



**UNIVERSITA' DI GENOVA  
DISTAV**

**Dipartimento di Scienze della Terra, dell'Ambiente e della Vita**

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And***

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***For 2023 Call for Technical and Scientific Consultancy of the Pelagos  
Agreement***

**Call 6 - ASSESSMENT OF FISHING-RELATED IMPACTS ON CETACEAN  
SPECIES AND  
THEIR HABITAT IN THE PELAGOS SANCTUARY: STATE OF THE ART**

**Delivarable 2**

**"Review on the present state of fisheries in the Sanctuary."**

# FISHING FLEET OF THE PELAGOS SANCTUARY

## Commercial fisheries

The main data source of the fishing fleets present along the coast of the Pelagos Sanctuary is the EU Fleet Register database available at: [https://webgate.ec.europa.eu/fleet-europa/search\\_en](https://webgate.ec.europa.eu/fleet-europa/search_en)

The main data provided by the Fleet Register refers to the technical characteristics of the boats (Length - LOA, tonnage - GT, power – kW), useful to define the fishing capacity indices, the main and the subsidiary fishing gears and the year of construction (Age) of the vessels.

The Classification of Fishing Gear reported from now on is derived from the new revision reported in Lucchetti et al. (2023).

In general the professional fishing fleets registered in the study area are characterized by a total amount of 1,704 vessels, for a total of 10,528 GT (tonnage) and 124,427 kW (power). They are composed by small-sized vessels (mean LOA 8.6 m), ranging from 0.2 to 153 tonnage (mean value 6.2 GT) and between 0 and 612 power engine (mean value 73 kW).

In the study area the main fleet segment is represented by boats belonging to the small scale fishery, up to 12 m LOA; more in details, boats ranging between 6-12 m LOA are 1,133 (66%), while between 0-6 m LOA are 338 (20%).

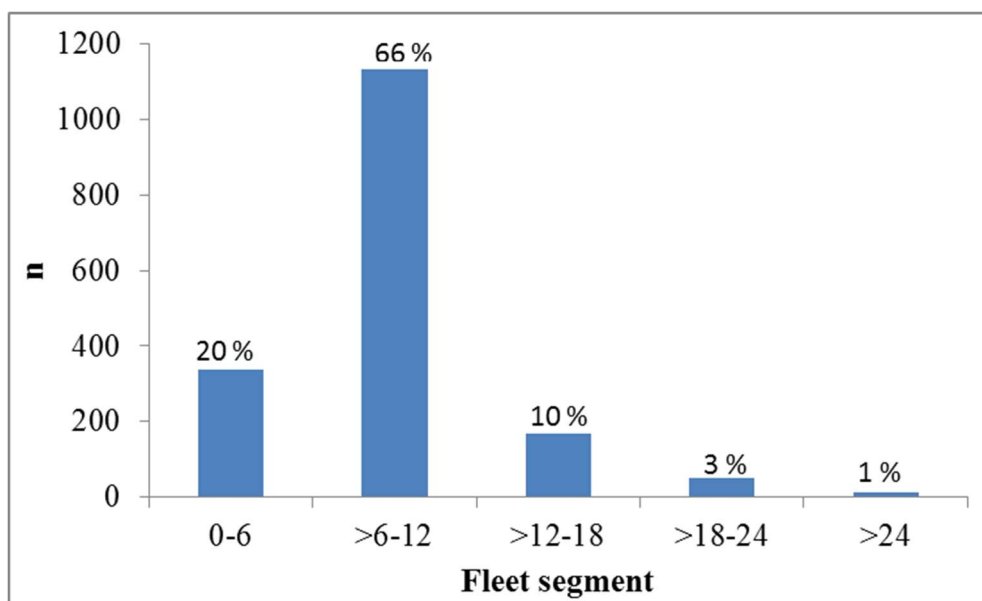


Figure 1. Fishing fleet segments of the Pelagic Sanctuary.

More in details the professional fishing fleets distributed along the Pelagos area were divided in 14 maritime districts (Table 1) respectively:

- 10 in Italy: 4 in the Liguria region (Imperia – IM, Savona –SV, Genoa – GE, La Speiza – SP), 4 in Tuscany (Marina di Carrara, Viareggio, Leghorn, Porto Ferraiio) and 2 in Sardinia (Porto Torres, La Maddalena)

- 4 in France: 2 in Corse (Bastia and Ajaccio) and 2 along the south French coast (Toulon and Nice);
- no data are reported in the Fleet Register about fishing vessels in Monaco, given that it is not a EU country, but from local knowledge there are two boats (<12 m LOA), belonging only to one fisherman.

Leghorn fleet (n= 343) represents the main district in terms of number of vessels, followed by Genoa (n=180) and Toulon (n=161). The district with the largest fishing vessels is Porto Ferrario (mean value 10.6 m LOA) followed by Imperia (mean value 9.9 m LOA) and La Spezia (mean value 9.7 m LOA) (Table 1; Figure 1). The fishing capacity indexes ratio (GT vs kW) is characterized by small vessels with high engine power in Corse and confirm the presence of the largest vessels in Porto Ferrario and La Spezia. Instead, Marina di Carrara, Nice and Savona represent the marine district with the lowest fishing capacity.

