of FISHING ACTIVITIES			
	Trawlers		

Number of fishing vessels	**265**	**265**	**265**
Landing Ports	**236 (134**)**	**236 (127**)**	**236(80**)**
Gillnets			
Number of fishing fleet	**8032 (14806 ***)**	**8032 (14806 ***)**	**8032 (14806 ***)**
Landings Ports	**1000+**	**1000+**	**100**
Longlines			
Number of fishing fleet	**8989 (14806***)**	-	-
Landings Ports	**1000+**	-	-

data source: MEDAC questionnaire 2016 – EasternMed Area

**Landings for year 2014, number of vessels realtime*
*** landing ports where there were OTB landings reported through ERS during 2014-2015*
**** total number of vessels using passive gear*

Past studies have shown that discards vary among areas and seasons and the reason for discarding commercially important species is due to the size of the fish (undersized) and/or its condition (damaged individuals). FIGURE 5 illustrates the weight composition of the catches in terms of weight, for both, the discarded and retained fractions of the main species in the Ionian (GSA 20), Aegean seas (GSA 22) and Crete (GSA 23)

Discards of the most important species are higher in the case of bottom trawlers but they are generally remaining at low levels (less than 5% of the total catch, in terms of weight, in most cases – TABLE 19).

The Greek bottom trawl fishery has multi-species characteristics and similarly to all Mediterranean demersal trawl fisheries, captures more than 100 commercial species. However, according to the records of the Greek Statistical Service, few of them such as red mullets, hake and shrimps compose the main bulk of landings.

TABLE 19: GREECE LANDINGS AND DISCARDS 2014

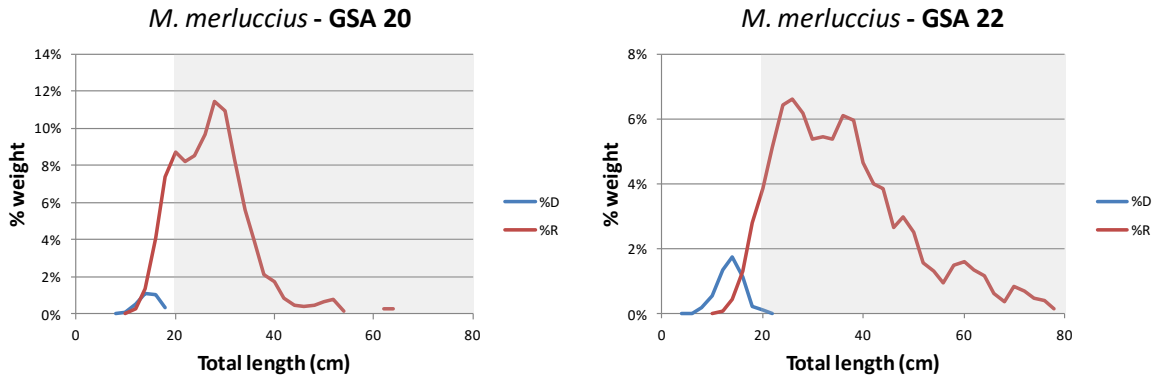
Gear	Species	Discards (t)	Landings (t)	% Discards
Bottom otter trawl	*Mullus barbatus*	16,259	972,8	1,64
Purse seine	*Mullus barbatus*		0,088	0
Set gillnet*	*Mullus barbatus*	17,604	994,864	1,74
Trammel net*	*Mullus barbatus*	17,321	365,921	4,52

Bottom otter trawl	*Merluccius merluccius*	106,461	1840,775	5,47
Set gillnet*	*Merluccius merluccius*	17,023	804,015	2,07
Set longlines*	*Merluccius merluccius*		235,964	0
Trammel net*	*Merluccius merluccius*	8,377	86,295	8,85
Bottom otter trawl	*Parapenaeus longirostris*	152,769	2346,145	6,11

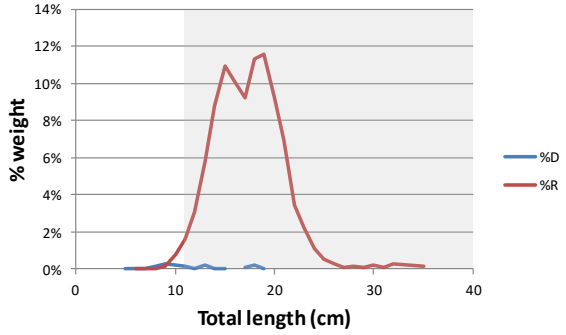
Data source: https://datacollection.jrc.ec.europa.eu/dd/med/graphs

*estimated annual values based on 9 months data collection for Set gillnets, Trammel nets, Set longlines

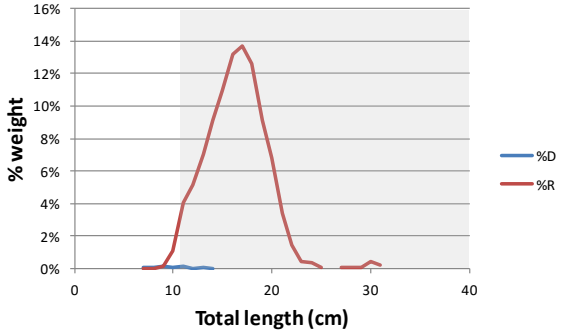
FIGURE 5: GREECE – Indicative figure representing percentage weight composition of the catches of the main species in the Ionian (GSA 20) and Aegean seas (GSA 22) in 2014. A similar representation as for Aegean sea applies also for Crete (GSA 23) D=discarded fraction, R=retained fraction.



