Annex III
Southern Sicily (GSA 16)

Summary

4.3.1 Introduction 2

4.3.2 Status of the stocks exploited by the selected UoAs 4

4.3.3 List of the species exploited by the selected UoAs 11

4.3.4 Environmental context 15

4.3.5 Socio-economic context. Analysis of the main socio-economic indicators and of market trends in the 10 UoAs selected for the Deeper Mapping 22

4.3.1 Introduction

Based on the results of Fast-scan and interactions with stakeholders, the ten UoAs listed in Table 4.3.1.1 were identified in the GSA 16. In this list, the UoAs using bottom otter trawl nets (OTB) target mainly three different types of target species:

- demersal fish (DEF);
- mixed group of demersal species and deep water species (MDD);
- deep water species (DWS)

These types were aggregated together in Tables 4.3.1.1 and 4.3.3.1, both in terms of landed volume and value. Considering trawlers landings, about 56% come from boats targeting demersal fish.

Figure 4.3.1.1 – List of the UoAs selected for Deeper-mapping in the GSA 16[1]

Nome italiano	Nome inglese	Nome scientifico	Attrezzo	Gruppo di specie bersaglio	Sbarcato medio in peso 2015-2016 (Tons)	Sbarcato medio in valore 2015-2016 (k euro)	Identificato durante la consultazione
Alici	European anchovy	*Engraulis encrasicolus*	Purse seine	SPF	1,257	3,029	X
Gamberi bianchi o rosa	Deep-water rose shrimp	*Parapenaeus longirostris*	Bottom otter trawl	DEF + MDD	5,603	33,924	X
Gamberi rossi	Giant red shrimp	*Aristaeomorpha foliacea*	Bottom otter trawl	MDD+DWS	1,440	32,917	
Gambero viola	Blue and red shrimp	*Aristeus antennatus*	Bottom otter trawl	MDD+DWS	394	9,003	
Moscardino muschiato	Musky octopus	*Eledone moschata*	Bottom otter trawl	DEF	369	2,563	
Nasello	European hake	*Merluccius merluccius*	Bottom otter trawl	DEF + MDD	1,278	7,944	X
Pesce spada	Swordfish	*Xiphias gladius*	Drofting longline	LPF	678	7,158	X
Sardine	European pilchard	*Sardina pilchardus*	Purse seine	SPF	852	1,397	
Tonno rosso	Bluefin tuna	*Thunnus thynnus*	Drofting longline	LPF	224	1,378	X
Triglie di fango	Red mullet	*Mullus barbatus*	Bottom otter trawl	DEF+MDD	1,281	4,983	

– DEF: Demersal fish.
– DWS: Deep water species.
– LPF: Large pelagic fish.
– MDD: Mixed group of demersal species and deep water species.
– SPF: Small pelagic fish.

Source: estimates from MIPAAFT/National Fisheries Data Collection Programme.

From the data reported in Table 4.3.1.1 it is possible to note that the selected UoAs are made up of three types of fishing gear: purse seines for small pelagic fish, bottom otter trawl and drifting longlines for large pelagic fish.

The trawlers are mostly medium and large (12-40 meters LFT) and distributed mostly in the ports of Mazara del Vallo and Porto Empedocle. Figure 4.3.1.2 shows the maps of the fishing activity of trawlers (OTB, period 2013-2015) within the GSA 16, estimated from the Vessel Monitoring System (VMS) data. The analyses were performed with VMS base (Russo et al., 2014) using a grid with 5km side cells and the values represent the total annual fishing hours per cell of all trawl boats aggregated also in terms of target species. From the maps it can be seen how the distribution of fishing activity remains substantially constant over the three years and is more concentrated on the continental shelf funds (MIPAAFT, 2017).

[1] Note: for the mud mullet, more updated data have been used (2017) as the 2015 and 2016 for the GSA 16 are being revised.

