

# **Annual report on Italy's efforts during 2018 to achieve an enduring balance between fishing capacity and fishing opportunities**

(in accordance with Article 22 of Regulation (EU) No 1380/2013)

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## 1. Introduction

This report is prepared pursuant to Article 22 of Commission Regulation (EU) No 1380/2013 on the Common Fisheries Policy and assesses the balance between the fishing capacity of the Italian fleet and fishing opportunities for 2018.

The data used to calculate the indicators are from the National Data Collection Programme (DCR/DCF) updated to 2017. The reported assessments of the state of resources in the Italian GSAs were carried out by the GFCM, STECF and ICCAT working groups.

The report presents the annual capacity assessment of the national fleet, highlighting the potential structural overcapacity, as well as short and long-term profitability of each segment subject to *assessment*.

More specifically, the following are presented:

1. the report includes tuna catch data regarding the various segments of the relevant fleet, see Table B1;
2. as in the previous years and taking the provisions of the community guidelines into account<sup>1</sup>, with the aim of evaluating the exploitation of fish stocks by the different fleet segments, we used the SHI (Sustainable Harvest Indicator) index calculated based on the F/FMSY ratio. With regard to economic indicators, we continued to use RoFTA (Return of Fixed Tangible Assets) and the CR/BER ratio (Current revenue/Break-Even Revenue), in addition to the activity and usage indicators, IVI (Inactive Vessel Indicator) and VUI (Vessel Use Indicator);
3. the annual calculation of the SHI index was carried out considering all current fishing mortality values (F<sub>c</sub>) and the related available FMSY, for all stocks analysed from 2015 to 2017 in the different Italian GSAs. Where the up-to-date F/FMSY ratio was not available, we considered the values from the previous years.

During 2018, the Italian administration prepared the scientific document that first led to the drafting (Directorial Decree of 30 January 2018) and subsequently to the amendment (Directorial Decree of 28 December 2018) of the National Management Plans related to fishing fleets for the capture of demersal (bottom fishing) resources in the context of: GSA 9 (Ligurian Sea and Central-Northern Tyrrhenian Sea), GSA 10 (Southern and Central Tyrrhenian Sea), GSA 11 (Sardinia), GSA 16 (Strait of Sicily), GSA 17 (Northern and Central Adriatic Sea), GSA 18 (Southern Adriatic Sea) and GSA 19 (Western Ionian Sea).

When drawing up the plans, the entirety of resources was considered, consisting of the target species which represented the most important part of landings in terms of volume and value, about which assessments were available regarding the state of exploitation, and the by-catch species which were responsible for up to 75 % of landings of demersal fishing in the various GSAs.

The general objective of these Management Plans was the recovery of stocks within the safe biological limits by 2010 in accordance with Regulation (EU) No 1380/2013.

The Italian administration, as set out in the action plan presented last year, has fully implemented the permanent cessation plan of 2016 (Ministerial Decree of 29 September 2016, Official Journal No 268 of 16 November 2016).

The impact on the state of the stocks will be undoubtedly positive because the actual reduction achieved with the scrapping plan was 8 % in almost all segments compared to the estimate shown in last year's report. This was even exceeded significantly in several cases, reaching the maximum value of 19 % in the 18 ≤ LOA < 24 m bottom trawling segment of GSA 10.

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<sup>1</sup> COM (2014) 545 final. Communication from the Commission to the European Parliament and the Council. Guidelines for the analysis of the balance between fishing capacity and fishing opportunities according to Art. 22 of Regulation (EU) No 1380/2013 of the European Parliament and the Council on the Common Fisheries Policy.

## A.1 Description of the fishing fleet

The Italian fishing fleet entered in the Fisheries Licence Register as at 31 December 2018 amounted to 12 032 vessels. The gross registered tonnage expressed in GT amounted to 146 134 GT while engine power was 930 235 kW. Due to the complete implementation of the permanent cessation plan, a fleet capacity decrease was recorded in 2018, both in terms of GT and engine power. Compared with 2017, it emerges that the number of vessels decreased by 1.88 %, GT fell by 7.00 % while engine power declined by 5.37 % (Table 1).

*Table 1 – Fishing fleet entered in the Fisheries Licence Register - 2017-2018*

Year	Vessels	GT	kW
2017	12 263	157 143	983 115
2018	12 032	146 134	930 235
<b>Change %</b>	<b>-1.88 %</b>	<b>-7.00 %</b>	<b>-5.37 %</b>

The situation regarding the fleet operating outside the Mediterranean is exactly the same as in the last year, it consists of eight trawling vessels operating in the FAO 34\_3 (Atlantic, East Central) and one purse-seining boat operating in the 51\_7 area (Indian Ocean, West). GT and kW data of these nine vessels obviously remains unchanged, standing at 6 236 GT and 13 064 kW.

In 2018, the Mediterranean fleet consisted of 12 023 vessels, of 139 898 GT and 917 171 kW (Table 2).

*Table 2 - Fishing fleet operating in the Mediterranean - 2017-2018*

Year	Vessels	GT	kW
2017	12 254	150 907	970 051
2018	12 023	139 898	917 171
<b>Change %</b>	<b>-1.88 %</b>	<b>-7.30 %</b>	<b>-5.45 %</b>

It can be seen from the above tables that the reduction of the Italian fleet recorded during 2018 only concerned the vessels operating in the Mediterranean.

## A.2 Description of the fishing fleets in relation to fisheries.

During 2018, the subdivision of the fishing fleet by fishing methods<sup>2</sup> confirms the structure registered in the previous years. With 8 496 vessels, small-scale fishing (PGP) represents by far the most important segment in terms of the number of vessels, equivalent to 70.6 % of the total fleet, their weight is significantly lower in dimensional terms, standing at 13.2 % of GT and 28.8 % of engine power.

The fleet operating with trawled gear (DTS and TBB) with 2 131 vessels (17.7 % of the total national fleet) is dominant in terms of size, representing 58.7 % of GT and 46.3 % of engine power.

The segment of hydraulic dredgers (DRB) consists of 712 productive vessels, equivalent to 5.9 % of the national fleet; 6.4 % of the tonnage and 8.2 % of total engine power.

The purse-seining (PS) segment which includes the boats authorised for the fishing of bluefin tuna, consists of 328 vessels and represents a considerable share of the total tonnage of the national fleet (7.7 %).

The group of vessels using longline as their main method consists of 234 vessels, approximately 2 % of the national fleet and representing slightly more than 4 % of tonnage and engine power.

Lastly, the fleet equipped with pair-trawling (TM) gear represents 1 % of vessels and 5.7 % of the total Italian GT.

Similar to the previous year, the fleet operating outside the Mediterranean consists of 9 vessels, eight equipped with trawling and one with purse-seining gear, representing 6 236 GT and 13 064 kW engine power in total (Table 3).

*Table 3 Fleet by fishing method - year 2018*

Fishing method	Vessels	GT	KW	Vessels %	GT %	kW %
Bottom trawling and rapido trawling (DTS and TBB)	2 127	85 777	430 013	17.7	58.7	46.2
Hydraulic dredgers (DRB)	705	9 317	76 386	5.9	6.4	8.2
Pair trawling (TM)	122	8 391	40 659	1.0	5.7	4.4
Purse seining (PS)	328	11 183	58 177	2.7	7.7	6.3
Longliners (HOK)	234	5 926	43 727	1.9	4.1	4.7
Small-scale fishing (PGP)	8 507	19 304	268 211	70.7	13.2	28.8
<b>Mediterranean fleet</b>	<b>12 023</b>	<b>139 898</b>	<b>917 171</b>	<b>99.9</b>	<b>95.7</b>	<b>98.6</b>
Bottom trawling (DTS)	8	4 099	9 374	0.1	2.8	1.0
Purse seining (PS)	1	2 137	3 690	0.0	1.5	0.4
<b>Distant-water fleet</b>	<b>9</b>	<b>6 236</b>	<b>13 064</b>	<b>0.1</b>	<b>4.3</b>	<b>1.4</b>
<b>ITALY</b>	<b>12 032</b>	<b>146 134</b>	<b>930 235</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

With reference to the geographical distribution by GSAs, it should be noted that most of the Italian fleet is concentrated in GSA 17 (Northern Adriatic) with slightly less than 3 000 vessels. Indeed, the fleet based in this area, which covers the coastal zone from Molise to Friuli-Venezia Giulia with an extension of over 700 km, constitutes a historical nucleus of the Italian fisheries sector where all possible fishing methods can be found. The number of vessels in GSA 17 corresponds to 24.5 % of the total Italian fleet, in dimensional terms it represents 30 % of GT and engine power. In terms of the number of vessels, the Northern Adriatic area is followed by the fleet operating in the Southern and Central Tyrrhenian Sea (GSA 10) which includes the regional areas of Campania, the Tyrrhenian coast of Calabria and Northern Sicily; this fleet comprises 2 521 vessels which represents 21 % of the total fleet, their share in terms of size is

<sup>2</sup> In this report, the fleet is segmented on the basis of the prevalent fishing method as established in Council Regulation (EC) No 199/2008 establishing a Community framework for the collection and management of the data needed to conduct the Common Fisheries Policy (CFP) and Commission Regulation (EC) No 26/2004 of 30 December 2003 on the Community fishing fleet register, Annex I "Definition of the data and description of a record".

12.5 % of GT and 14.4 % of engine power.

Regarding the number of vessels, the list continues with GSA 9, GSA 19 and GSA 11; the percentage shares of these fleets are between 13.6 % and 11.2 % of the national total, while in terms of GT, they are between 9.7 % and 7.1 %.

The share of the fleet operating along the Southern coast of Sicily (GSA 16) with 1 131 vessels is lower than 10 % in terms of the number of vessels. However, this low figure is compensated by the considerable average size of vessels which is 24.9 GT on average (more than double the national average which equals to 11.6 GT).

Finally, the fleet of GSA 18 which includes the Northern part of Apulia, has an 8.2 % share of the total number of vessels and slightly more than 9 % with regard to the capacity expressed in GT and useful engine power (Table 4).