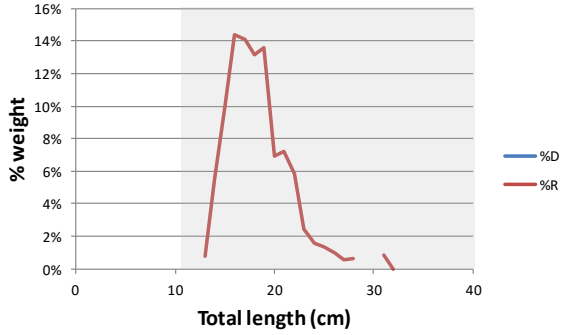
M. barbatus - **GSA 20**



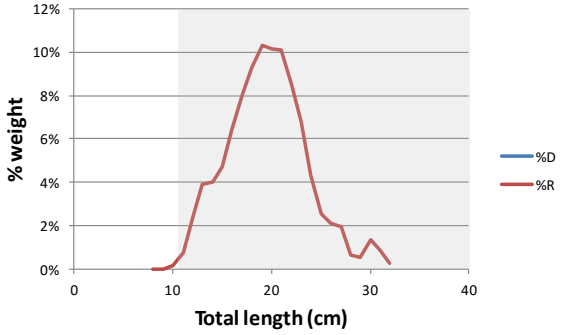
M. barbatus - **GSA 22**



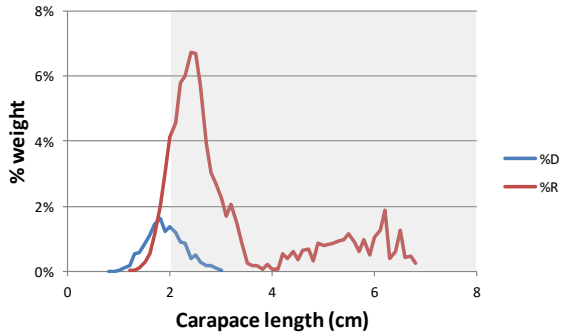
M. surmuletus - **GSA 20**



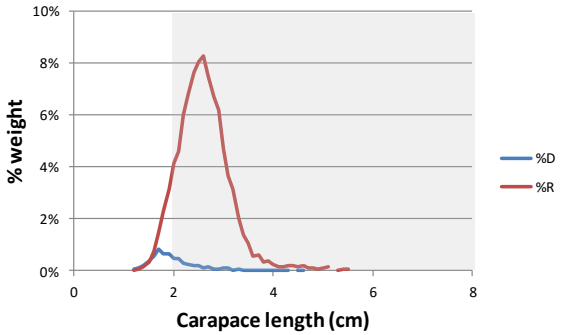
M. surmuletus - **GSA 22**



P. longirostris - **GSA 20**



P. longirostris - **GSA 22**



5.8. Malta

TABLE 20: MALTA'S ANNUAL CATCHES AND TYPE OF FISHING ACTIVITIES

	Rose Shrimp	Red Mullet (*surmuletus*)	Hake
Annual Total Landings	15.6 tons	59.6 tons	28.0 tons
Total Landings (seasonal trend)	QTR1 2.5 QTR2 4.3 QTR3 5.0 QTR4 3.8	QTR1 9.6 QTR2 15.8 QTR3 17.3 QTR4 16.9	QTR1 4.3 QTR2 7.5 QTR3 8.7 QTR4 7.5
Landings Ports	**Designated landing ports:** Marfa/Cirkewwa Marsaxlokk Mgarr (Gozo) Valletta Marsascala **Landings were registered in 2015 in:** Valletta 9.2 Marfa 3.4 Marsaxlokk 2.4 Other 0.6	**Designated landing ports:** Marfa/Cirkewwa Marsaxlokk Mgarr (Gozo) Valletta Marsascala **Landings were registered in 2015 in:** Valletta 40.8 Marsa 5.8 Marfa 0.2 Other 12.8	**Designated landing ports:** Marfa/Cirkewwa Marsaxlokk Mgarr (Gozo) Valletta Marsascala **Landings were registered in 2015 in:** Valletta 16.9 Marsaxlokk 3.2 Marsa 1.7 Other 6.2
Number of fishing vessels	11 - Active trawlers targeting Rose Shrimp in 2015	10 – Active trawlers targeting Red Mullet in 2015	11 – Active trawlers targeting Hake in 2015
Landings Ports	Marfa/Cirkewwa Marsaxlokk Mgarr (Gozo) Valletta Marsascala	Marfa/Cirkewwa Marsaxlokk Mgarr (Gozo) Valletta Marsascala	Marfa/Cirkewwa Marsaxlokk Mgarr (Gozo) Valletta Marsascala
Number of fishing fleet	NA	811 - Vessels registered with Trammel nets in 2015	NA
Landings Ports	NA	All MLT ports	NA
Number of fishing fleet	NA	NA	NA
Landings Ports	NA	NA	NA

Catch / landing quantity data corresponds to reference year 2015.

TABLE 21: MALTA'S LANDINGS AND DISCARDS 2013

According to the data collection obtained by JRC database there are no discards of mullet and surmullet in the fishing activities of the Maltese fleet of bottom trawl, drifting longlines, lampara nets and trammel nets.

Gear	Species	Discards (t)	Landings (t)
Trammel net	*Mullus barbatus*	0,12	0,0384
Bottom otter trawl	*Mullus barbatus*	0,12	5,511
Trammel net	*Mullus surmuletus*	0,12	1,164
Trammel net	*Mullus surmuletus*	0,12	2,8345
Bottom otter trawl	*Mullus surmuletus*	0,12	1,609

Data source of landings and discards (2013) https://datacollection.jrc.ec.europa.eu/dd/med/graphs

II. PROPOSAL OF JOINT RECOMMANDATIONS ON DISCARDS MANAGEMENT PLANS FOR SPECIES DEFINING THE FISHERIES

6. Elements for the preparation of regionalized discards management plans

The purpose of the regulation is to eradicate the capture of by-catch as far as possible, in the Mediterranean particular reference is made to Annex III to the Mediterranean Regulation. Among the elements to be considered, therefore, priority is given to measures that aim to minimize or eliminate the capture of undersized specimens of the target species identified, both by means of increased selectivity of the capture gear, and also by avoiding fishing activities in sensitive areas where juveniles of these species concentrate seasonally.

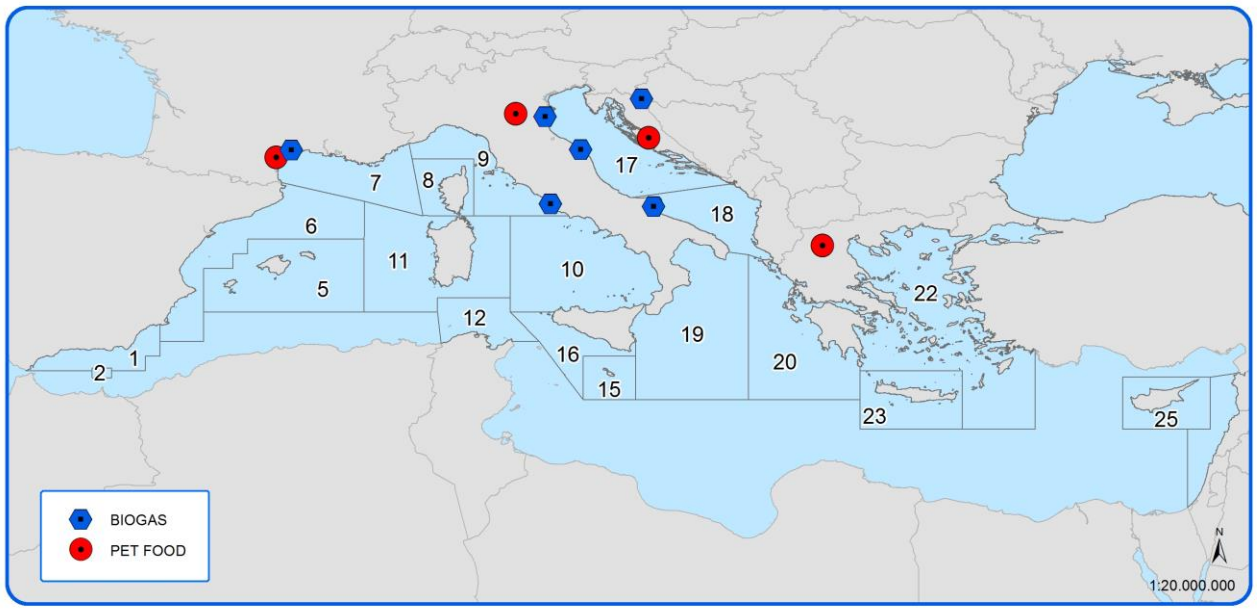
Where these measures are not sufficient to solve the problem, the law establishes the obligation to land and market these products for non-human consumption. This implies the creation of a specific sector on land, whether in port areas or adjacent to them, wherever landing takes place and assumes that there are companies interested in purchasing this product for various purposes (animal feed, cosmetics, lubricants, biogas etc.).