**Table 1. Mean and absolute values, by maritime district, of the main fishing capacity indicators of the professional fishing fleet by maritime district: length overall (LOA), gross tonnage (GT), engine power (kW).**

<b>Nation</b>	<b>Region</b>	<b>Number of vessels</b>	<b>LOA mean value</b>	<b>GT total</b>	<b>GT mean value</b>	<b>kW total</b>	<b>kW mean value</b>
<b>FRANCE</b>		<b>422</b>	<b>7.8</b>	<b>1,588.4</b>	<b>3.8</b>	<b>38,009.0</b>	<b>90.1</b>
	<i>Corse</i>	<i>173</i>	<i>8.2</i>	<i>859.7</i>	<i>5.0</i>	<i>20,229.0</i>	<i>116.9</i>
	Ajaccio	113	8.0	582.2	5.2	13,044.0	115.4
	Bastia	60	8.5	277.5	4.6	7,185.0	119.8
	<i>French coast</i>	<i>249</i>	<i>7.5</i>	<i>728.7</i>	<i>2.9</i>	<i>17,780.0</i>	<i>71.4</i>
	Toulon	161	7.7	517.6	3.2	12,061.0	74.9
	Nice	88	7.1	211.1	2.4	5,719.0	65.0
<b>ITALY</b>		<b>1,282</b>	<b>8.9</b>	<b>8,939.4</b>	<b>7.0</b>	<b>86,418.4</b>	<b>67.4</b>
	<i>Liguria</i>	<i>497</i>	<i>8.7</i>	<i>3,034.4</i>	<i>6.1</i>	<i>31,950.6</i>	<i>64.3</i>
	Genoa	180	8.7	1,089.4	6.1	11,377.0	63.2
	Savona	139	7.3	508.0	3.7	6,513.0	46.9
	Imperia	110	9.9	780.0	7.1	8,461.9	76.9
	La Spezia	68	9.7	657.0	9.7	5,598.7	82.3
	<i>Sardinia</i>	<i>202</i>	<i>9.2</i>	<i>1,265.0</i>	<i>6.3</i>	<i>16,822.0</i>	<i>83.3</i>
	Porto Torres	140	9.5	1000.0	7.1	12,626.8	90.2
	La Maddalena	62	8.5	265.0	4.3	4,195.3	67.7
	<i>Tuscany</i>	<i>583</i>	<i>8.9</i>	<i>4,640.0</i>	<i>8.0</i>	<i>37,645.8</i>	<i>64.6</i>
	Leghorn	343	8.9	2,724.0	7.9	22,487.8	65.6
	Viareggio	130	9.2	1,111.0	8.5	8,126.3	62.5
	Porto Ferrario	64	10.6	723.0	11.3	6,146.9	96.0
	Marina di Carrara	46	6.7	82.0	1.8	884.8	19.2
	<b>Total</b>	<b>1,704</b>	<b>8.6</b>	<b>10,527.8</b>	<b>6.2</b>	<b>12,4427.4</b>	<b>73.0</b>

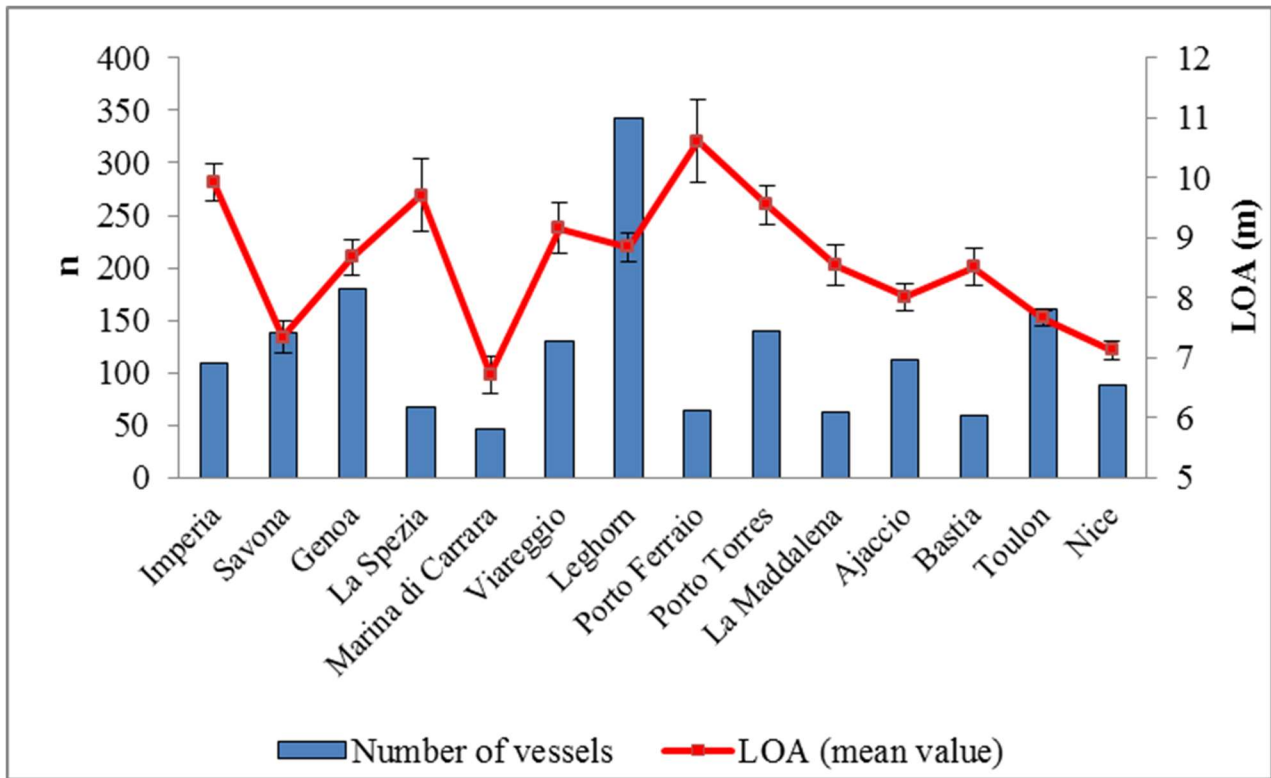


Figure 2. Number of vessels and mean length (LOA) of the professional fishing fleet by maritime district.