**Table 4 Fleet by geographical sub-areas (GSAs) – 2018**

<b>GSA</b>	<b>Vessels</b>	<b>GT</b>	<b>KW</b>	<b>Vessels</b> %	<b>GT</b> %	<b>KW</b> %
GSA 9 - Ligurian Sea and Northern Tyrrhenian Sea	1 636	14 235	117 498	13.6	9.7	12.6
GSA 10 - Southern and Central Tyrrhenian Sea	2 521	18 293	134 132	21.0	12.5	14.4
GSA 11 - Sardinia	1 351	10 354	80 407	11.2	7.1	8.6
GSA 16 - Southern Sicily	1 131	28 190	122 966	9.4	19.3	13.2
GSA 17 — Northern Adriatic Sea	2 948	43 006	278 178	24.5	29.4	29.9
GSA 18 — Southern Adriatic Sea	985	14 042	91 842	8.2	9.6	9.9
GSA 19 - Western Ionian Sea	1 451	11 778	92 149	12.1	8.1	9.9
<b>Mediterranean fleet</b>	<b>12 023</b>	<b>139 898</b>	<b>917 171</b>	<b>99.9</b>	<b>95.7</b>	<b>98.6</b>
Distant-water fleet	9	6 236	13 064	0.1	4.3	1.4
<b>ITALY</b>	<b>12 032</b>	<b>146 134</b>	<b>930 235</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

### **2018 production**

Trawling, including *rapido* trawling, represented the main production segment in the Italian fishing fleet in 2018 as well. Landings in tonnes covered 40 % of the total national production. The revenue generated by the catch, which mainly consisted of species of high commercial value, particularly red shrimp and Norway lobster whose price is higher than EUR 20/kg, was 61 % of the total turnover.

With 21 % of total national landings, pair trawling was the second largest segment in terms of tonnage. However, the lower value of target species, especially small pelagic fish, determined a relatively smaller economic return, 6 % of the total revenue from landings.

Compared to an overall 14 % of landings, fishing vessels operating with passive gear recorded around 20 % of total revenues. Therefore, in economic terms, the value generated by this segment is second only to the trawling segment which is due to the economic value of target species.

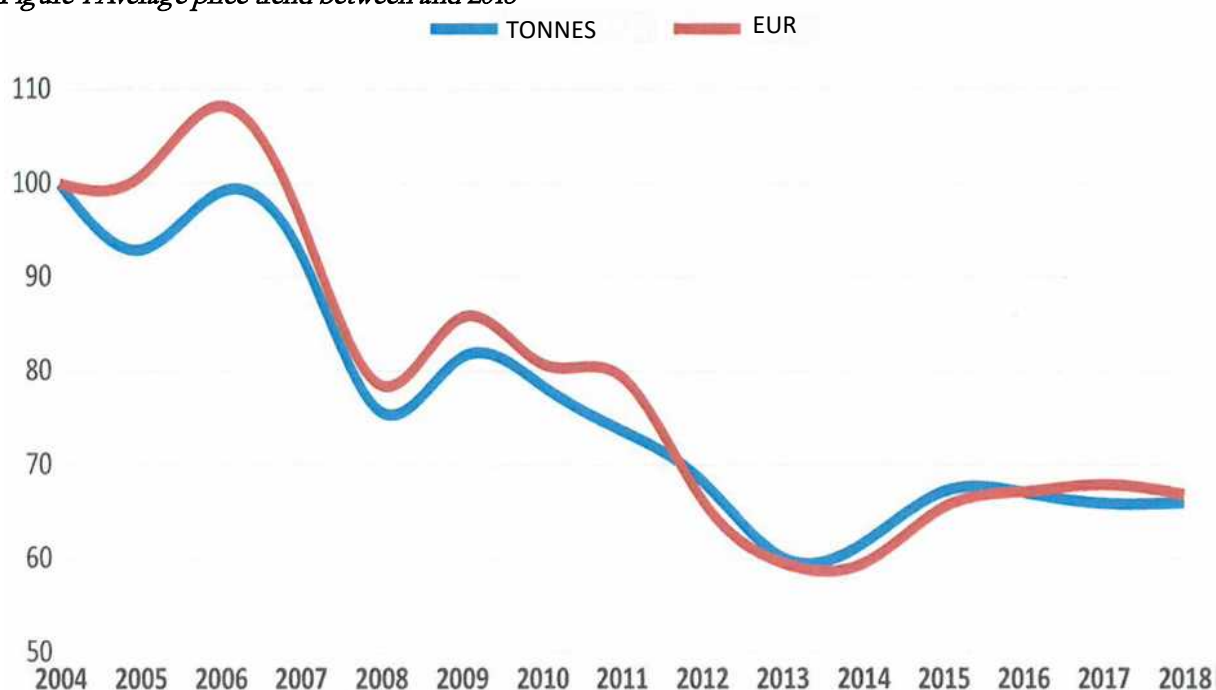
Finally, vessels operating with purse-seining nets generated a landing volume of slightly lower than 14 % and an economic value of 5 % of the total figures.

If we examine the geographical distribution of production, the Northern Adriatic and the Strait of Sicily have a dominant role, as mentioned with regard to the fleet, too. 43 % of landings are concentrated in the first area, compared to an economic value of 31.5 % of the total national value. In Southern Sicily, the volume of landings amounts to 11.8 %, while revenues represent 17 % of total figures. The Adriatic zone of Apulia (GSA 18) has a significant role in the recorded production where the volume of landings is even higher than in Southern Sicily. However, the high proportion of pelagic species in the composition of the catch reduces their economic value, so the turnover stands at 13.5 % of the total (Table B2).

The composition of the catch is structurally concentrated on anchovies and sardines which together represented more than 33 % of Italian landings in 2018. Anchovies saw a decline of 7 % compared to 2017, representing 19.4 % of the overall catch. The volume of sardine landings increased by 15 % compared to 2017, with a share of 14 % in total national landings. Landings of white shrimp increased by 7 % compared to 2017 while hake saw a decline of 4 %. Looking at the economic value of landings of the first twenty species in consideration, anchovies retained the first place with a value of 67.5 million EUR and a share of 7.4 %. Cuttlefish comes second with 65.4 million EUR which equals to 7.2 % of the total revenue, followed by white shrimp with 57, hake with 53.7 and red shrimp with 53.6 million EUR.

If compared with 2017, it can be identified that the economic value of cuttlefish increased by 19 %, white shrimp is stable and the other main, above mentioned species saw a decline, ranging from 11 % for anchovies to 14 % for hake and 15 % for red shrimp. This trend underlies a negative performance of the commercial stage and the unit price of the product fell indeed by almost 2 percentage points compared to 2017.

*Figure 1 Average price trend between and 2018*

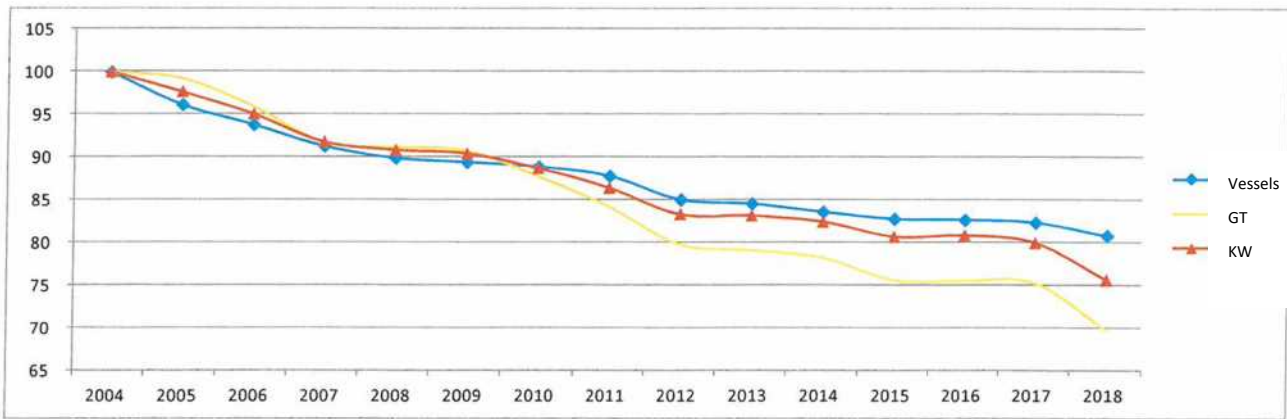


### A.3 Developments during the previous year

The fleet operating in the Mediterranean, listed in the Fisheries Licence Register as of 31 December 2018, amounted to 12 023 fishing vessels for a gross registered tonnage (GT) of 139 898 GT and an engine power of 917 171 kW. The number of vessels operating outside the Mediterranean remains the same as in 2017: 9 vessel with a total of 6 236 GT and 13 064 kW.

Taking 2004 as a reference year basis, a clear and steady decline can be observed in the size of the fleet, from 14 873 in 2004 to 12 032 in 2018. This is a total decline of approximately 2 800 fishing vessels and 60 000 GT. This decline of 19 % in the number of vessels, 30 % in GT and 24 % in engine power mainly affected above-average sized fishing vessels, as shown by the average GT which decreased from 13.5 to 11.6. The process of sharp reduction in production structure is due to the measures set out by the Common Fisheries Policy which supported and encouraged the spontaneous exit of fishing vessels through specific measures for permanent cessation.

Figure 2 Trends of the fishing fleet between 2004 and 2018



As anticipated, the decline in the number of vessels has continued with a very slight intensity in recent years. Between 2004 and 2012, a decline of 15 percentage points was recorded. From 2013, the trend became more moderate and slightly more than 4 % of vessels have been withdrawn from the fleet.

Table 5 – Fleet trend in GT and kW by fishing method – 2017/2018 comparison

Fishing method	Vessels			GT			KW		
	2017	2018	%	2017	2018	%	2017	2018	%
Bottom trawling and <i>rapido</i> trawling (DTS and TBB)	2 251	2 127	-5.5	93 569	85 777	-8.3	464 811	430 013	7.5
Hydraulic dredgers (DRB)	705	705	0.0	9 277	9 317	0.4	76 382	76 386	0.0
Pair trawling (TM)	123	122	-0.8	8 773	8 391	4.4	44 272	40 659	8.2
Purse seining (PS)	332	328	-1.2	13 264	11 183	15.7	63 120	58 177	7.8
Longliners (HOK)	181	234	29.	4 992	5 926	18.7	34 229	43 727	27.7
Small-scale fishing (PGP)	8 662	8 507	-1.8	21 032	19 304	-8.2	287 237	268 211	-
<b>Mediterranean fleet</b>	<b>12 254</b>	<b>12 023</b>	<b>-1.9</b>	<b>150 907</b>	<b>139 898</b>	<b>-7.3</b>	<b>970 051</b>	<b>917 171</b>	<b>-5.5</b>
<b>Distant-water fleet</b>	<b>9</b>	<b>9</b>	<b>0.0</b>	<b>6 236</b>	<b>6 236</b>	<b>0.0</b>	<b>13 064</b>	<b>13 064</b>	<b>0.0</b>
<b>ITALY</b>	<b>12 263</b>	<b>12 032</b>	<b>-1.9</b>	<b>157 143</b>	<b>146 134</b>	<b>-7.0</b>	<b>983 115</b>	<b>930 235</b>	<b>-5.4</b>

In terms of activity and production, a slight, 1.6 % reduction can be seen in the overall activity in terms

of days at sea when compared with 2017. However, the average value remains unchanged compared to 2017, being 114 days for each fishing vessel. Among the different fishing methods, dredgers and longliners showed an increase in total activity, trawling remained stable while all other segments showed a reduction.