TABLE 22: LIST OF GEARS AND TARGET SPECIES WHERE THERE ARE DISCARD PROBLEMS

	Trawlers	Gillnets	BeamTrawler	Longlines
Hake	X	X	x	X *
Red mullet	X	X	X	
Sole	X	X	x	
Deep rose shrimps	X			

*No undersized

TABLE 23: MAP OF EXISTING AND POTENTIAL INFRASTRUCTURES TO HANDLE DISCARDS – BY TYPE OF INDUSTRY IN EU MS (PET-FOOD, BIO-GAS)



Aside from the detailed study of the physical location of facilities and infrastructure inherent to this activity (entrusted to Member States in their work plans and related projects) the technical and economic feasibility assumes particular importance. It is clear that failure to cover the expenses required for the storage, refrigeration, transportation of the product would constitute an unacceptable additional burden for the companies concerned, in the same way setting up waste disposal systems would also entail high costs.

6.1. Technical measures to increase selectivity

Given the causes of discards and catches composition (multi-specific), it seems complicated, in a short term period at least, to avoid all unwanted catches for Mediterranean trawlers by improving selectivity. The implementation of such selective devices would conduct to important economic loss because of high value commercial catches not under MCRS that would escape. Member States commit themselves to conduct pilot studies to increase selectivity of all fishing gears with the involvement of the fishermen within 2 years of the approval of the management plan.
Preferential access to fishing grounds could be granted to the more selective fishing gears (art.7 CFP Reform).

It is important to notice that scientific studies are ongoing or planned in Europe (REDRESSE, SIMBAD, EODE, EU fund call "H2020") to test new selective devices and new spatio-temporal

approaches to avoid residual discards of undersized species, especially under new technical measures context. Those studies could give precious information for trawler fishery.
Therefore, an integrated approach combining the following several actions should be implemented:

1. Distribution mapping of catches and discards and definition of sensitive habitats
2. Selectivity device study (i.e. selectivity tests of square mesh 40mm versus T90 mesh).

Trawl nets

Demersal trawl fisheries employ nets towed by one or two fishing vessels that advance thanks to the use of a propeller. They can be divergent (Bottom Otter trawl) if the horizontal opening is ensured by otter boards (or doors), or fixed (Beam Trawl) (beam trawl or rake trawl) if the horizontal opening is ensured by a rigid frame. They can also be towed by two vessels of similar power that together ensure the horizontal opening.

There are several kinds of trawl net:

- Divergent trawl nets (used in hake, mullet and white shrimp fisheries);
- Rake trawl (nets with a fixed opening used mainly in sole fisheries);
- Twin rig or divergent trawl nets;
- Pair trawl nets.

Bottom set gillnets

Fixed gillnets are anchored to the sea bed and retain the fish that get caught there as they move.

There are several kinds of fixed gillnet:

- Anchored gillnets;
- Trammel nets;
- Combined gillnet-trammel net.

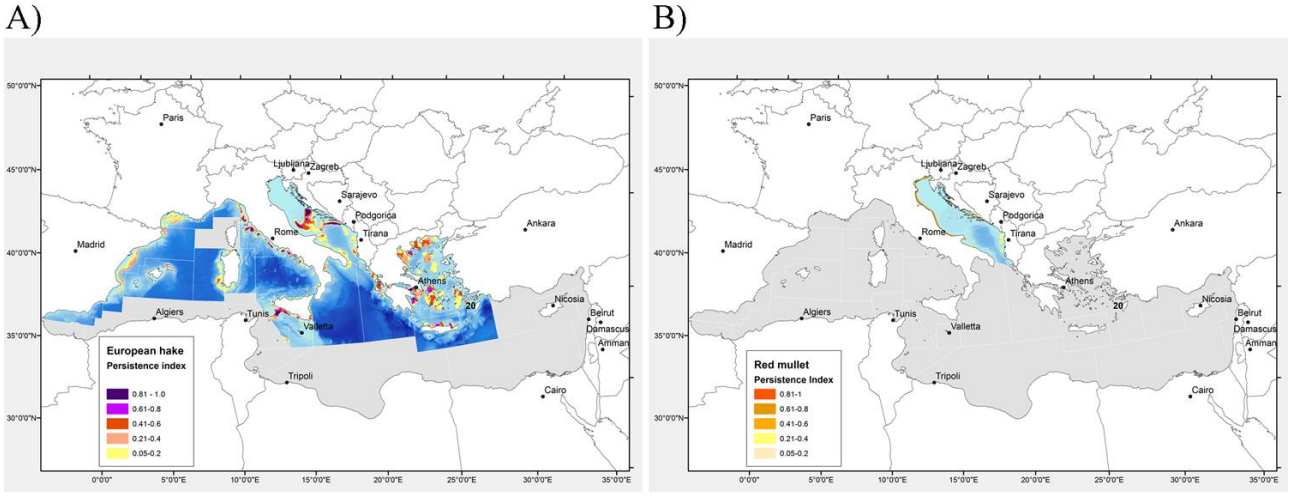
Recreational fisheries

Catches made with gears that do not permit high survival (like longlines) should be subject to the landing obligation, and if the quantities caught are deemed incompatible with the daily limit that should be allowed at Member State level, such gears should be banned.