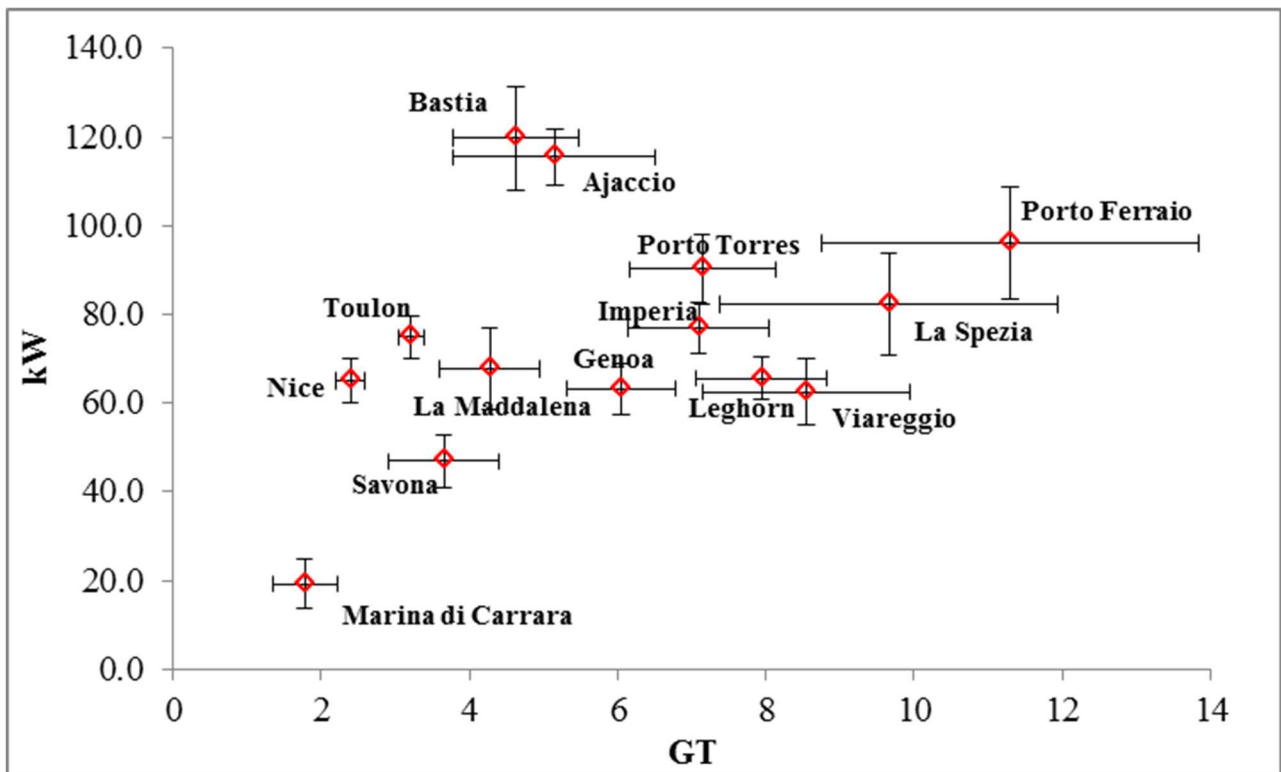


Figure 3. Mean gross tonnage (GT) and engine power (kW) (mean values) of the professional fishing fleet by maritime district in the Pelagos Sanctuary (bars indicate Standard Error).

The main fishing gear reported in the dataset is the set longline (LLS), followed by the purse seine (PS) and gillnets (GNS) (Table 2; Figure 5). Italy is the country with the largest numbers of LLS (n=698), PS (n=298) and OTB (n=208) declared, while in France the main gears resulted the nets: GNS (n=187) and GTR (n=158) (Table 2; Figure 4).

**Table 2. Main fishing gears per vessel reported in the EC fleet register.**

<b>Gear name</b>	<b>Gear code</b>	<b>Italy (Liguria, Tuscany, Sardinia)</b>	<b>France (French Coast-Corse)</b>
Towed dredges	DRB	-	9
Pots	FPO	-	2
Gillnets	GN	-	1
Encircling gillnets	GNC	-	1
Drift gillnets	GND	2	-
Fixed gillnets	GNF	-	1
Gillnets	GNS	73	187
Combined gillnets-trammel nets	GTN	-	9
Trammel nets	GTR	-	158
Handlines	LHP	1	1
Longlines	LL	-	6
Drifting longlines	LLD	-	5
Set longlines	LLS	698	29
Boat operated lift nets	LNB	-	2
Diving	MDV	-	5
Gear not know	NO	1	-
Bottom Otter Trawl	OTB	208	4
Midwater otter trawl	OTM	-	1
Purse seine	PS	298	1
Midwater Pair Trawls	PTM	1	-
<b>Total</b>		<b>1,282</b>	<b>422</b>

In terms of fishing capacity four of the main gears belong to the small scale fishery (LLS, GTR, GNS, PS) while the OTB segment is characterized by the highest values of the fishing fleet performing in the Pelagos Sanctuary (Figure 6-7).