As for average activity by vessels, trawling increased from 148 to 157 fishing days and dredgers from 56 to 62 while there was a slight reduction in other segments.

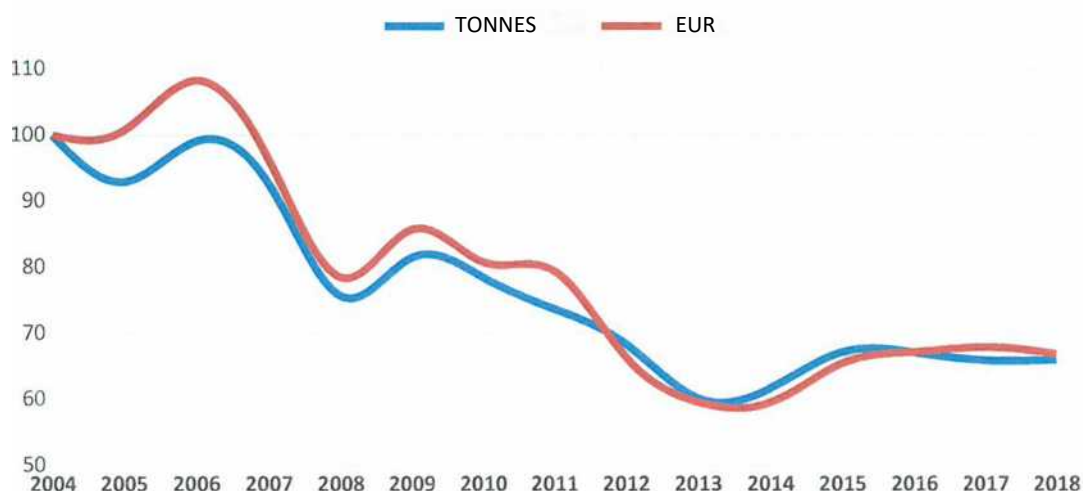
In economic terms, trawling showed an increase of 11.4 %, similar to pair trawlers which increased their revenue by almost 20 percentage points while hydraulic dredgers by 27 %. On the negative side, the changes affected the purse-seining fleet (-16 %), longliners (-26 %) and small-scale fishing (-19 %).

**Table 7 – Production trend in economic value by fishing method**

Fishing method	EUR (000)			Change %
	2015	2016	2017	
Bottom trawling and <i>rapido</i> trawling (DTS and TBB)	463 489	502 019	559 198	11.39
Hydraulic dredgers (DRB)	46 993	32 968	41 959	27.27
Pair trawling (TM)	46 358	47 207	56 447	19.57
Purse seining (PS)	73 649	54 485	45 957	-15.65
Mixed passive gear (PMP)*	4 022	-	-	-
Longliners (HOK)	24 715	28 849	21 246	-26.35
Small-scale fishing (PGP)	244 567	233 061	187 716	-19.46
<b>Total</b>	<b>903 794</b>	<b>898 589</b>	<b>912 523</b>	<b>1.55 %</b>

The trend of landings and revenues on a 2004 basis shows that after the decline experienced in 2013 and 2014, the trend has stabilised (Figure 3).

**Figure 3 Production trend between 2004 and 2018 (base year: 2004)**





**B. Impact on fishing capacity of fishing effort reduction schemes adopted under multiannual management or recovery plans or, if appropriate, under national schemes.**

The Italian administration, as set out in the action plan presented last year, has fully implemented the permanent cessation plan of 2016 (Ministerial Decree of 29 September 2016, Official Journal No 268 of 16 November 2016). The following table shows the summary of scrappings broken down by fishing method, GSA and length class. The required reduction percentage (8 %) was respected in almost all segments, it was even exceeded significantly in several cases, reaching the maximum value of 19 % in the 18 <=LOA<24 m bottom trawling segment of GSA 10.

*Table 8 Summary table of the permanent cessation plan of Ministerial Decree of 29 September 2016*

		<i>Purse seining and pair-trawling</i>	No of vessels	GT	GT to be withdrawn	GT withdrawn	% of initial GT
GSA 17 GSA 18	LOA <12 total	194	588	53	17	3	
	12<=LOA <18 Total	218	4 348	391	181	4	
	18<=LOA<24 total	107	7 365	663	685	9	
	24<=LOA<40 total	101	11 290	1 016	1 222	11	
				<b>2 123</b>	<b>2 105</b>		

		<i>Bottom trawling</i>	No of vessels	GT	GT to be withdrawn	GT withdrawn	% of initial GT
GSA 9	18<=LOA<24 total	124	6 507	521	775	12	
	24<=LOA<40 total	16	1 522	122	204	13	
GSA 10	LOA <12 total	28	135	11		0	
	12<=LOA < 18 Total	171	3 045	244	399	13	
	18<=LOA<24 total	82	4 654	372	889	19	
GSA 11	24<=LOA<40 total	26	4 069	326	342	8	
GSA 16	12<=LOA < 18 Total	134	2 738	219	301	11	
	18<=LOA<24 total	148	8 840	707	860	10	
	24<=LOA<40 total	96	14 307	1 145	923	6	
GSA 17	LOA < 12 Total	193	1 131	90	46	4	
	12<=LOA < 18 Total	516	9 955	796	842	8	
	18<=LOA<24 total	214	14 986	1 199	1 523	10	
	24<=LOA<40 total	103	12 203	976	1 081	9	
GSA 10	LOA < 12 Total	56	401	32	37	9	

GSA 19	12<=LOA < 18 Total	192	3 136	251		335	11
	18<=LOA<24 total	24	1 266	101		163	13
This system in total				<b>7 112</b>		<b>8 720</b>	
Withdrawn vessels in total		<b>202</b>					

### C. Information on compliance with the entry/exit regime and the reference level

The evaluation of compliance with the entry/exit regime and the reference level as of 31 December 2018 has been carried out by considering the situation of the consolidated fleet in mid-January 2019. In accordance with Article 22(7) of Regulation (EU) No 1380/2013, the fishing capacity of the Italian fleet has never exceeded the limits established in Annex II of this community regulation.

*Table 9 - Table calculating compliance with the entry/exit rules and the reference level*

		GT	Kw
Reference level of Regulation No 1380/2013	GT-kW	<b>173 506</b>	<b>1 070 028</b>
Aided exits 2014-2018	GT <sub>a</sub> -kW <sub>a</sub>	17 358	85 042
Ceiling as at 31 December 2018	GT-kW	156 148	984 986
Situation as at 31 December 2018	GT-kW	<b>146 134</b>	<b>930 235</b>
<b>Difference</b>		<b>10 014</b>	<b>54 751</b>

The results in the above table show an available capacity of approximately 10 000 GT and 55 000 kW as of 31 December 2018.

### D. Summary report on the weaknesses and strengths of the fleet management system

In continuation of the actions already undertaken to protect some stocks particularly at risk, taking previous experience and the gathered data into account, the Italian administration has issued measures aimed at reducing fishing effort by the reduction of fishing activity with space- and time-related cessations and by establishing lists of vessels which are expressly authorised to carry out specific fishing activities.

In this regard, the main regulatory measures are presented below:

- Directorial Decree of 30 January 2018 - Implementation of national Management plans relating to fishing fleets for catching demersal resources within: GSA 9, GSA 10, GSA 11, GSA 16, GSA 17 and 18, GSA 19;
- Ministerial Decree of 23 February 2018 - Technical measures for fishing swordfish in the Mediterranean
- Directorial Decree of 30 March 2018 - List of vessels authorised to catch small pelagic fish in GSA 17 and 18;

- Directorial Decree of 20 April 2018 - Breakdown of national quota for the catch of bluefin tuna for the three-year period of 2018-2020;
- Ministerial Decree of 20 July 2018 - Fishing Ban Decree in 2018 for the vessels authorised to perform fishing activities with trawling method;
- Directorial Decree 14 August 2018 - Fishing ban for small pelagic fish, anchovies only;
- Directorial Decree of 12 September 2018 - Implementation of the national management plan for fishing for transparent goby (*Aphia minuta*) in the maritime districts of Tuscany and Liguria within GSA 9 by using boat seines by way of derogation from Article 9 (minimum mesh size) and from Article 13 (distance from the coast) of Regulation (EC) No 1967/2006;
- Directorial Decree of 2 October 2018 - Measures for small pelagic fishing, modification of fishing ban periods for sardines - year 2018
- Directorial Decree of 12 October 2018 - Registration procedure to the national list of vessels authorised to fish for common dolphinfish (*Coryphaena hippurus*) carried out with fish aggregating devices (“FAD”);
- Directorial Decree of 22 November 2018 - Mapping of fishing areas related to the national management plan for fishing for transparent goby (*Aphia minuta*) in the maritime districts of Tuscany and Liguria within GSA 9;
- Directorial Decree of 21 December /2018 - National provisions on the collection of red coral (*Corallium rubrum*);
- Directorial Decree of 28 December 2018 - Amendment of National Management plans relating to fishing fleets for catching demersal resources within GSA 9 — GSA 10 — GSA 11 — GSA 16 — GSA 17 and 18 – GSA 19.

## **E. Information on changes of the administrative procedures relevant to the management of the fleet**

No changes have been made to the administrative procedures over the past year.

## **F. Application of balance indicators**

In the following pages we set out a detailed examination of the proposed indicators by geographical sub area (GSA) with the aim of identifying the overall trends by fishing method and LOA class. The data used to calculate the indicators are from the National Data Collection Programme (DCR/DCF).

The choice of providing information by GSA reflects the need to ascertain the geographical differences in terms of economic and social performance and the overall status of the resources that reflect on the state of fisheries and on differing levels of fishing capacity.

### **F.1 Biological sustainability indicators**

In order to identify the fleet segments with overcapacity, we used the SHI (*Sustainable Harvest Indicator*) index. It is noted that owing to the lack of reference points based on biomass for most of the stocks fished by the Italian fleet, it was not possible to estimate SAR based on criterion “a” of the community guidelines. Stocks under criteria “b”, “c” and “d” of these guidelines always represent a small part of the catch by weight.