6.2. Spatio-temporal closures

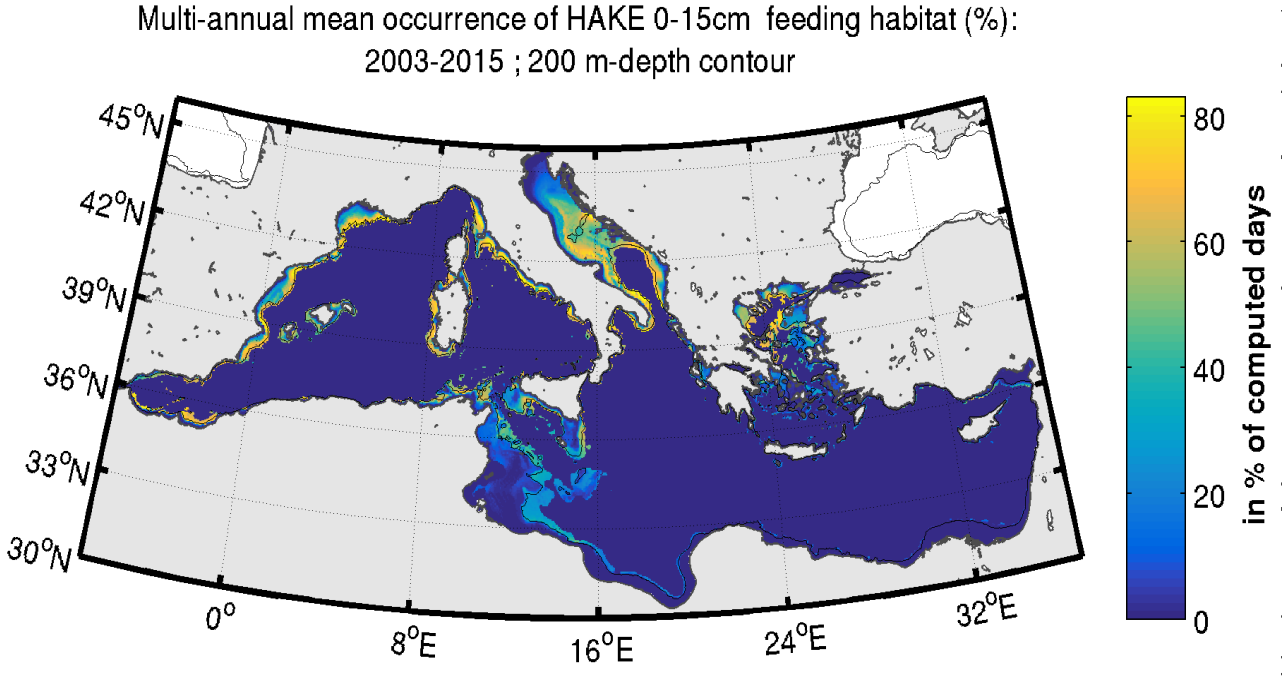
The identification of nursery grounds and other essential fish habitats of exploited stocks is a key requirement for the development of spatial conservation planning aimed at reducing the adverse impact of fishing on the exploited populations and ecosystems. The reduction in juvenile mortality is particularly relevant in the Mediterranean and is considered as one of the main prerequisites for the future sustainability of trawl fisheries.

The figures here below show the distribution maps of persistence index (Ii) of nursery areas in the Mediterranean for hake (A) and red mullet (B).



Data source: PLOS one, F.Colloca et al, 2015
https://figshare.com/articles/_Distribution_maps_of_persistence_index_Ii_of_nursery_areas_of_commercial_fish_in_the_North_Mediterranean_Sea_/1341403

FIGURE: MEAN OCCURRENCE OF POTENTIAL HAKE NURSERIES FROM FEBRUARY TO JUNE 2003–2015 IN THE MEDITERRANEAN SEA (IN % OF AVAILABLE HABITAT DETECTION, INCLUDING SEAWIFS AND MODIS-AQUA SENSORS) AND ZOOM ON THE MAIN FAVOURABLE HABITATS.



Source: **Druon JN, Fiorentino F, Murenu M, Knittweis L, Colloca F, Osio C, Mérigot B, Garofalo G, Mannini A, Jadaud A, Sbrana M, Scarcella G, Tserpes G, Peristeraki P, Carlucci R and J Heikkonen (2015)** Modelling of European hake nurseries in the Mediterranean Sea: an ecological niche approach. *Progress in Oceanography 130:188-204* | Full text download in open access

In the Mediterranean Sea, the French GALION project (*Gestion Alternative de la ressource dans le Golfe du LION* - conducted by AMOP, in collaboration with IFREMER, and funded by France Filière Pêche) intends to monitor catches of trawl fishery during the one-year study to identify the composition of catches. The long term objective is to limit unwanted catches by proposing to avoid fishing activities, according to seasonal distribution of juveniles concentration. Similar ongoing projects are conducted in other areas, such as MANTIS (*Marine Protected Areas Network Towards Sustainable Fisheries in the Central Mediterranean* - focusing its case studies in particular in the Strait of Sicily and Northern Adriatic) and SAFENETS (*Sustainable Fisheries in a EU-Mediterranean Waters Through Network of MPAs* – focusing on north-western Mediterranean)
In the process of nursery areas 'identification the result of the MAREA-MEDISEH project (Mediterranean Sensitive Habitat) should be taken into account.

Member States commit themselves to identify nursery areas of the management plan in addition to those already identified within the GFCM, related to the four target species for landing obligation (socioeconomic impacts should be taken into account in this identification and in the National Operational Programmes regarding compensation and supporting measures). In the nursery grounds any fishing activity (including recreational fisheries) is banned or strictly regulated on the basis of available scientific advices.
In case a Member State demonstrates the measures already implemented to be sufficient to reduce unwanted catches it might not implement any other additional closures.

6.3. Handling costs

In order to assess the handling costs related to the landing obligation it is worth starting by calculating:

- Biomass price

This is a price that each processing companies will assess products according to the species and quality and the type of processing industry (i.e. prices vary from pet-food industries to cosmetics and bio-fertilizers or simply biomass for incineration). Price of sale could range between 0.3 to 0.5€/kg for certain fish corresponding to demersal species (CRPMEM PACA, 2015).

Total elimination is not an appropriate option compare to the price associated because disposable infrastructure is often located far away, usually more than 200km from different landing ports.

➢ Transportation cost

In addition to the selling, it is necessary to add the transportation cost that would be generated to transport those unwanted catches from landing spot to companies. Regarding distances between harbours and processing companies, transport cost are highly over the price of sale, especially considering insular areas (it will have to include the cost for the ferry).

Therefore, processing unwanted catches wouldn't generate any benefit, on the contrary, it would be necessary to pay for the transportation of those volumes.