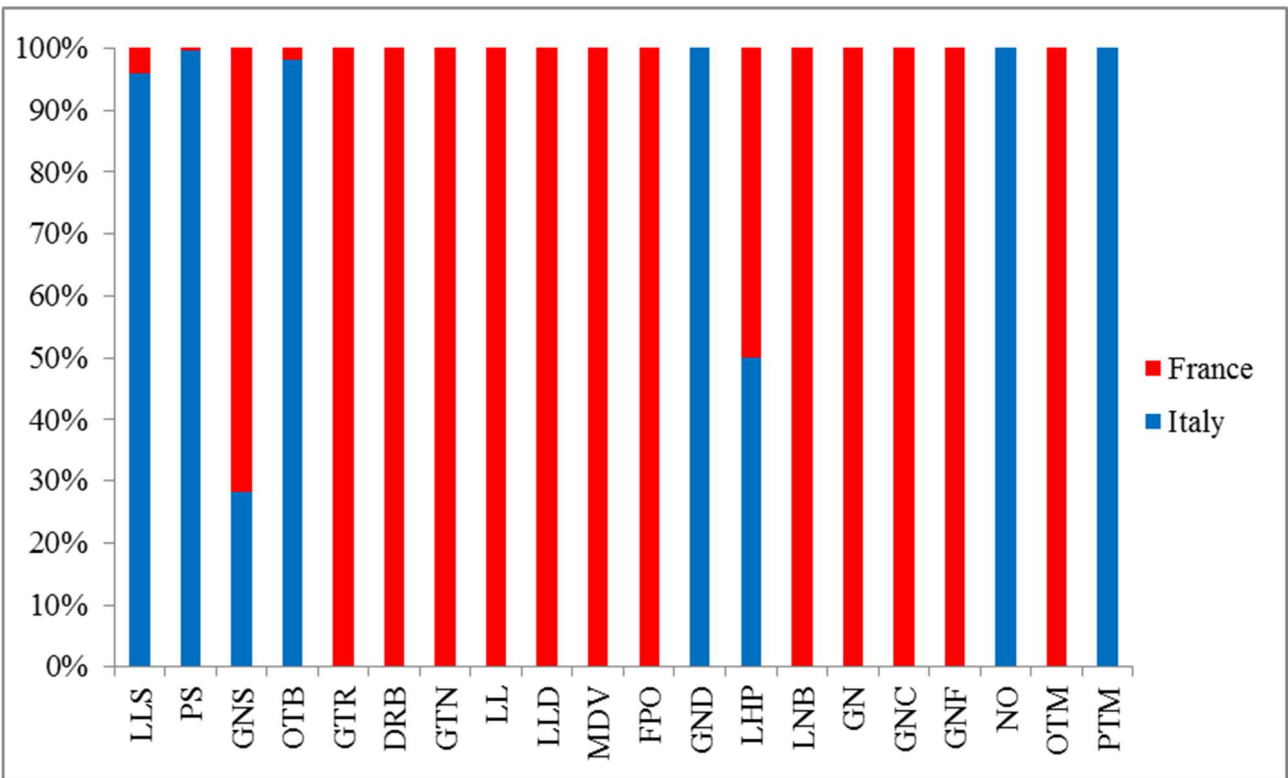
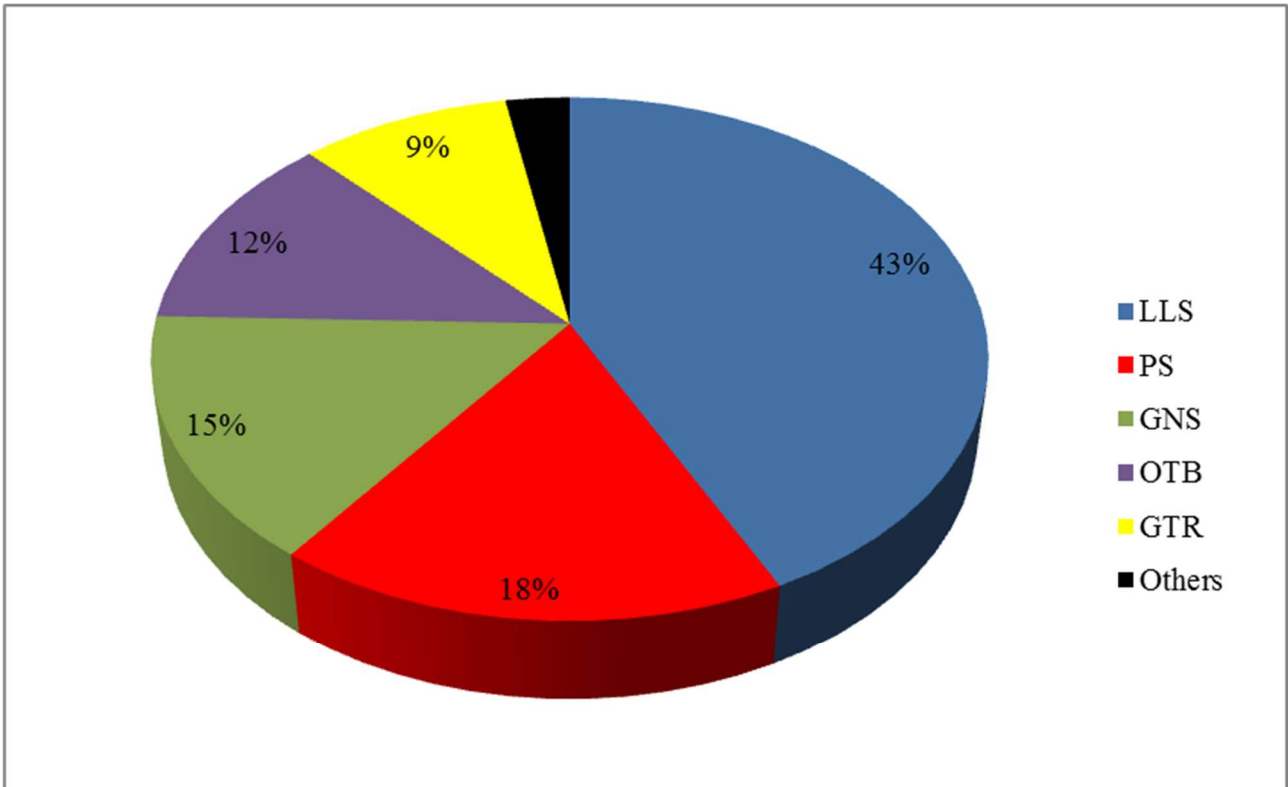