For the annual calculation of SHI, we used the F/FMSY ratios for all analysed stocks in various Italian GSAs since 2015. Details are shown in Table B4.

Where the estimate of the F/FMSY ratio has not been updated, the 2016 or 2015 values were assumed

to be constant for 2017 and for 2016 and 2017 respectively. For the selection of fleet segments that show imbalance, we considered the segments that show SHI indicator values above 1 and a threshold above 40 % in least in two years out of three in the 2015 — 2017 period.

From the 52 segments with a threshold above 40 %, 37 are in imbalance (Table 10). If we compare this result with the one observed in last year’s report, we can clearly see an increase in the number of segments in imbalance. This result, in fact, was determined by the fact that fleet segments with PERC\_LV below 40 % in some years were included in the previous report, therefore it does not represent a real, general deterioration in the state of resources.

*Table 10 - List of fleet segments showing SHI >1 for at least in two years out of three in the 2015-2017 period*

GSA	SYSTEM DI	VESSEL	2015		2016		2017	
			SHI_LV	PERC_LV(%)	SHI_LV	PERC_LV(%)	SHI_LV	PERC_LV(%)
9	DTS	VL1218	2.27	45.29	2.23	49.88	2.31	47.26
9	DTS	VL1824	2.00	41.21			1.98	51.37
9	DTS	VL2440	2.39	59.23	2.49	54.33	2.43	61.73
9	PS	VL1218	1.50	58.40	1.49	66.68	1.48	68.76
9	PS	VL1824	1.92	86.96	2.05	88.52	2.27	80.03
9	PS	VL2440	1.48	76.77	1.48	73.46		
10	DTS	VL0612	1.38	46.05	1.67	50.69		
10	DTS	VL1218	2.12	45.47	2.44	45.98	1.81	44.72
10	DTS	VL1824	1.49	44.06	1.59	42.68	1.35	49.12
11	DTS	VL2440			2.63	41.73	2.40	56.94
16	DTS	VL1218	2.64	49.99	2.68	46.41		
16	DTS	VL1824	2.96	53.21	3.04	53.07	3.25	49.87
16	HOK	VL1218	1.02	81.20	1.01	83.56	1.00	68.73
16	HOK	VL1824	1.00	100.00	1.01	100.00	1.02	89.08
17	DTS	VL0612	3.67	72.82	3.30	71.19	1.89	49.92
17	DTS	VL1218	2.99	62.23	2.70	59.49	2.55	58.97
17	DTS	VL1824	2.59	60.24	2.37	58.45	2.44	53.83
17	DTS	VL2440	2.32	51.44	2.21	61.94	2.24	53.55
17	PS	VL1218	2.08	79.74	1.82	82.79	2.16	63.61
17	PS	VL2440	2.07	99.59	2.15	96.91	2.19	97.65
17	PS	VL40XX	2.08	93.14	2.08	91.87	2.08	88.35
17	TBB	VL1218	1.50	47.01	1.21	49.46	0.86	67.45
17	TBB	VL1824	1.28	80.94	1.06	74.61	1.00	75.60
17	TBB	VL2440	1.55	64.23	1.44	59.61	0.86	66.78
17	TM	VL1218	2.09	93.40	1.68	88.40	1.68	91.14
17	TM	VL1824	1.32	97.16	1.06	98.98	1.24	98.02
17	TM	VL2440	1.47	97.02	1.77	99.66	1.87	86.45
18	DTS	VL0612	1.82	61.19	1.46	70.24	1.91	58.13
18	DTS	VL1218	2.14	59.14	1.83	60.57	1.62	55.51
18	DTS	VL1824	2.35	52.17	1.95	59.11	2.00	64.04
18	DTS	VL2440	2.45	69.71	2.49	72.86	2.41	76.46
18	HOK	VL1218	1.46	74.86	1.25	59.45	1.03	85.26
18	PS	VL2440	2.11	91.91	2.18	97.00	2.07	92.26
18	TM	VL2440	2.21	88.65	2.00	92.24	2.05	94.98
19	DTS	VL1218	6.08	71.77	3.39	70.39	3.90	64.55
19	DTS	VL1824	3.65	54.45	1.58	66.89	1.61	71.32
19	HOK	VL1218	1.79	41.28	2.26	54.20	2.64	75.08

## F.2 Economic indicators

Following the methodology proposed in the guidelines, two economic indicators have been calculated: RoFTA (long-term return) and the CR/BER ratio of current revenue to break-even revenue (short-term return).

### RoFTA

RoFTA is the return per unit (in percentage) on fixed tangible assets invested in the fisheries sector. RoFTA has been compared to the arithmetic mean of the long-term harmonised interest rate of the previous five years (2013-2017)<sup>3</sup>. A return on investment below zero and at the best zero-risk long-term interest rate implies long-term economic inefficiency that may indicate the existence of an imbalance. Table B5 shows the values of the indicator for all fleet segments by GSA; while in Table 11 below there is a list of fleet segments where the value of the indicator is lower than the Target Reference Point in 2017.

*Table 11 - List of fleet segments with a RoFTA value lower than the TRP in 2017*

GSA	Fishing method	Length class	ROFTA		
			2015	2016	2017
9	DRB	VL1218	-6 %	10 %	-22 %
9	DTS	VL2440	4 %	5 %	-13 %
9	PGP	VL1218	53 %	21 %	1 %
10	DRB	VL1218	-6 %	-2 %	-28 %
11	DTS	VL2440	-12 %	-3 %	-1 %
17	DTS	VL2440	-8 %	-9 %	-4 %
17	TBB	VL1824	8 %	13 %	0 %
18	DRB	VL1218	33 %	22 %	-22 %
18	DTS	VL1824	0 %	-2 %	0 %
18	DTS	VL2440	-2 %	-11 %	2 %
18	PGP	VL0612	-3 %	7 %	-2 %
19	PGP	VL1218	-1 %	7 %	-1 %

In 2017, out of a total of 79 fleet segments, 12 show an indicator value lower than the TRP; these include trawlers with a length class over 24 metres, with one exception being the vessels operating in GSA 16. With regard to passive gear, a negative performance can be identified for vessels of LOA > 12 metres in GSA 19 and in GSA 9 and for small-scale fishing vessels operating in GSA 18. *Rapido* trawlers also show a RoFTA lower than the TRP in 2017; the number of fishing days grew in this segment in 2017 which did not result in the increase of production which, on the contrary, slightly decreased compared to 2016; the increased fishing effort, on the other hand, led to an increase in production costs (in particular fuel costs) with negative effects on the profits of the segment.

Compared to 2016, longliners showed a substantial improvement of the economic performance represented by ROFTA. This trend directly correlates with production which increased both in quantity and value.

With the exception of these fleet segments, the trend recorded at a national level can be considered positive,

<sup>3</sup> ECB source: <http://www.ecb.int/stats/money/long/html/index.en.html>

with a substantial increase in revenues (+ 5.8 %), added value (+ 5 %) and gross profit (+ 16 %) on the level of the national fleet. These increases are linked to the increase in the value of catches and the reduction of labour costs, maintenance costs and other variable costs, while capital costs (depreciation and interest) remained stable. With regard to the reduction of labour costs, it should be noted that this is a highly diversified trend at the level of fleet segments. In more detail, labour costs increased for trawling vessels in line with the trend of revenues; on the contrary, in small-scale fishing where approximately 12 000 fishermen are employed (47 % of the national total), falling revenues has affected labour costs negatively which also decreased.

In 2017, the average production prices saw an increase of approximately 3 %; the stability of prices for some of the commercially most important species (hake, white shrimp, and Norway lobster) and the increase of prices for anchovies, red shrimp and swordfish had a positive effect on the profitability of certain fleet segments.

Another driving factor of the recovery of returns was the reduction of fishing effort; the total number of fishing days decreased by 11 % in the 2008-2017 period; the average number of days of activity per vessel was 114 in 2017, the lowest level since 2008.

With regard to fuel costs, the average fuel price of 0.52 EUR/litre dropped approximately by 32 % between 2008 and 2017 which resulted in a 39 % reduction of fuel costs incurred by a vessel on average in this period. The reduction of fishing effort and the stability of catch volumes resulted in the recovery of productivity. The catch per unit effort reached the highest level since 2008; the estimated value was 137 kg per days at sea in 2017, with a 4 % increase compared to 2016.

## CR/BER

Break-even revenue (BER) means the revenue needed to cover both fixed and variable costs, therefore making neither a loss nor a profit. Current revenue (CR) is the total operating revenue of the fleet segment, which consists of the profits from landings and non-fishing activities. The calculation of the ratio does not take account of the opportunity cost; the calculated indicator therefore provides an illustration of short-term financial viability.

Table B5 shows the values of the indicator for all fleet segments by GSA; while in Table 12 below there is a list of fleet segments that show an indicator value lower than 1 for the last available year.

*Table 12 - List of fleet segments with a CR/BER value of less than 1 in 2017*

GSA	Fishing method	Length class	CR/BER		
			2015	2016	2017
9	DRB	VL1218	0.88	1.36	0.27
9	DTS	VL2440	1.21	1.22	0.60
10	DRB	VL1218	0.86	1.00	0.01
17	DTS	VL2440	0.73	0.66	0.86
17	PGP	VL0006	2.17	1.98	0.68
18	DRB	VL1218	2.39	1.88	0.23
19	PGP	VL1218	1.02	1.37	0.99

In 2017, out of a total of 79 fleet segments, only 7 showed an indicator value lower than 1. None of the segments show negative CR/BER ratio. The indicator shows an improvement in relation to the previous two years. In 2015, 15 fleet segments had a value lower than 1; this dropped to 9 in 2016. The indicator expresses the short-term profitability of the fishing fleet; the general improvement already pointed out in 2016 continued in 2017 is largely related to the reduction of operating costs, in particular fuel costs and the increase of production value.

The segments showing unsatisfactory short-term profitability coincide with those with a Rofta value lower than the reference point, except for *rapido* trawlers and bottom trawlers.

### F.3 Vessel use indicators

For assessing the intensity of fleet use, the Guidelines for the balance indicators (COM 2014, 545) recommend two different indicators aimed at measuring the inactivity of the fleet (Inactive Vessel Indicator), Table B6 and the use of vessels (Vessel Use Indicator), Table B7.

The first indicator describes the percentage of inactive vessels of the total fleet in terms of number of vessels, tonnage (GT) and engine power (kW).