➢ Indirect labor costs

Other costs are also to be taken into consideration:

- For fishermen:
  - Cost for boxes to store and land unwanted catches. Some harbors do have old plastic boxes, other would need to invest. The use of plastic boxes and polystyrene boxes would be practical on board.
  - Cold storage to keep catches in good quality (especially in hot season).
  - Increase in fishery market hall taxes to compensate storage onshore.
  - Costs for crew given that in fisheries contracts envisage profit sharing among employees
- For onshore structures/organisation :
  - The need to buy specific containers (unit cost: approximately 600 € HT).
  - Additional cost in water (refrigerated room and containers cleaning…), in electricity and staff (handling unwanted catches onshore).
  - When needed, investment for refrigerated rooms.

Example of the costs generate by handling catches onsite in the harbour of Sète, France:

- Handling and disposal of the products onsite = 75€ / tons
- Conservation of the products onsite = 100€ / tons
- Transport of the products = 300€ / tons
- Indirect cost (business expenses) = 20€ / tons

Total = 495€ / tons

This simple calculation shows that companies should pay 0.495 €/kg to balance the cost generated by handling unwanted catches onsite from Sète vessels, the closest harbour from Béziers.

This price does not take into account the cost of handling and conservation of the unwanted catches onboard as well as the loss of income generated by their storage at the expense of commercial catches usually landed.

Source: The above information has been provided by the SATHOAN.

➢ Conclusions :

Due to the low and irregular and seasonal volumes of discards registered throughout the Mediterranean and the lack of already existing infrastructures and industries located in proximity of the landing sites, which are widely spread throughout the coast of all Mediterranean member States (i.e. more than 800 in Italy, and close to 1000 in Croatia) it seems that disproportionate cost of handling cost of unwanted catches can be claimed for the Mediterranean (as you can see from the examples below).

For socio-economic protection it is necessary to carry out a preventive analysis of the additional costs resulting from landing obligation, storage and transportation of unwanted catches and its impact on employment and company profitability. Support measures, even financially, should be provided.

The commercialization of unwanted catches should be by any means discouraged and not implemented, especially where unwanted catches are negligible.

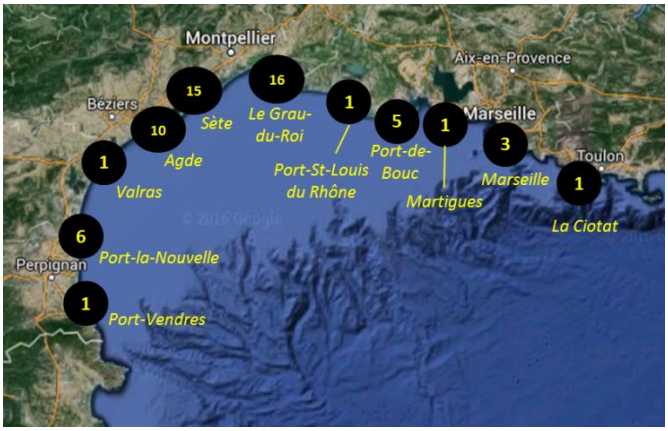
Disproportionate costs of handling unwanted catches are also a major argument for trawlers to benefit from de minimis exemption authorizing limited discards.

➢ **A few examples from various Member States**

FRANCE

Landing harbours for French trawlers are disseminated along the Mediterranean coast over 388 km (distance between Port-Vendres and La Ciotat). Between one and sixteen trawlers are likely to land their catches in those harbours (Fig.6).

FIGURE 11: LANDING HARBOURS DISTRIBUTION FOR FRENCH TRAWLERS IN MEDITERRANEAN REGION AND NUMBER OF VESSELS PER HARBOURS



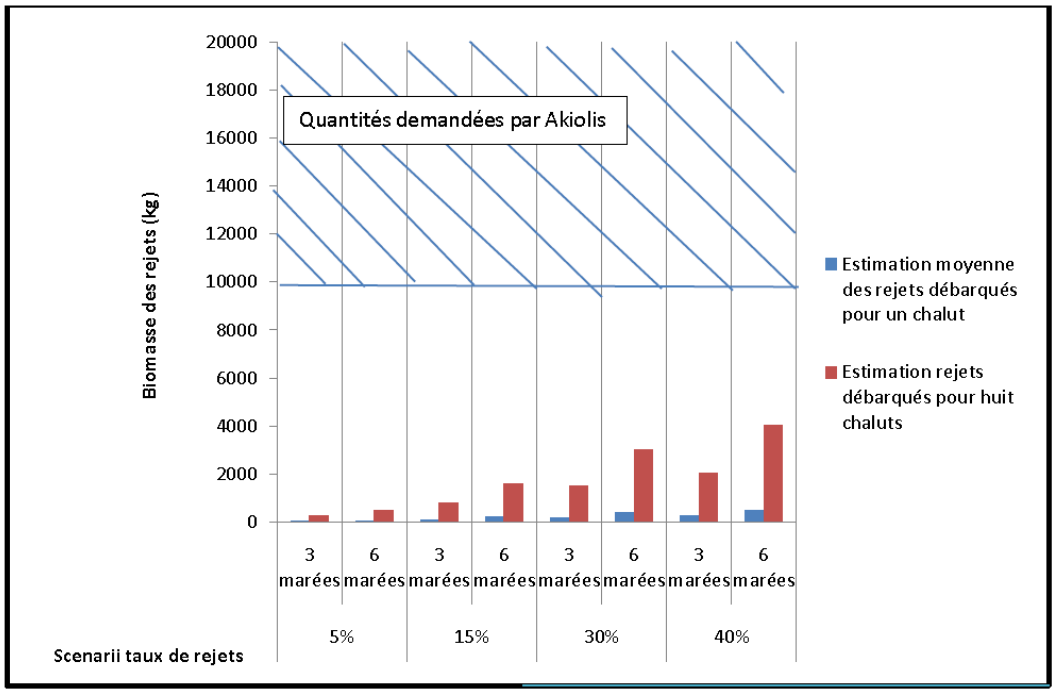
Transport issues for unwanted catches are raised due to the important number of landing spots and the low number of vessels per harbours. This represent significant challenges in terms of logistic organisation for a possible collect by a processing company.

Regarding volume of unwanted catches estimate, Mediterranean trawler land in average 500 kg of fish per vessel per day (OPDUSUD, 2015). If we apply the 14.7% discard rate estimate (Cornou et al, 2015), this would represent an estimated discard of 70 kg. This volume is low and would represent approximate landings between 70 and 1180 kg per day per harbours (depending on the number of vessels per harbours).
Furthermore, because all species discarded are not under landing obligation (because they are not all under MCRS), and considering that landing obligation will apply only for hake and red mullet for now, it is clear that unwanted catches volume that will be possible to land are underestimate by this way of calculation (OPDUSUD, 2015).

Anyway, those volumes are way under what could be interested for processing company. Even if we combined possible volume of unwanted catches between landing spots, this won't allow to reach a volume that would be economically profitable.