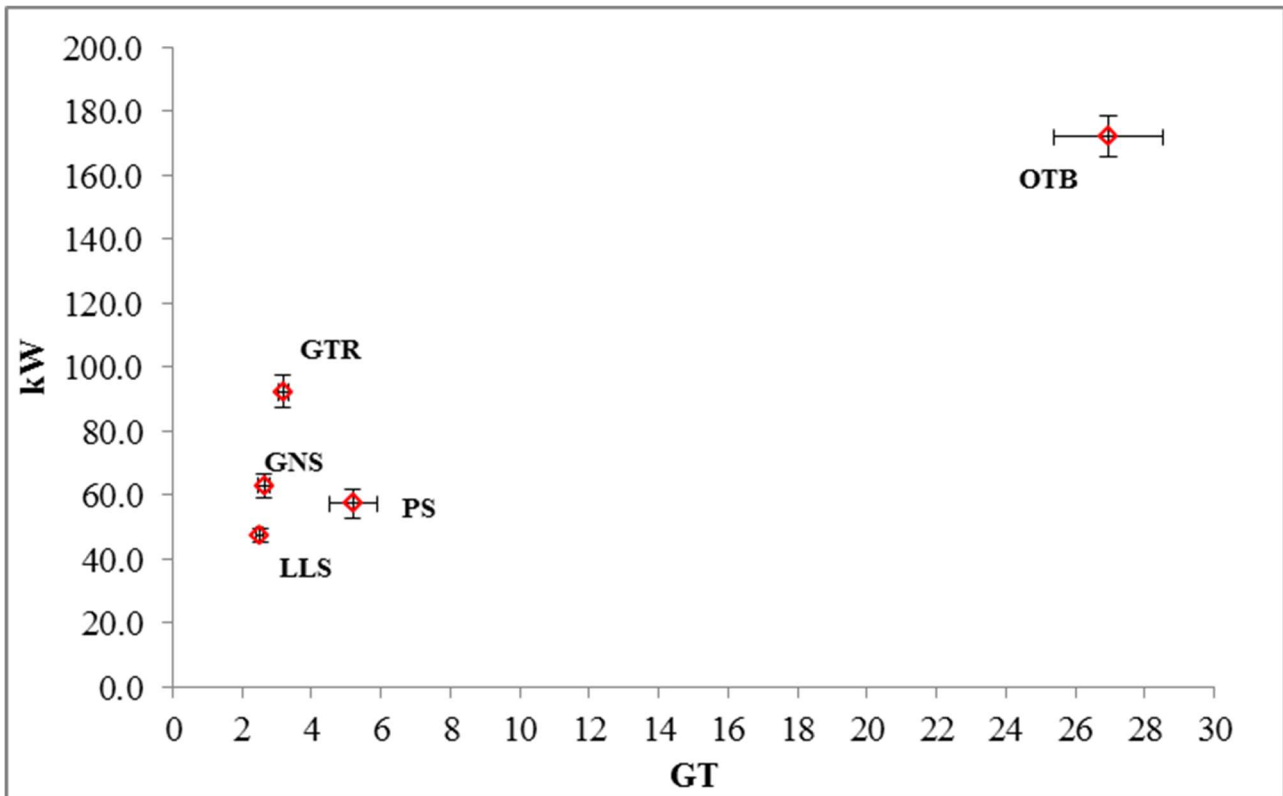