The second indicator, on the other hand, measures the activity levels of the vessels that have carried out fishing activities at least once over the year, taking into account the seasonal nature of fishing activities and other restrictions. For each fleet segment, it is the ratio between observed fishing effort (the average number of days at sea per vessel) and the maximum identified effort (the maximum days at sea observed in one fleet segment).

According to the 'traffic light signalling system' an indicator above 0.9 is observed only in the fleet segments that registered a broadly consistent level of activity, which can be marked with a green light. Values below 0.7 were potentially considered as indices of under-utilisation, which in turn may indicate a technical overcapacity (red light).

Indicator figures between the indicated limit values are highlighted in yellow; these show a relatively stable situation demonstrating that the available technical capacity is moderately exploited on the whole.

#### Application and interpretation

The indicator measuring the level of inactivity of the fleet (Inactive Vessel Indicator) shows a balanced overall situation because the inactivity values of the fleet remain below the threshold value of 20 % for all fleet segments and these values remained rather stable during the period under review.

In 2018, on the whole, the proportion of inactive vessels amounted to 8.8 % of the total number, 7.9 % in terms of capacity (GT) and 7.2 % in engine power (kW) (Table B6).

Compared to the previous year, the indicator value increased slightly, especially in terms of GT and kW which indicates a greater level of inactivity of larger vessels, namely those with LOA over 18 metres. On the other hand, the inactivity percentage of smaller vessels remained stable.

As usual, apart from the greater “sensitivity” of these boats to weather and marine conditions, this situation can also be attributed to the obsolescence identified in vessels falling in this category. On average, the age of vessels with a LOA of less than 6 metres is close to 40 years, in contrast to the national average of 33 years. Such characteristics require expensive maintenance operations, which result in a prolonged inactivity of the vessel in many cases.

On the whole, it can be stated that the activity indicator remained at “physiological” levels during 2018, as it is normal to expect that 10 % of boats in a fleet segment is inactive due to repairs, adjustments, conversions or transfers in progress.

The second indicator which measures the rate of utilisation of fishing capacity (Vessel Use Indicator), shows a range of different situations and the situation is characterised by a fair degree of variability by fishing segments and geographical areas.

In 2018, out of 88 fleet segments in total (GSA/fishing method/LOA class), 24 recorded a homogeneous activity level (indicator in green colour) which tends to indicate the full utilisation of fishing capacity, 36 segments reported a moderate rate of utilisation (indicator in yellow colour) while 28 of the examined segments showed indicators which referred to a potential technical under-utilisation of vessels (Table B7). The temporal analysis of the indicator shows an improving trend compared to the first three years of the examined five-year period, with an increasing number of segments in the “green zone” and a simultaneously decreasing number in the “red zone” which dropped from 48 % in 2014 to 26 % in 2018.

Indicator	Number of segments in percentage per year				
	2014	2015	2016	2017	2018
Under-utilisation	15.2 %	10.0 %	18.3 %	32.9 %	30.7 %
Moderate utilisation	36.7 %	36.3 %	41.5 %	34.2 %	43.2 %
Under-utilisation	48.1 %	53.8 %	40.2 %	32.9 %	26.1 %

With regard to the fishing method, it is interesting to point out the green indicator for the fleet equipped with pair-trawling gear which shows a good level of utilisation of fishing capacity in this segment. This is undoubtedly related to the management policies affecting the fishing of small pelagic fish which, apart from establishing quantitative restrictions with daily quotas per boat, regulated according to market demands and the ecological characteristics of resources, also introduce limits on fishing days (GFCM 40/2016/3 — Ministerial Decree of 26 January 2016).

The trawling segment is dominated by the yellow indicator which shows a moderate utilisation of fishing capacities while the red indicator is frequent in small-scale fishing and remains stable over time. This situation, which indicates a highly variable level of activity, does not directly refer to the under-utilisation of capacities but it is linked to natural, technical and social conditions which are characteristic of this fishing segment. In fact, some specific aspects of the fleet need to be considered for small-scale fishing:

1. there are many cases where fishing boats operating with passive gear in the 0/10 metre class are owned by older people who perform only limited activity;
2. some boats in the 0/10 metre class belong to the owners of larger vessels who use the small boat to cope with potential crisis periods of the segment in which the larger boat operates.

Finally, with respect to hydraulic dredges, the level of activity and the quantities that may be caught are decided by the Management Consortiums, mainly established at a District level, based on the composition of the resource (clams and smooth clams) and market trends. For this reason, if segments belonging to different Consortiums are considered in the same way, this may lead to distortions of data. In GSA 17, there are 15 Consortiums whose decisions concerning the activity levels may be very different during the year.



## **G. Conclusions: achievement of a balance between the fleet and the available fishing opportunities**

The biological, economic, social and technical indicators proposed in the European Commission's guidelines represent the tools by which management measures have been implemented to achieve a complete balance between fishing capacity and fishing opportunities over time.

The used indicators are the following:

- Sustainable Harvest Indicator (SHI),
- Return of Fixed Tangible Assets (RoFTA)
- Current revenue/Break-Even Revenue (CR/BER)
- Inactive Vessel Indicator (IVI)
- Vessel Utilisation Indicator (VUI)

The indicators were calculated considering the results of the National Data Collection Programme (DCR/DCF), presenting an examination of these indicators by Geographical Sub-Area (GSA) with the aim of identifying the overall trends at the level of fishing method and LOA class. The choice of providing information by GSA reflects the need to ascertain the existing geographical differences in terms of economic and social performance and the overall status of resources which reflects the state of fisheries and different levels of fishing capacity.

### **SHI**

It is important to point out that in 2019 the available assessments used for estimating the state of the resources, allowed to obtain an SHI index for more fleet segments (GFCM-SAC, 2017; STECF, 2018). The increase in the number of segments in imbalance does not indicate a general deterioration of the state of resources by itself because the new segments refer to fishing vessels that rely on the same stocks, even if they use different gear in some cases from the one previously identified and reported in the permanent cessation plan. In consideration of the above, it is appropriate to consider that the catch volumes may be different for the same target species in percentage depending on the used gear. As the SHI already shows a decreasing trend in several cases due to scrapping carried out with the permanent cessation plan, a further improvement of the indicator can be expected.

Considering the 2020-2023 time horizon to achieve the Maximum Sustainable Yield (MSY), a further reduction of fishing mortality is carried out through the application of management plans of demersal fisheries (Annex A).

### **RoFTA**

In 2017, out of a total of 79 fleet segments, 12 showed an indicator value lower than the TRP. The trend recorded at a national level can be considered positive, with an increase in revenues, added value and gross profit. These increases are linked to the increase in the value of catches and the reduction of labour costs, maintenance costs and other variable costs, while capital costs (depreciation and interest) remained stable. The segments with a ROFTA value lower than the TRP include trawlers with a length class over 24 metres, with one exception being the vessels operating in GSA 16, hydraulic dredgers and small-scale fishing in GSA 18 and mixed passive gear in GSA 19.

### **CR/BER**

The indicator shows an improvement in relation to the previous two years. In 2015, 15 fleet segments had a value lower than 1; this dropped to 7 in 2017.

The general improvement already identified in 2016 and continued in 2017 is largely due to the reduction of

operating costs, in particular fuel costs and the increase of production value.

## IVI

The indicator measuring the level of inactivity of the fleet (Inactive Vessel Indicator) shows a balanced overall situation because the inactivity values of the fleet remain below the threshold value of 20 % for all fleet segments and these values remained rather stable during the 2014-2018 period.

In the last year of the period, on the whole, the proportion of inactive vessels amounted to 8.8 % of the total number, 7.9 % of the capacity (GT) and 7.2 % of engine power (kW) (Table B6).

Compared to the previous years, the indicator has been stable with regard to the number of vessels with a slight increase in terms of GT and kW. This trend indicates that a higher inactivity rate was recorded for larger vessels during the last year of the period.

On the whole, it can be stated that the activity indicator remained at “physiological” levels during 2018, as it is normal to expect that 10 % of boats in a fleet segment is inactive due to repairs, adjustments, conversions or transfers in progress.

## VUI

In 2018, out of 88 fleet segments in total (GSA/fishing method/LOA class), 24 recorded full utilisation of fishing capacity, 36 reported a moderate rate of utilisation while 28 recorded an indicator which referred to a potential technical under-utilisation of vessels (Table B7).

The temporal analyses show a moderate improvement compared to the first three years of the period (2014-2018) with an increasing number of segments in the green zone and a simultaneous decrease of segments in the red zone.

With regard to the fishing method, it is interesting to point out the green indicator for the fleet equipped with pair-trawling gear which shows a good level of utilisation of fishing capacity in this segment, while there are still situations marked by the red indicator in the small-scale fishing segments due to natural, technical and social conditions which are characteristic of this type of activity.

In 2018, the Italian administration issued a number of measures in order to achieve a balance between fishing capacities and opportunities.

Among these, the most important ones are the following:

- Directorial Decree of 30 January 2018 - Implementation of national Management plans relating to fishing fleets for catching demersal resources within: GSA 9, GSA 10, GSA 11, GSA 16, GSA 17 and 18, GSA 19;
- Ministerial Decree of 23 February 2018 - Technical measures for fishing swordfish in the Mediterranean
- Directorial Decree of 30 March 2018 - List of vessels authorised to catch small pelagic fish in GSA 17 and 18;
- Directorial Decree of 20 April 2018 - Breakdown of national quota for the catch of bluefin tuna for the three-year period of 2018-2020;
- Ministerial Decree of 20 July 2018 - Fishing Ban Decree in 2018 for the vessels authorised to perform fishing activities with trawling method;
- Directorial Decree 14 August 2018 - Fishing ban for small pelagic fish, anchovies only;

- Directorial Decree of 2 October 2018 - Measures for small pelagic fishing, modification of fishing ban periods for sardines - year 2018
- Directorial Decree of 28 December 2018 - Amendment of National Management plans relating to fishing fleets for catching demersal resources within GSA 9 — GSA 10 — GSA 11 — GSA 16 — GSA 17 and 18 – GSA 19.

### *References*

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# Annex A

## Action plan setting out adjustment objectives and tools for achieving a balance between fleet segments where an imbalance has been demonstrated

The Italian Action Plan, taking the community guidelines into account, aims to significantly reduce current fishing mortality (Fc) through the synergistic effect of a series of different measures.

### New Management Plans

During 2018, the Italian administration prepared the scientific document that led to the drafting of the National Management Plans related to fishing fleets for the capture of demersal (bottom fishing) resources in the context of: GSA 9 (Ligurian Sea and Central-Northern Tyrrhenian Sea), GSA 10 (Southern and Central Tyrrhenian Sea), GSA 11 (Sardinia), GSA 16 (Strait of Sicily), GSA 17 (Northern and Central Adriatic Sea), GSA 18 (Southern Adriatic Sea) and GSA 19 (Western Ionian Sea) approved by the European Commission (Ares 2019-1271318 of 25 February 2019).