As an example, study conducted in PACA show that mutualisation of those hypothetical volumes won't be sufficient (whatever discard rate and frequency of collect scenarios) (Fig.12).

FIGURE 12: SCENARIO 2 : LANDING OF SPECIES UNDER MCRS



ITALY

In Italy there is a firm[3] that is already well established (processing of fish products from other states) which is willing to collect and subsequently transform them into fish meal. Specifically, the company guarantees, primarily in mainland Italy, to supply refrigerated containers to the main landing ports, collecting the product at its own expense at established intervals depending on the presence of the fish product in question. The fishers will receive approximately 100 €/tonne of fish product. The fishers on the other hand will be responsible for the indirect costs of sorting and storing the product on-board; of the electricity for refrigeration of the container; purchasing the crates for the product which will then be stored in the container, and transfer from the boat to the container (generally located at the landing port).

A coordinated project (2016, Ministry of Agricultural, Food and Forestry Policies, "Survey on discards of demersal fishery species in Italian seas: preliminary assessments for the implementation of EC provisions on the landing obligation" (Basic Reg. 1380/ 2013, Art. 15)) assessed the feasibility of the construction of infrastructure for transformation, based on fishing communities in GSA 10. Considering the quantities of discards that these fleets could provide, an average price for collecting the product (approx € 0.05/kg) by a transformation company and the average price of fishmeal (around € 1.72/kg), it can be estimated that the investment for the processing plant could generate positive revenue within the first two years of operations.

CROATIA

In Croatia there is only one approved facility for processing by-products for non-direct human consumption, but it is more than 300 km far away from landing ports and one plant for producing pet food. They are all located in the continental part of Croatia with a distance of more than 600 km from the landing ports. On landing sites there is no infrastructure for collection of discarded catch, therefore it should be transported to collection facility or to approved processing facilities. The average price to cover transport to the factory if product is not collected at port is approximately 0,60 cent/kg, but it depends on the size of the vehicle and it increases if collection is on the island (then calculation should include the price for the ferry). In Croatia, nearby important ports there is no industry that could accept discarded catch and due to limited space at the landing sites there is no possibility to plan any additional facilities for the storage of discarded catch.

SLOVENIA

Slovenia shows very low quantity of discard, about 12 kilograms per week per fishing port and it would need to be transported to central Slovenia (about 150 km) for incineration as waste. The cost of incineration per kg is about 0,19 EUR/kg. However, this figure does not take into account neither the handling and disposal costs onsite nor conservation (cooling facilities) onsite that

[3] FarPro SPA -Modena

would be needed. In particular, this cost does not take into account the fact that there are no facilities to collect or store discards in fishing ports and such facilities would have to be built. This could be about 100.000 EUR per fishing port, but it really depends on the port - a separate facility would be needed in each case, with separate storage and cooling facilities for discards.

GREECE

The main difficulties for the handling the catch related to landing obligation could be summarized as follows.

- The quantities of the discarded catches per vessel per day are limited only to some kilos. We should also mention that these small quantities are scattered along the multiple landing ports of the Greek coast line, as already mentioned, and this entails difficulties in their collection and a high cost. Moreover, the landing ports used by bottom trawls vessels are variable according to temporal and spatial differentiation of fisheries activities.
- Since these catches are not destined to human consumption, they are characterized, according to the national legislation, as animal by-products. As a result, their transport is not allowed by conventional vessels, while the use of a special vessel for their transport would lead to an even higher cost of transportation from the islands. Besides, special vessels for such a task are not currently available in the Greek fleet.
- On the other hand, the management of their disposal is particularly difficult since they cannot be disposed in the existing landfill sites because of the fact that their disposal is only allowed in specific establishments.
- There is a lack of appropriate infrastructure to deal with discard quantities.

At present, quantities that are not incinerated for hygienic reasons, are treated as follows:
The usual process for the use of small quantities of fisheries by-products from processing plants is through the collection and transport of the by-products to industries preparing animal feed for fur animals. The contracts are dependent on the distance and the quantity of the by-products. Small quantities are also transported to appropriate plant in central Greece for the preparation of biofertilizers, at a cost of 90 euros/tn paid by the fisheries processing industry.
The animal feed industry is located in Central Macedonia and the plant for biofertilizer is located in central Greece.

In conclusion, the scattered landing ports in combination with a very small quantity of discarded catches of the specific species per vessel make disproportionate the cost of their handling and their management in general.

The following examples are attempting to quantify the handling and management costs of catch related to the landing obligation

Example 1: Estimations (based on real costs) based on a **medium sized trawler** that lands its catch of demersal species in a representative Greek fishing port where a fully operational auction place is nearby sited. The **port is fully equipped** with all the necessary machinery suitable for handling and managing the unwanted catch.

1. PACKAGING: Polyurethane boxes of 5 kg capacity are used. Each box costs 0,80 €, which means that per ton of fish required 200 boxes * 0, 80€ = **160 € / ton**

2. DISPOSAL: washing and separation by type of fish landed is required a fully operational workplace with electric machinery. The handling of all catch in the case of LO needs an extra time on average about 30% more than normal. This incurs a cost as follows: Electric power generator on average of 60KVA with consumption of 15 lt per hour of oil costs about 8 €. A conservative estimation of time needed per haul will require approximately one additional hour of handling operation, which per haul is estimated at 20% of production capacity, i.e., about 25-30 Kg. Therefore, the handling of 25 kg of production will consume about 8 € energy cost e.g. **320 € / ton** are required.

3. CONSERVATION: All catch is kept in ice, the cost of which is 2 € per 20 kg of ice. The above mentioned packaging of 200 boxes need 2kg of ice and the cost for freezing can be estimated 200boxes * 2kg of ice for each box * 0,10 € per kg of ice = **40 € / ton**.

4. INDIRECT LABOUR COST: The increase in labor requirements will incur an additional cost, at least for the additional amount of landing catch which would be handled by fishers. This additional cost could amount in about 20-25% of their salary, which means about 200 € per fisher. So a trawler with an average crew of 6 fishers will have an additional labour cost of 6 fishers * 200 € = 1200 € per month. This increase could be calculated based on catch production as follows: 30 kg per haul * 4 hauls * 30 days = 3600 kg, i.e., 1200 € per 3600 kg, which eventually amounts to **333 € / ton**.

The estimated TOTAL COST from the above calculations amounts to **853 € / ton**. This will be the amount that an average trawler should pay to balance the cost generated by handling the unwanted catch on site in a fully equipped Greek fishing port.