Figure 4. Main fishing gears reported in the Pelagos Sanctuary (up) and percentage of different gears in Italy and France (down).

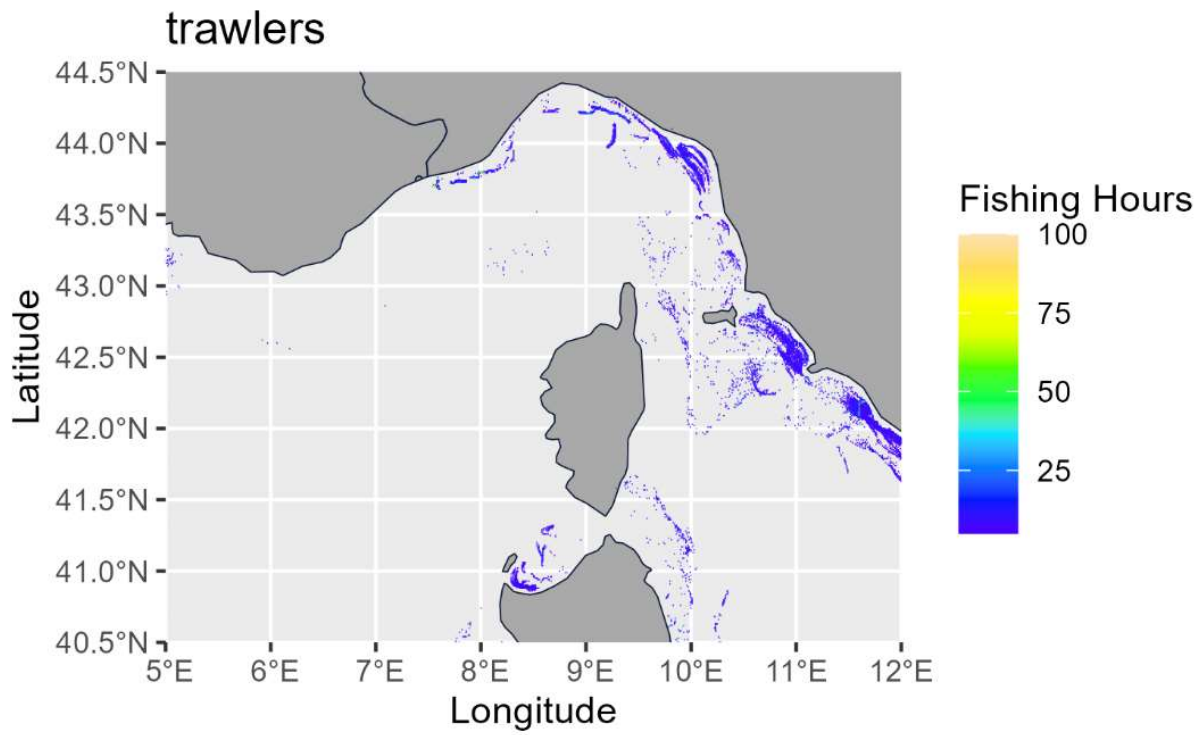


**Figure 5. Mean gross tonnage (GT) and engine power (kW) (mean values) of the professional fishing fleet by main gear types reported in the Pelagos Sanctuary (bars indicate Standard Error).**



**Figure 6. Different fishing vessels belonging to otter trawl (left) and small scale (right) fisheries.**

The spatial distribution of commercial fishing vessels grouped by gear was done using data downloaded from the Global Fishing Watch website (<https://globalfishingwatch.org/>). The most updated data, for the year 2020, were downloaded and plotted summing the daily fishing hours across the whole year (Fig. 7). Data were filtered including only recording between 1 and 100 hours in this first extraction, to remove single records reporting unique high amount of hours in a single cell, as these should be verified. Additionally, thanks to our local knowledge of the distribution of the fleets, it was highlighted that longliners are reported in the dataset under “trawling” gear, therefore additional verification of the data will be done. The only available data in the Pelagos Sanctuary from the Global Fishing Watch are for trawling gear.



**Figure 7** Distribution of trawlers effort (in fishing hours) in the Pelagos Sanctuary in 2020.



## Recreational fisheries

Marine recreational fisheries can be considered a common practice throughout the Mediterranean Sea and the Black Sea; however, still now, despite its ubiquity all over the coastline, it can be considered a data-poor sector and a realistic estimation of socio-economic impact catches and effort on fishery resources is very difficult to define and it can be variable depending on countries (Grati et al., 2021).

The main data source reported onward refers to technical reports and pilot studies (EU Data Collection Framework - DFC) based on qualitative interviews and questionnaires (Guillot et al., 2018, Grati et al., 2021b).

In France were estimated 2,750,000 of recreational fishers (Guillot et al., 2018); data derived by the report do not allow to estimate the percentage of fishers on the Mediterranean French coast (Provence-Alpes-Côte d'Azur).

More in general fishing on shore appears to be the most practiced method ( $\frac{3}{4}$  of the total numbers), the most common fishing gear is the fishing pole used by the 39% of fishers. The recreational fishing onboard (19% of total fishers) corresponds to an activity marked by the seasons starting in the spring with peaks during summer months. Regarding the catches there are three target species (fishes): the mackerel (*Scombrus spp*), the sea bass (*Dicentrarchus labrax*) and the sea bream (*Sparus aurata*). The last one represents the main species caught in the Mediterranean French coast area (Provence-Alpes-Côte d'Azur).

In Italy were estimated 2,206,459 recreational fishers (Source: Masaf, 2013) of which the 29% (n=644,323) in the three region of the Pelagos Sanctuary (Liguria, Toscana, Sardinia) (Figure 8).

As observed in France fishing on the coast is the most practiced activity (44%) followed by fishing onboard (36%) and diving (20%).

The first gear declared was the fishing pole (30%) followed by handline (19%), speargun/harpoons (12%) and longlines (10%) (Figure 9).