The general objective of the Management Plans is the recovery of stocks within the safe biological limits by 2020 through the improvement of spawning stock biomass (SSB) by reducing the exploitation rate (weighted by the pool of target species) from the current level to a level which is compatible with sustainability standards foreseen by the new Common Fisheries Policy (Article 2 of Regulation (EU) No 1380/2013).

When drafting the plans, the species of greater relevance in terms of the volume and economic value of landings produced by the considered fishing segments were taken into account.

Compared to the previous versions of the Management Plans where the main technical management measure was the reduction of fishing capacity which was implemented by a Plan for disarming fishing vessels which has now ended, the Plans elaborated in 2018 aim to achieve the objectives through the regulation of fishing effort, which, in addition to the usual temporary ban, establishes a further specific reduction percentage of fishing days for each GSA and LOA class as shown in Table A1:

*Table A1 Additional days of ban by GSA and LOA class - year 2019*

GSA	LOA CLASS	% of additional reduction	Additional days of ban
GSA 9	LOA<=12	10	9
	LOA>12	10	18
GSA 10	LOA<=12	10	12
	LOA>12	10	15
GSA 11	LOA<=24	10	13
	LOA>24	10	17
GSA 16	LOA<=12	6	7
	12<LOA<=24	6	8
	LOA>24	6	12
GSA 17 GSA 18	LOA<=12	8	7
	12<LOA<=24	8	10
	LOA>24	8	13
GSA 19	LOA<=18	10	16

	LOA>18	10	15
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The reductions of the fishing effort laid down by the national Management Plans with regard to GSA 9, 10 and 11 are consistent with the legislative Resolution of the European Parliament of 4 April 2019 regarding the establishment of a multi-annual plan for fishing activities exploiting demersal stocks in the Western Mediterranean. This plan lays down a 10 % reduction in the first year (2019) and up to a further reduction of 30 % in 5 years in terms of activity (annual fishing days). For the other GSAs of the Italian seas (Adriatic, Ionian, Strait of Sicily), additional specific MAPs will be implemented.

Target species, by-catch species, fishing methods subject to management and the main additional technical measures in terms of the closure of critical areas to trawling in order to improve the sustainability of fishing, are presented in Table A2. In particular, a summary is provided about the number of existing Biological Protection Zones (BPZ) and the proposals for the establishment new areas closed to trawling (nurseries) to improve exploitation patterns and reduce the catch of undersized specimens, especially of hake and pink shrimp pursuant to Art. 14 of Reg. (EU) No 1380/2013.

**Table A2 - Target species, by-catch species, fishing methods subject to management and the main additional technical measures**

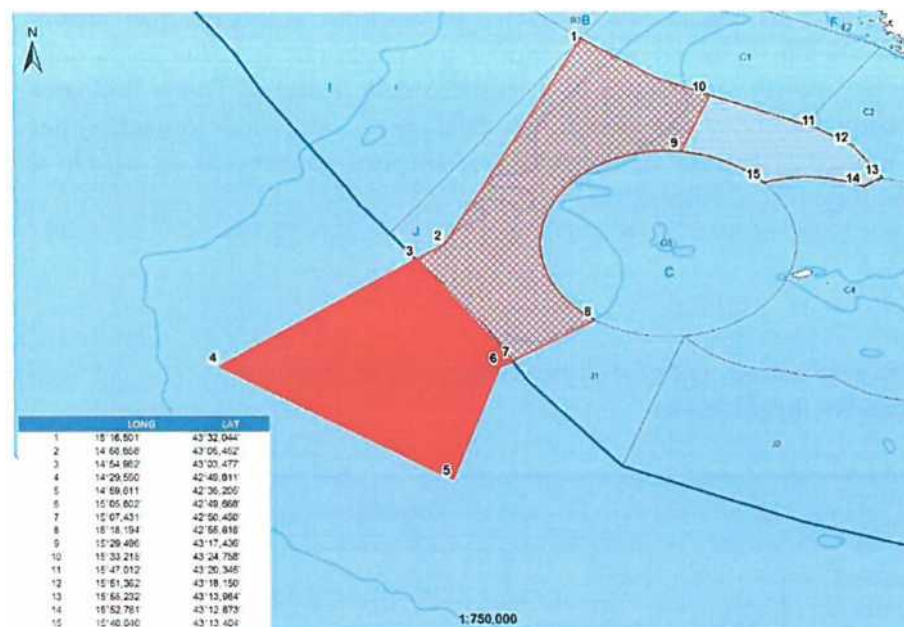
GSA	Target species	By-catch species	Fishing methods	Additional technical measures
9	Hake, red mullet, striped red mullet, white shrimp, Norway lobster	Curled octopus, European flying squid, red shrimp, blue and red shrimp	Bottom trawling and mixed passive gear	2 BPZs in force and 5 newly proposed ones (nurseries of hake and pink shrimp)
10	Hake, red mullet, white shrimp or pink shrimp, red shrimp	Squilla mantis	Bottom trawling and mixed passive gear	4 BPZs in force and 2 newly proposed ones (nurseries of hake and pink shrimp)
11	Hake, red mullet, white shrimp or pink shrimp, Norway lobster and red shrimp	Striped red mullet, blue and red shrimp, curled octopus, common octopus and European squid	Bottom trawling and mixed passive gear	3 BPZs in force and new proposed ones (nurseries of hake pink shrimp and red shrimp)
16	Hake, white shrimp or pink shrimp, red mullet and red shrimp	Musky octopus, striped red mullet, Norway lobster and common pandora	Bottom trawling and mixed passive gear	3 FRA GFCM in implementation phase (nurseries of hake and pink shrimp)
17 & 18	Hake, red mullet, common sole, Norway lobster and white shrimp or pink shrimp	Squilla mantis, curled octopus, common cuttlefish (17) and anglerfish (18)	Bottom trawling, rapido trawling (17), mixed passive gear (17) and longline (18)	8 BPZ in force, including the Pomo Pit which is in a transformation phase in FRA GFCM. Other protection proposals of hake and pink shrimp nurseries.

19	Hake, white shrimp or pink shrimp and red shrimp	Blue and red shrimp, striped red mullet and red mullet	Bottom trawling, longline and mixed passive gear	1 FRA GFMC (Santa Maria di Leuca) for the protection of white coral and other protection proposals of hake and white shrimp nurseries.
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## Pomo Pit (GSA 17)

In the Pomo area there are currently restrictions in force laid down by the Ministerial Decree No 466 of 1 June 2017 which establishes a BPZ divided in three areas: one with complete closure to demersal fishing (cross-hatched in red) and two areas where fishing effort is regulated (Figure 1).

Figure 1- Pomo Pit



## New technologies to improve the selectivity of towed gear

Fishing with trawl nets in the Mediterranean is often characterised by the combination of high fishing efforts and small catch volumes of several commercial species. In order to increase the size of first catch of demersal species, first the EU and then GFCM implemented a 40 mm square mesh or a 50 mm diamond mesh as the minimum mesh size of towed nets in the Mediterranean. Although these are a good compromise for the trawling of crustaceans and cephalopods which are one of the most important items of national fisheries, these sizes do not prevent the catch of significant quantities of undersized commercial fish such as cod and horse mackerel (Milisenda and al., 2017).

Since the implementation of larger meshes would result in losing a significant part of crustacean and cephalopod catches of commercial size, the possible management options to reduce the capture of unwanted sizes and species are the following: reduction of the mortality rate of juvenile fish by banning trawling when and where recruitment and juvenile fish gather (closed areas), implementation of selection grids which improve the selectivity of trawl nets or the combination of these two.

First within the Ritmare national project, then in the European Minouw project, the use of selection grids mounted on trawl nets has been tested to minimise the catch of undersized individuals of pink shrimp (*Parapenaeus longirostris*, DPS) and European hake (*Merluccius merluccius*, HKE) in the Strait of Sicily (Vitale et al., 2018). The catch of a traditional trawl net was compared to the catch obtained with the same net equipped with three different selection grids (JTED). Three different JTEDs have been tested: the first one (G1-SM40) uses a 40 mm square mesh net; on the second (G2-ST20) and the third (G3-ST25), vertical steel bars of 20 and 25 mm spacing are mounted, respectively. With G1-SM40, the number of undersized specimens in the net was reduced by approximately 60 % and 44 % for DPS and HKE respectively. With G2-ST20, a 34 % reduction was observed in the catch of HKE specimens with a total length below 20 cm.

The losses of marketable DPS fractions amounted to 25 % with G1-SM40 (-25 %) and 30 % with G2-ST20. Finally, JTD G3-ST25 effectively reduced the capture of undersized specimens of DPS and HKE but showed a greater loss of marketable fractions compared to other JTEDs. Although further tests are necessary to optimise the efficiency of grid selection, the obtained results clearly show that the grids can substantially reduce unwanted, undersized catches of DPS and HKE in trawling fisheries in the Mediterranean.

The effects of the use of selection grids tested in Vitale et al. (2018a) on the sea biomass of DPS and HKE stocks and the catches of trawling fisheries in the Strait of Sicily have been evaluated by the GADGET population dynamics model (Vitale et al., 2018b). In order to simulate the effect of the implementation of the selection grid by Italian trawling vessels operating in the area, several scenarios have been defined, characterised by different recruitment hypotheses. If compared with the simulations of the status quo that uses nets without a selection grid, the obtained results indicate a positive effect both for stocks in terms of increased biomass and for fleets in terms of the quantity and size composition of catches. In the case of DPS, fishing mortality would be reduced by about 14 % compared to the initial value in a 4-year period after the adoption of grids on trawlers. During this period, GADGET simulations gave an average increase of sea biomass by 10 % and catches by 3 %. For cod, the reduction of fishing mortality would be approximately 3 %, compared to an increase of sea biomass by 7 % and catches by 5 %. An improvement should be noted in the composition of age classes of cod catches, with an average reduction of 20 % of juveniles and an average increase of 10 % of specimens from age class 3 and above.