Example 2: Cost calculation to add to the above box when discards are to be collected in **islands**

TRANSPORTATION: In Greece the transportation cost from an island to the main land is about 2 to 3 € per box and mainland transportation cost for one to another site is estimated at 1 € per box. Therefore, an average of transportation costs could be 1,5 € per box, i.e., 200 boxes (equals to 1 ton) * 1,50 € = **300 € / ton.**

As a result, in addition to the above Total Cost of 853 € / ton if we add the cost of transportation the **TOTAL COST** could be formed at **1153 € / ton**

This estimate does not take into account the cost of handling and conservation of the unwanted catch **on board of the fishing vessel** as well as the **loss of income** generated by the storage of the unwanted catch at the expense of commercial catch that usually landed. Furthermore, there is an additional cost of handling and transport the unwanted catch in the case it should be converted into pet-food.

An average cost for handling and transport this catch to an animal feeding processed plant is about **90 € / ton** whereas the cost of handling and transportation in the case of converting animal residues to animal feed is literally zero.

CYPRUS

Cyprus does not have any information concerning possible costs generated by handling unwanted catches. As already mentioned in our completed questionnaire, discard processing does not seem feasible in Cyprus due to the fact that, based on the information we received, the discard quantities are lower than the minimum quantities required for processing.

SPAIN

AZTI4 has made an economic calculation of the landing obligation, using as an example the Spanish fleet operating in Cantabrian waters and directs its activity to demersal species. The analysis focuses on 1473 ships generating about 166 million euros of revenue. Two scenarios were simulated corresponding to the non-application of the landing obligation outside its application.

The results show that in the first two years of implementation of the landing obligation the overall reduction in revenue would approximately be 48 million euros, that account for one-third of revenues. This loss implies a reduction in the return on investment of 22 million Euros. Wages and

[4] http://www.azti.es/es/efectos-economicos-de-la-obligacion-de-desembarco/

salary would also be reduced by 33%. Another important aspect is that this reduction is not equal for all fleets.

MALTA

No specialized service is available in Malta for the:

Preservation / conservation of unwanted fish products;

Transport of unwanted fish products;

Indirect costs (business expenses) for handling of unwanted fish.

There are no specialized processing plants or bio-digestors to convert discarded fish for alternative uses, or for the production of energy and gas; therefore, unwanted landed fish should be destroyed. Incineration rates for unwanted fish (food discards) are €50/tons if not considered high risk, or €500/tons if considered high risk (obligatory incineration). The classification between low or high risk is at the discretion of the treatment facility.

Preservation of unwanted fish products may require the development of further infrastructure for negligible benefit, given the low amounts of discards generated. Given the small scale of most vessels, allocating space for the storage of unwanted fish onboard prior to landing may have some economic repercussions.

6.4. De minimis exemption

Where feasibility is not achieved, the alternatives to *de minimis* are only the disposal of discards as "special waste", with additional costs for businesses, or collection by bio-energy or bio gas producers free of charge, or at best for the production of fish meal with an uninviting contribution of just 0.05-0.10 euro/kg.

This applies in particular to islands areas (Balearic Islands, Corsica, Greece - Ionian-Aegean Crete-, the Croatian islands, Cyprus and Malta), in these areas the costs indicated are supplemented significantly by transport costs to continental areas with the facilities to receive the discarded product. In these areas, the only alternative to *de minimis* exemption is free collection by incinerator companies and bio-gas disposal. In light of the above, these areas fall into the category of possible exemption from the landing obligation according to art. 15 paragraph 5 letter c of the basic Regulation, except for local solutions (use of discards in aquaculture system).

Moreover, according to the fact that:

- Trawler fishery in Mediterranean sea is a mixed fishery financially depending on several species;
- Program working on selectivity in Europe showed that it is hard to find a gear that doesn't imply too many commercial loses for the fishermen, but still, selectivity programs are ongoing (REJEMCELEC, DISCARDLESS…) with the aim to test new and existing gears;
- It will be difficult to improve selectivity in a short-term period;
- There are no real structures for now that could handle unwanted catches, also even if some structures could handle those unwanted catches, prices won't cover the cost of handling those catches by fishermen or other infrastructures;
- Studies conducted in Mediterranean area showed that landings of unwanted catches are quite low and widespread along the coast line and that those aspects hamper the interest and development of such structures;
- De minimis exemptions can provide the flexibility to the fishermen to adapt their behaviour to such new regulation frame and will ease the implementation of the landing obligation, particularly during the first years;
- the implementation of measures to increase selectivity, such as the sorting grids, will require additional amount of time in order to benefit from the EMFF provisions (National Opreational Programs).

DE MINIMIS EXEMPTION PROPOSALS FOR THE 3 MEDITERRANEAN AREAS*

TABLE 23: DE MINIMIS EXEMPTION - WESTERN MEDITERRANEAN SEA (FR, IT, SP)

	2017		2018		2019	
	Trawlers	Gillnets	Trawlers	Gillnets	Trawlers	Gillnets
Hake**	5+2	1	5+2	1	5+1	1
Red Mullet	5+2	1	5+2	1	5+1	1

**Longlines 0 de minimis

TABLE 24: DE MINIMIS EXEMPTION – ADRIATIC SEA (HR, IT, SI)

	2017			2018			2019		
	Trawlers	Gillnets	Rapido	Trawlers	Gillnets	Rapido	Trawlers	Gillnets	Rapido
Hake**	5+2	1	1	5+2	1	1	5+1	1	1
Red Mullet	5+2	1	1	5+2	1	1	5+1	1	1
Sole	3	0	5	3	0	4	2	0	3

**Longlines 0 de minimis

TABLE 25: DE MINIMIS EXEMPTION – CENTRAL-EASTERN MEDITERRANEAN SEA (CY,GR,IT,MT)

	2017		2018		2019	
	Trawlers	Gillnets	Trawlers	Gillnets	Trawlers	Gillnets
Hake**	5+2	1	5+2	1	5+1	1
Red Mullet	5+2	1	5+2	1	5+1	1
Rose shrimp	5+2	NA	5+2	NA	5+1	NA

**Longlines 0 de minimis

*Members States will proceed to define the level of their respective de minimis percentage according to their national level of reported discards

7. Timeline

The application of measures that could lead to a reduction in unwanted catches by means of increasing gear selectivity is not realistic in the very short term. This is because modifying nets by means of adding selective gear would considerably increase costs for the fishing enterprises.

In addition, the financial instruments available, most notably the EMFF, in particular art.39 parag.1 " Innovation linked to the conservation of marine biological resources", art.42 parag.2 "Added value, product quality and use of unwanted catches" are not yet fully implemented in the different Member states and the chance such funds might be used for the necessary implementation seems mostly unlikely.

The implementation of more selective gear therefore needs a certain amount of time. However, it is believed that these steps be taken by 1st January 2019, the year in which the landings obligation system will see full implementation.