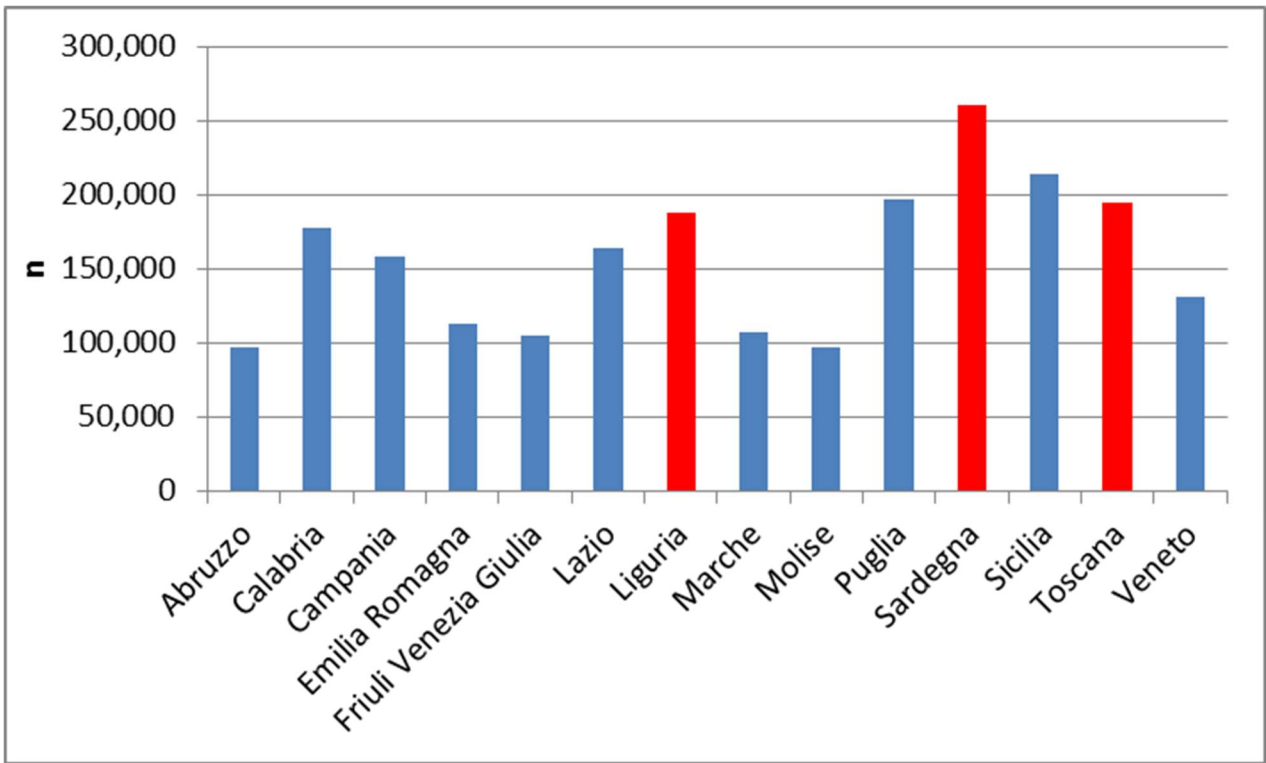


Figure 8. Recreational fisheries in Italy (Source: Masaf, 2013)