Apart from the studies on improving the selectivity of towed nets, useful for mitigating the issues related to undersized catches of commercial species subject to minimum sizes, it is worth mentioning the research works related to the investigations of the survival of discards from unwanted and unregulated catches of invertebrates after the stress caused by the catch. These are fundamental species in the structure and the trophic relationships of fish habitats which are essential for important fish resources such as hake, red mullet and cuttlefish. Also within the European Minouw project, the survival of species constituting unwanted catches of trawling has been evaluated using a semi-quantitative evaluation on the deck of trawlers and in laboratory for a period of 96 hours in two areas in the Mediterranean (the Catalan coast and the Ligurian Sea - Northern Tyrrhenian Sea) (Demestre and al., 2018). A high number of invertebrates discarded into the sea showed a high survival percentage (>70 %) in both evaluations. The obtained results are useful for the protection of the health of benthic ecosystems which is essential for the development of the life cycles of demersal resources, subject to fishing.

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# Annex B

## Reference tables

*Table B1 - Year 2018 - Catch of bluefin tuna by fishing method*

FISHING METHOD	NO.	GT	KG
PURSE SEINING	15	3 841	2 885 426.605
LONGLINE	32	1 098	527 999.670
FIXED TUNA TRAP	3	/	300 064.894
By catch			127 689.679
Sports/recreational fishing			18 342.680
	<b>TOTAL CATCH</b>		<b>3 859 523.528</b>

*Table B2 — Production trend by GSA, in EUR*

GSA	EUR			Change (%)
	2016	2017	2018	
GSA 9 - Ligurian Sea and Northern Tyrrhenian Sea	112 619	105 054	113 794	8.32
GSA 10 - Southern and Central Tyrrhenian Sea	125 383	112 776	97 024	-13.97
GSA 11 - Sardinia	52 354	57 010	60 249	5.68
GSA 16 - Southern Sicily	154 114	175 963	156 534	-11.04
GSA 17 — Northern Adriatic Sea	268 218	259 125	291 605	12.53
GSA 18 — Southern Adriatic Sea	103 122	101 722	125 068	22.95
GSA 19 - Western Ionian Sea	87 983	86 938	68 250	-21.50
<b>TOTAL</b>	<b>903 794</b>	<b>898 589</b>	<b>912 523</b>	<b>1.55</b>

*Table B3 — 2018 production, first 20 species by value*

3A_CODE	SPECIES	EUR (000)	%
<b>ANE</b>	Engraulis encrasicolus	67 520.78	7.40
<b>CTC</b>	Sepia officinalis	65 371.51	7.16
<b>DPS</b>	Parapenaeus longirostris	56 694.87	6.21
<b>HKE</b>	Merluccius merluccius	53 774.36	5.89

<b>ARS</b>	Aristaeomorpha foliacea	53 582.33	5.87
<b>NEP</b>	Nephrops norvegicus	37 480.81	4.11
<b>SVE</b>	Chamelea gallina	34 095.24	3.74
<b>MTS</b>	Squilla mantis	32 989.63	3.62
<b>MUT</b>	Mullus barbatus	32 525.77	3.56
<b>OCC</b>	Octopus vulgaris	30 083.12	3.30
<b>ARA</b>	Aristeus antennatus	28 776.28	3.15
<b>PIL</b>	Sardina pilchardus	25 405.66	2.78
<b>TGS</b>	Penaeus kerathurus	24 736.97	2.71
<b>SOL</b>	Solea solea	23 047.33	2.53
<b>SQR</b>	Loligo vulgaris	22 016.12	2.41
<b>MUR</b>	Mullus surmuletus	20 146.25	2.21
<b>EOI</b>	Eledone cirrhosa	19 663.40	2.15
<b>SWO</b>	Xiphias gladius	17 749.26	1.95
<b>SQM</b>	Illex coindetii	16 621.50	1.82
<b>SBG</b>	Sparus aurata	16 113.82	1.77
<b>TOTAL</b>		<b>678 395.02</b>	<b>74.34</b>

*Table B4 - Stock assessments carried out over the last three years. The state of stocks by year (2015-2017) is reported as the ratio of current  $F$  ( $F_{cur}$ ) to  $F$  at maximum sustainable yield ( $FMSY$ ).*

<b>GSA</b>	<b>SPECIES</b>	<b>FMSY</b>	<b>F/FMSY 2015</b>	<b>F/FMSY 2016</b>	<b>F/FMSY 2017</b>
9	Anchovy	0.40	1.48	1.48	1.48
9	Blue and red shrimp	0.32	0.84	0.84	0.84
9	Blue whiting	0.33	1.16	1.16	1.16
9	Norway lobster	0.19	1.79	1.79	1.79
9	Red mullet	0.54	2.59	2.28	2.91
9	Striped red mullet	0.44	1.11	1.11	1.11
10	Red mullet	0.54	0.44	0.41	0.46
11	Norway lobster	0.19	2.05	2.05	2.05
17	Solea	0.24	1.88	1.96	2.71
19	Hake	0.16	8.19	8.88	8.88
	Red mullet	0.44	2.25	2.25	2.25
12-16	Deepwater pink shrimp	0.84	1.63	1.63	1.63

	Hake	0.20	3.70	3.70	3.70
15-16	Red mullet	0.45	1.20	1.20	1.20
17-18-19	Anchovy	0.64	2.22	2.23	2.23
	Common cuttlefish	1.00	0.74	0.62	0.50
	Hake	0.18	4.50	4.00	3.33
	Norway lobster	0.45	1.67	1.51	1.47
	Red mullet	0.41	1.63	1.39	1.17
	Sardine	0.47	2.07	2.07	2.07
	Spottail mantis shrimp	0.41	2.18	1.71	1.71
17-18-19	Deepwater pink shrimp	0.65	2.06	2.06	2.06
18-19	Giant red shrimp	0.42	1.10	1.10	1.10
9-10-11	Deepwater pink shrimp	0.74	1.92	2.05	2.27
	Giant red shrimp	0.57	1.07	1.07	1.96
	Hake	0.14	4.43	4.57	3.93
All	Albacore	0.12	0.83	0.83	0.83
	Blue fin tuna	0.42	0.40	0.40	0.40
	Swordfish	0.25	1.84	1.84	1.84

*Table B5 - ROFTA and CR/BER by fishing segments, years 2015, 2016 and 2017*

GSA	Fishing method	LOA class	2015		2016		2017	
			ROFTA (%)	CR/BER	ROFTA (%)	CR/BER	ROFTA (%)	CR/BER
9	DRB	VL1218	-6	0.88	10	1.36	-22	0.27
9	DTS	VL0612	20	1.71	1	1.08	15	1.44
9	DTS	VL1218	59	3.07	70	3.26	61	3.02
9	DTS	VL1824	20	1.76	27	2.04	10	1.33
9	DTS	VL2440	4	1.21	5	1.22	-13	0.60
9	PGP	VL0006	120	4.23	132	4.01	103	2.66
9	PGP	VL0612	31	1.94	18	1.55	14	1.43
9	PGP	VL1218	53	2.81	21	1.72	1	1.12
9	PS	VL1218	39	1.74	48	2.21	122	5.33
9	PS	VL1824	33	2.03	47	2.51	47	2.47
10	DRB	VL1218	-6	0.86	-2	1.00	-28	0.01
10	DTS	VL1218	2	1.09	15	1.61	34	2.11
10	DTS	VL1824	-5	0.76	11	1.38	13	1.48
10	HOK	VL1218	-7	0.82	-2	0.97	64	3.07
10	PGP	VL0006	46	1.99	85	3.02	89	2.68
10	PGP	VL0612	17	1.51	19	1.63	21	1.66
10	PGP	VL1218	18	1.66	8	1.40	22	1.81
10	PS	VL0612					61	2.89
10	PS	VL1218	54	2.69	93	3.65	91	3.77
10	PS	VL1824	60	2.95	35	2.09	27	1.94
10	PS	VL2440	-13	0.45	-6	0.79	11	1.61
10	PS	VL40XX	15	1.68	34	2.57	61	3.65
11	DTS	VL1218	55	2.85	31	2.17	71	3.46
11	DTS	VL1824	-2	1.00	4	1.20	10	1.46

GSA	Fishing method	LOA class	2015		2016		2017	
			ROFTA (%)	CR/BER	ROFTA (%)	CR/BER	ROFTA (%)	CR/BER
11	DTS	VL2440	-12	0.56	-3	0.94	-1	1.03
11	PGP	VL0006	36	1.86	59	2.51	69	2.73
11	PGP	VL0612	12	1.46	21	1.71	16	1.53
11	PGP	VL1218	24	1.88	19	1.70	30	1.98
11	PS	VL1824					60	2.90
16	DTS	VL0612	17	1.51	33	2.07	8	1.33
16	DTS	VL1218	25	1.82	30	1.93	76	2.90
16	DTS	VL1824	1	1.08	17	1.63	6	1.28
16	DTS	VL2440	2	1.14	0	1.08	27	1.93
16	HOK	VL1218	65	2.91	37	2.19	56	2.54
16	HOK	VL1824	18	1.66	15	1.56	28	1.96
16	PGP	VL0006	80	2.32	29	1.60	77	2.55
16	PGP	VL0612	22	1.62	18	1.53	30	1.84
16	PGP	VL1218	21	1.75	47	2.63	61	2.73
16	PS	VL1218	46	2.60	36	2.26	62	2.67
16	PS	VL1824	-6	0.87	20	1.65	65	2.62
16	PS	VL40XX			92	3.16	76	4.28
16	TM	VL1824	11	1.36	15	1.48	24	1.74
17	DRB	VL1218	4	1.16	13	1.44	4	1.20
17	DTS	VL0612	19	-0.85	27	1.47	28	1.77
17	DTS	VL1218	47	2.19	43	2.16	50	2.52
17	DTS	VL1824	2	1.08	3	1.13	15	1.56
17	DTS	VL2440	-8	0.73	-9	0.66	-4	0.86
17	PGP	VL0006	46	2.17	37	1.98	51	0.68
17	PGP	VL0612	32	1.89	36	2.04	61	2.60
17	PGP	VL1218	19	1.76	34	2.16	23	1.67
17	PS	VL1218	79	3.31	226	6.37	71	3.05
17	PS	VL2440	-9	0.73	6	1.25	8	1.34
17	PS	VL40XX	97	4.08	82	3.19	52	2.94
17	TBB	VL1218	123	3.36	56	2.37	65	2.63
17	TBB	VL1824	8	1.27	13	1.47	0	1.05
17	TBB	VL2440	-18	0.45	-9	0.74	18	1.69
17	TM	VL1218	312	5.01	187	3.71	130	2.18
17	TM	VL1824	25	2.01	17	1.46	49	2.05
17	TM	VL2440	-7	0.80	10	1.44	17	1.58
18	DRB	VL1218	33	2.39	22	1.88	-22	0.23
18	DTS	VL0612	129	5.34	101	4.39	73	3.01
18	DTS	VL1218	111	5.18	121	5.47	59	3.05
18	DTS	VL1824	0	1.06	-2	0.96	0	1.05
18	DTS	VL2440	-2	0.99	-11	0.64	2	1.14
18	HOK	VL1218	151	4.15	137	3.53	103	4.18
18	PGP	VL0006	184	4.65	175	4.72	125	2.79
18	PGP	VL0612	-3	0.89	7	1.24	-2	1.01