Ultimately the timing that is expected is the following:

- Pilot actions to increase selectivity of all fishing gears involved will be carried out by Member States in the first 2 years of implementation of the discards management plan (2017-2018), unless the current selectivity is deemed to be appropriate
- Identification of nursery areas by December 2017 has to be established over the next 6 months
- Handling stations have to be identified by June 30, 2018 through feasibility studies and blue prints carried out by Member States

8. Monitoring and control

SPAIN

The proposed measures for monitoring the exemption would be:

• VMS installed on all active vessels (blue box) .

• All quantities of fish caught and discarded species must be recorded in logbooks.

• Creation of working groups such as the one on control, on the study of scientific reports on fisheries, etc. in order to follow the development of the implementation of the discard policy of the new CFP.

ITALY

The Italian national administration, through the Italian Coast Guard, carries out control and monitoring activities in relation to the landing obligation and any discards that come under de minimis exemption according to the following operative requirements:

Controls on the landing obligation: these will follow the same procedures as the controls on landings currently in place (in terms of quantity and correctness of the declarations) under Regulations 1224/09 and 404/2011. In particular, the quantity of undersized specimens in the catch will be verified, together with the final destination of this part of the catch, which cannot enter the human food chain. For this purpose an appropriate control plan will be established, based on risk analysis, and this will determine the final destination of the undersized specimens landed.

Supervision and control are carried out by staff from the Italian Coast Guard as well as other law enforcement agencies, coordinated by the National Fisheries Control Centre, based in Rome at the Italian Coast Guard Headquarter.

FRANCE

Control will be based on suspect under-declarations of discards and also in the framework of exemptions, declarations remaining compulsory.

SLOVENIA

Inspections of the implementation of the obligation to record all catches and discards will be performed during regular inspection procedures at sea and on landing, in accordance with the Control System of the Common Fisheries Policy. Monitoring will be performed with regard to the data submitted in the fishing logbooks. Also, Slovenia proposes the following measures for monitoring the exemption with respect to the Slovenian fishing fleet:

- in accordance with Slovenian national legislation (Regulation on the traceability of catches, Official Journal of the Republic of Slovenia, 38/16), all quantities of all species of fish caught and discarded have to be recorded in the fishing logbooks.

- in addition, in accordance with Slovenian national legislation (Regulation on the traceability of catches, Official Journal of the Republic of Slovenia, 38/16), all fishing vessels of all lengths (also below 10 meters) have to record all catches and discards of fishing organisms (including below 50 kilograms).

- Vessel Monitoring System (VMS) has been installed on all active fishing vessels using bottom trawls, also on vessels below 15 meters of length (this is the only kind of trawls remaining in the Slovenian fishing fleet

CROATIA

Croatia has so far introduced the obligation of VMS installation and electronic logbooks on all vessels over 12 meters. In accordance with national legislation all catches and discards have to be recorded in the fishing logbook. Monitoring will be performed with regard to the data submitted in the fishing logbooks.

CYPRUS

The Department of Fisheries and Marine Research (DFMR) is the single authority responsible for the management of fisheries resources and fishing fleet (management measures, issue and management of fishing licenses, control of fishing activities and VMS, record of logbooks, structural funds concerning fisheries). The DFMR is using modern technologies in a wise, proper and effective way, in order to identify and combat illegal fishing activities. VMS is installed on all licensed fishing vessels with length more than 12m, and the Control Electronic Reporting System is compulsory for the fishing vessels with length more than 12m.

The proposed measures for monitoring discards that come under de minimis exemptions are the following:

- Implementation of the Control EU Regulation (Regulations 1224/2009 and 404/2011). Specifically for the species under de minimis exemption, it will be required that all quantities of fish caught and discarded will be recorded;
- Increase of control of fishing activities onboard bottom trawlers, and evaluation of possibility of implementing the obligatory use of CCTVs for bottom trawlers;

Concerning shared stocks with other MS (e.g. in central Mediterranean), regional collaboration on monitoring and control would be required

GREECE

The proposed measures for monitoring the exemption would be:

- VMS installed on all active vessels more than 12 m in length
- All quantities of fish caught and discarded species must be recorded in logbooks.

- A feasibility study for monitoring the quantity of the undersized specimens as well as their final destination will be established based on a risk analysis. This plan will be designed in order to monitor and deterring the entering of undersized fish to the human food chain and will be carried out by our National Fisheries Data Collection Programme.
- The usual control procedures will be followed as the controls on landings currently in place under Regulations 1224/09 and 404/2011.

9. EMFF tools to implement the measures

The European Maritime and Fisheries Fund (EMFF), Reg. (UE) 508/2014, describes ad hoc measures to facilitate the entry into force of the legislation on the obligation of landing discards. In in initial considerations it was considered opportune that the EMFF support investments on board vessels in order to be able to "*make the best use of unwanted catches and give due value to the under used part of the fish caught*" it is further stressed that "*considering the scarcity of resources, in order to optimize the value of the fish caught, it should also support investments on board aimed at increasing the commercial value of the catch.* "

Moreover, it is emphasised that "*in order to adapt to the new policy of a discards ban, the EMFF should support the transformation of the undesired part of catches".*

As an outline, possible interventions of the EMFF in the implementation of the landing obligation for discards can be summarized as follows:

- <u>Measures to avoid unwanted catches</u>

  Development of partnerships between scientists and fishers, in order to promote the transfer of knowledge (art. 28), in which case the EMFF could finance the collection and management of data on discards, the initiation and execution of studies, pilot projects as well as the dissemination of knowledge, by means, inter alia, of special seminars.

  In order to limit the impact of fishing on the marine environment and the adaptation of fishery activities to the protection of the species (art.37), the EMFF could finance (once only during the programming period for the same type of gear and on the same kind of EU fishing

vessel) investments in equipment that improve the selectivity of fishing gear with regard to size or species; investments on board or intended for equipment that eliminate discards avoiding and reducing unwanted catches of commercial stocks or concerning unwanted catches to be landed in accordance with Article 15 of Regulation 1380/2013.
Under the conditions specified in Article 38, the EMFF, with the aim of contributing to the gradual elimination of discards and by catch, can support measures to develop or introduce new technical or organizational knowledge that reduce the impact of fishery activities on the environment, including more effective capture techniques and more selective fishing gear, or that manage to achieve a more sustainable use of living marine biological resources.

Measures to optimize the use of the unwanted part of the catch that is landed
On condition that use is made of selective gear to minimize unwanted catches (art.41), the EMFF may support investments for innovation on board to improve the quality of fishery products, as well as other investments to improve the infrastructure of fishing ports, facilities for sales by auction, including those the infrastructure to be used for the collection of waste (art.42.2).
Measures to promote data collection

Measures for monitoring and control