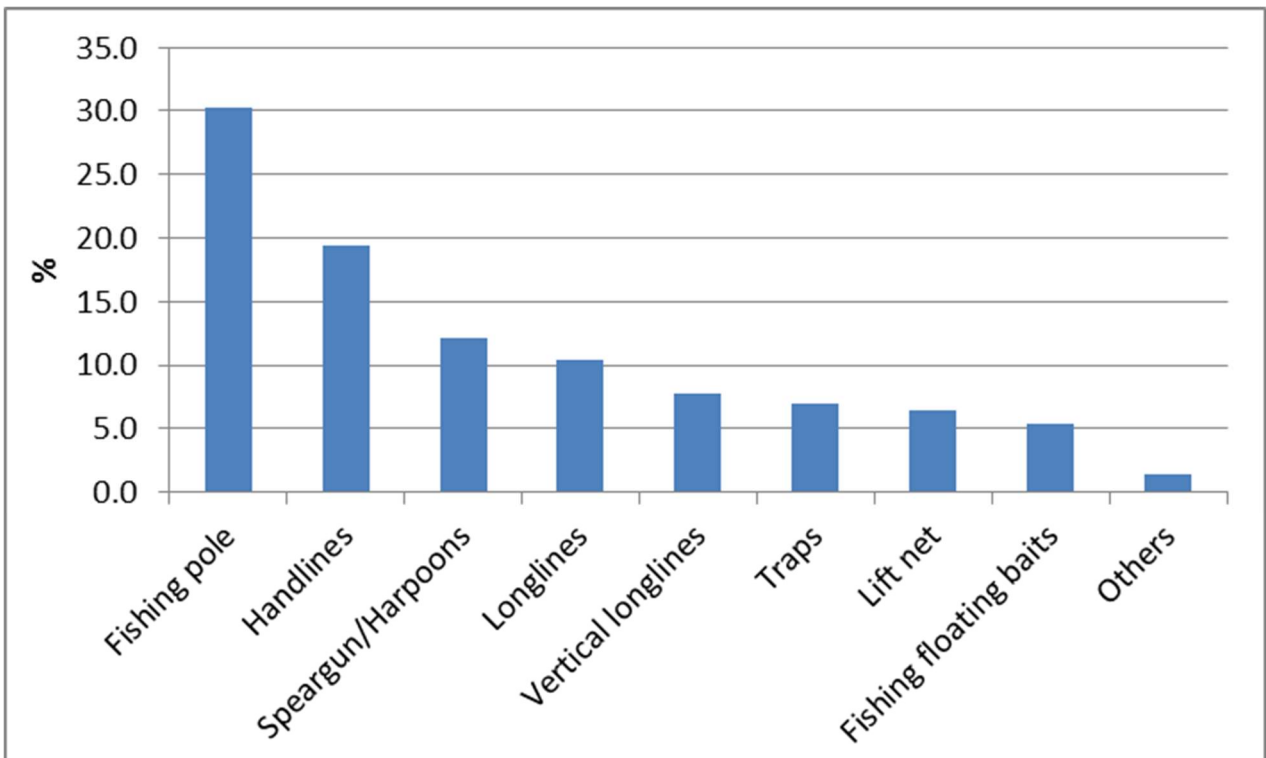


Figure 9. Recreational fishing gear most used in Italy (Source: Masaf, 2013).

## Stock assessment

Stock status of the fishing resource within the Pelagos Sanctuary derived by the assessment carried out in three GSA (7, 8, 9) by the STECF and GFCM Committee (STECF, 2024).

Data were resumed in table 3 and shows the most updated assessment for every target species with an indication of the safe biological limit; if the stock has F (Fishing mortality) below the values of F-MSY (Maximum Sustainable Yield) it is not overexploited.

**Table 3. Stock status for all stocks in the Pelagos Sanctuary: F ind is the value for F/FMSY ratio; F Status indicate if F is lower than F MSY (Y=Yes; N=No).**

Region	EcoRegion	Year	Stock	Common name (Species)	F ind	F status
FAO37	Western Med.	2023	COL_8	Red Coral ( <i>Corallium rubrum</i> )	-	*
FAO37	Western Med.	2022	ARA_6_7	Blue and red shrimp ( <i>Aristeus antennatus</i> )	3.81	N
FAO37	Western Med.	2020	ARA_9_10_11.1_11.2	Blue and red shrimp ( <i>Aristeus antennatus</i> )	4.60	N
FAO37	Western Med.	2022	ARS_8_9_10_11	Giant red shrimp ( <i>Aristaeomorpha foliacea</i> )	1.63	N
FAO37	Western Med.	2022	DPS_5_6_7	Deep-water rose shrimp ( <i>Parapenaeus longirostris</i> )	0.55	Y
FAO37	Western Med.	2022	DPS_8_9_10_11	Deep-water rose shrimp ( <i>Parapenaeus longirostris</i> )	1.29	N
FAO37	Western Med.	2022	HKE_8_9_10_11	European hake ( <i>Merluccius merluccius</i> )	2.00	N
FAO37	Western Med.	2022	MUT_7	Red mullet ( <i>Mullus barbatus</i> )	0.91	Y
FAO37	Western Med.	2022	MUT_7	Red mullet ( <i>Mullus barbatus</i> )	0.91	Y
FAO37	Western Med.	2022	MUT_9	Red mullet ( <i>Mullus barbatus</i> )	0.82	Y
FAO37	Western Med.	2022	NEP_9	Norway lobster ( <i>Nephrops norvegicus</i> )	1.13	N
FAO37	Western Med.	2022	PIL_7	Sardine ( <i>Sardina pilchardus</i> )	0.00	Y
FAO37	Western Med.	2021	ANE_7	European anchovy ( <i>Engraulis encrasicolus</i> )	0.02	Y
FAO37	Western Med.	2021	ANE_9	European anchovy ( <i>Engraulis encrasicolus</i> )	0.40	Y
FAO37	Western Med.	2021	PIL_9	Sardine ( <i>Sardina pilchardus</i> )	0.13	Y

\* Overexploited

## References

- Grati, F., Carlson, A., Carpentieri, P. & Cerri, J. 2021a. Handbook for data collection on recreational fisheries in the Mediterranean and the Black Sea. FAO Fisheries and Aquaculture Technical Paper No. 669. Rome, FAO. <https://doi.org/10.4060/cb5403en>
- Grati F., Koutrakis M., Mugerza E., Strehlow H.V., 2021b. Review of pilot studies under EU-MAP 2017-2019 (2020-2021): Relative share of catches of recreational fisheries compared to commercial fisheries.
- Guillot C., Nouvel G., Boria F., Stefenel C., 2018. Étude sur l'évaluation de l'activité de pêche de loisirs en France métropolitaine (dont la Corse). Enquête de cadrage – Novembre/Décembre 2017. Pêche et Aquaculture - Les études de FranceAgriMer.
- Lucchetti, A., Petetta, A., Bdioui, M., Gökçe, G., Saber, M., Sacchi, J., Özbilgin, H., Carlson, A. & Carpentieri, P. 2023. Catalogue of fishing gear in the Mediterranean and Black Sea region. FAO Fisheries and Aquaculture Technical Paper No. 695. Rome, FAO. <https://doi.org/10.4060/cc7260en>
- STECF, 2024. Monitoring the Performance of the Common Fisheries Policy (STECF-Adhoc-24-01). Publication Office of the European Union, Luxembourg.

Genova, 05/04/2024

The scientific responsible of the contract

A handwritten signature in blue ink, appearing to read 'Fabio Perilli', is written over a faint, light blue circular stamp or watermark.