GSA	Fishing method	LOA class	2015		2016		2017	
			ROFTA (%)	CR/BER	ROFTA (%)	CR/BER	ROFTA (%)	CR/BER
18	PS	VL2440	1	1.09	8	1.33	12	1.50
18	TM	VL2440	28	2.11	8	1.35	67	3.08
19	DTS	VL1218	20	1.45	25	1.87	61	3.08
19	DTS	VL1824	-9	0.71	6	1.25	18	1.69
19	HOK	VL1218	7	1.30	30	2.04	14	1.54
19	HOK	VL1824	-10	0.69	-4	0.91	5	1.24
19	PGP	VL0006	96	3.35	108	3.75	102	3.43
19	PGP	VL0612	17	1.51	19	1.73	16	1.58
19	PGP	VL1218	-1	1.02	7	1.37	-1	0.99
19	PS	VL1218	10	1.10	24	1.81	60	2.90
19	PS	VL2440	-2	0.97	15	1.83	68	4.64
19	PS	VL40XX			38	2.14	118	5.03

Table B6—Inactive Vessel Indicator by LOA classes, years 2014—2018

INACTIVE VESSEL INDICATOR					
VESSELS					
Length class	2014	2015	2016	2017	2018
VL0006	13.5 %	13.4 %	13.1 %	12.1 %	12.0 %
VL0612	9.5 %	9.6 %	10.3 %	10.1 %	10.2 %
VL1218	4.7 %	4.6 %	1.8 %	1.9 %	2.3 %
VL1824	3.5 %	3.6 %	3.1 %	2.7 %	8.4 %
VL2440	4.5 %	3.2 %	8.2 %	8.8 %	11.9 %
VL40XX	28.6 %	7.7 %	15.4 %	7.1 %	4.8 %
Total	8.9 %	8.8 %	8.5 %	8.3 %	8.8 %
GT					
Length class	2014	2015	2016	2017	2018
VL0006	13.5 %	13.5 %	13.1 %	12.1 %	12.0 %
VL0612	9.0 %	9.2 %	10.9 %	8.5 %	9.0 %
VL1218	4.8 %	4.5 %	2.4 %	3.1 %	4.0 %
VL1824	3.5 %	3.5 %	2.7 %	2.3 %	8.6 %
VL2440	5.5 %	3.7 %	8.8 %	8.5 %	11.9 %
VL40XX	23.2 %	8.2 %	16.4 %	5.4 %	2.0 %
Total	5.5 %	4.6 %	5.2 %	4.8 %	7.9 %
KW					

Length class	2014	2015	2016	2017	2018
VL0006	13.0 %	13.0 %	12.3 %	11.9 %	11.6 %
VL0612	9.4 %	9.5 %	10.9 %	8.8 %	9.2 %
VL1218	5.0 %	4.8 %	2.1 %	2.9 %	3.1 %
VL1824	3.5 %	3.6 %	2.7 %	2.6 %	9.0 %
VL2440	4.9 %	3.2 %	8.2 %	8.0 %	11.3 %
VL40XX	20.4 %	7.3 %	21.8 %	5.9 %	2.7 %
Total	6.1 %	5.6 %	5.4 %	5.1 %	7.2 %

Table B7- Vessel Use Indicator by GSA, fishing method, LOA class, years 2014—2018

VESSEL USE INDICATOR							
GSA	SISPES	LFT	2014	2015	2016	2017	2018
9	DRB	VL1218	0.84	0.31	0.84	0.92	0.85
9	DTS	VL0612	0.80	0.52	0.54	0.63	0.60
9	DTS	VL1218	0.77	0.79	0.74	0.76	0.76
9	DTS	VL1824	0.88	0.89	0.86	0.80	0.86
9	DTS	VL2440	0.94	0.85	0.89	0.92	0.91
9	PGP	VL0006	0.37	0.44	0.42	0.45	0.57
9	PGP	VL0612	0.41	0.46	0.39	0.48	0.50
9	PGP	VL1218	0.42	0.48	0.52	0.52	0.59
9	PS	VL0612					0.86
9	PS	VL1218	0.46	0.52	0.47	0.72	0.62
9	PS	VL1824	0.89	0.98	0.96	0.99	0.92
9	PS	VL2440	0.94	0.91	0.97		0.91
10	DRB	VL1218	0.79	0.77	0.65	0.38	0.65
10	DTS	VL0612	0.74	0.55	0.62		
10	DTS	VL1218	0.69	0.66	0.72	0.74	0.70
10	DTS	VL1824	0.77	0.62	0.81	0.77	0.74
10	HOK	VL1218	0.77	0.75	0.58	0.79	0.68
10	HOK	VL1824					0.70
10	PGP	VL0006	0.46	0.55	0.59	0.48	0.61
10	PGP	VL0612	0.50	0.54	0.57	0.54	0.58
10	PGP	VL1218	0.40	0.65	0.51	0.61	0.69
10	PGP	VL1824					0.70
10	PMP	VL0612	0.46	0.77	0.53		
10	PMP	VL1218	0.54	0.61	0.56		
10	PS	VL0612				1.00	1.00
10	PS	VL1218	0.59	0.64	0.66	0.75	0.68
10	PS	VL1824	0.48	0.63	0.79	0.73	0.68
10	PS	VL2440		0.33	1.00	0.52	0.63
10	PS	VL40XX	1.56	0.29	0.80	0.70	0.84
11	DTS	VL1218	0.64	0.76	0.54	0.71	0.63
11	DTS	VL1824	0.72	0.68	0.72	0.63	0.74
11	DTS	VL2440	0.72	0.81	0.80	0.75	0.75
11	PGP	VL0006	0.62	0.62	0.61	0.60	0.73
11	PGP	VL0612	0.60	0.56	0.43	0.53	0.52
11	PGP	VL1218	0.66	0.52	0.64	0.58	0.69
11	PGP	VL1824					0.88
11	PS	VL1824				0.91	0.91

**VESSEL USE INDICATOR**

<b>GSA</b>	<b>SISPES</b>	<b>LFT</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
16	DTS	VL0612	0.81	0.73	0.67	0.86	0.95
16	DTS	VL1218	0.64	0.65	0.71	0.70	0.70
16	DTS	VL1824	0.80	0.63	0.73	0.67	0.60
16	DTS	VL2440	0.73	0.68	0.79	0.75	0.74
16	HOK	VL1218	0.54	0.73	0.71	0.98	0.78
16	HOK	VL1824	0.76	0.83	0.89	0.73	0.86
16	PGP	VL0006	0.47	0.68	0.75	0.65	0.67
16	PGP	VL0612	0.42	0.62	0.63	0.58	0.64
16	PGP	VL1218	0.72	0.84	0.77	0.74	0.70
16	PS	VL0612	0.84				
16	PS	VL1218		0.82	0.77	0.93	0.91
16	PS	VL1824	0.88	0.82	0.99	0.94	0.92
16	PS	VL2440		0.64	0.50		1.00
16	PS	VL40XX	1.00		1.00	1.00	1.00
16	TM	VL1824	0.99	0.78	0.93	0.99	0.99
17	DRB	VL1218	0.55	0.63	0.59	0.42	0.60
17	DTS	VL0612	0.35	0.40	0.41	0.80	0.70
17	DTS	VL1218	0.67	0.54	0.51	0.56	0.59
17	DTS	VL1824	0.84	0.81	0.72	0.70	0.71
17	DTS	VL2440	0.90	0.55	0.77	0.76	0.70
17	PGP	VL0006	0.38	0.38	0.32	0.33	0.34
17	PGP	VL0612	0.34	0.42	0.37	0.42	0.40
17	PGP	VL1218	0.33	0.49	0.68	0.88	0.80
17	PGP	VL1824					1.00
17	PS	VL1218	0.80	0.86	0.88	0.94	0.89
17	PS	VL2440	0.55	0.73	0.91	0.94	0.91
17	PS	VL40XX		4.30	1.00	1.00	1.00
17	TBB	VL1218	0.65	0.95	0.86	0.86	1.09
17	TBB	VL1824	0.87	0.88	0.89	0.75	0.77
17	TBB	VL2440	0.95	0.94	0.98	0.92	0.92
17	TM	VL1218	0.77	0.79	0.90	0.91	0.97
17	TM	VL1824	0.95	0.87	0.93	0.96	0.93
17	TM	VL2440	0.93	0.93	1.00	1.00	0.97
18	DRB	VL1218	0.45	0.56	0.90	0.92	0.89
18	DTS	VL0612	0.68	0.75	0.78	0.95	0.88
18	DTS	VL1218	0.62	0.66	0.77	0.60	0.66
18	DTS	VL1824	0.69	0.91	0.87	0.65	0.74
18	DTS	VL2440	0.70	0.91	0.91	0.92	0.94
18	HOK	VL1218	0.86	0.73	0.90	0.98	0.99
18	PGP	VL0006	0.67	0.54	0.52	0.66	0.68
18	PGP	VL0612	0.75	0.66	0.48	0.59	0.69
18	PGP	VL1218					0.96
18	PS	VL2440	0.94	0.74	0.82	0.91	0.87
18	TM	VL1218					0.87
18	TM	VL2440	0.94	0.90	0.89	1.00	0.92
19	DTS	VL1218	0.82	0.85	0.78	0.85	0.78
19	DTS	VL1824	0.75	0.71	0.73	0.72	0.73
19	HOK	VL1218	0.70	0.72	0.77	0.93	0.80

VESSEL USE INDICATOR							
GSA	SISPES	LFT	2014	2015	2016	2017	2018
19	HOK	VL1824	0.72	0.62	0.80	0.82	0.74
19	PGP	VL0006	0.58	0.64	0.68	0.67	0.69
19	PGP	VL0612	0.63	0.69	0.64	0.61	0.65
19	PGP	VL1218	0.68	0.76	0.59	0.83	0.88
19	PS	VL1218	0.86	0.61	0.76	0.93	0.79
19	PS	VL2440	1.27	0.33	0.67	0.71	0.70
19	PS	VL40XX	1.56		1.00	1.00	1.00