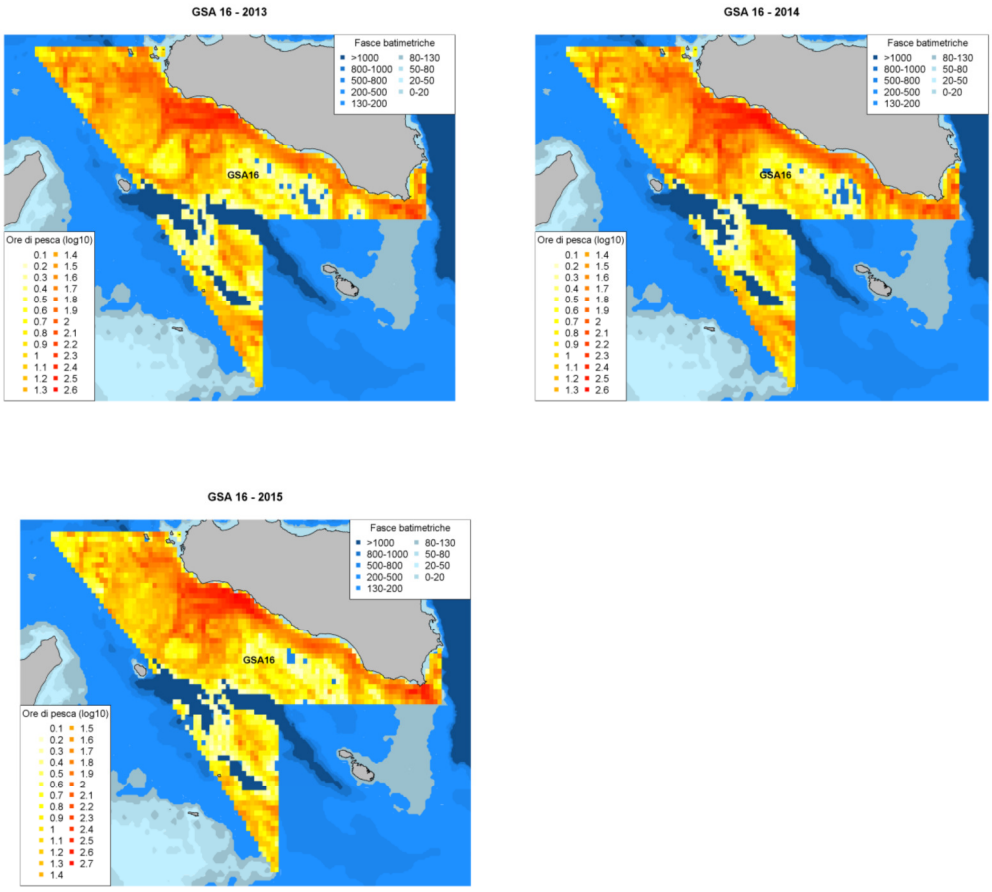


Figure 4.3.1.2 - Fishing activities of the trawling fleet in the GSA16. The values represent the average fishing hours per cell, calculated from the monthly hours for the years 2013 to 2015 (MIPAAFT, 2017).

It is important to clarify that a substantial portion of the large trawl fleet (24-40 m LFT), which mainly targets deep-sea species, has shown a gradual shift in the fishing of the Strait of Sicily marines, due to the reduction of catches, from traditional western areas (GSA 16 and 12), to those south of Malta (GSA 15), to the southern Ionian (GSA 21), until reaching, starting from 2004, the exploitation of the batial bottoms of the entire eastern basin of the Mediterranean (Figure 4.3.1.3). In recent years, during the shrimp season, which runs from March to September, about twenty Sicilian trawlers operate almost permanently in international waters off Greece, Turkey, Cyprus, Lebanon, Israel, Egypt and Libya, on areas fishing ranges between 500 and 800 meters deep. The broadsides can last up to about three months even if, every 20-30 days, the caught catch (red shrimp, pink shrimp, scampi, large cod) is landed in the foreign port closer to fishing places and shipped to Italy by air (Garofalo et al., 2007).

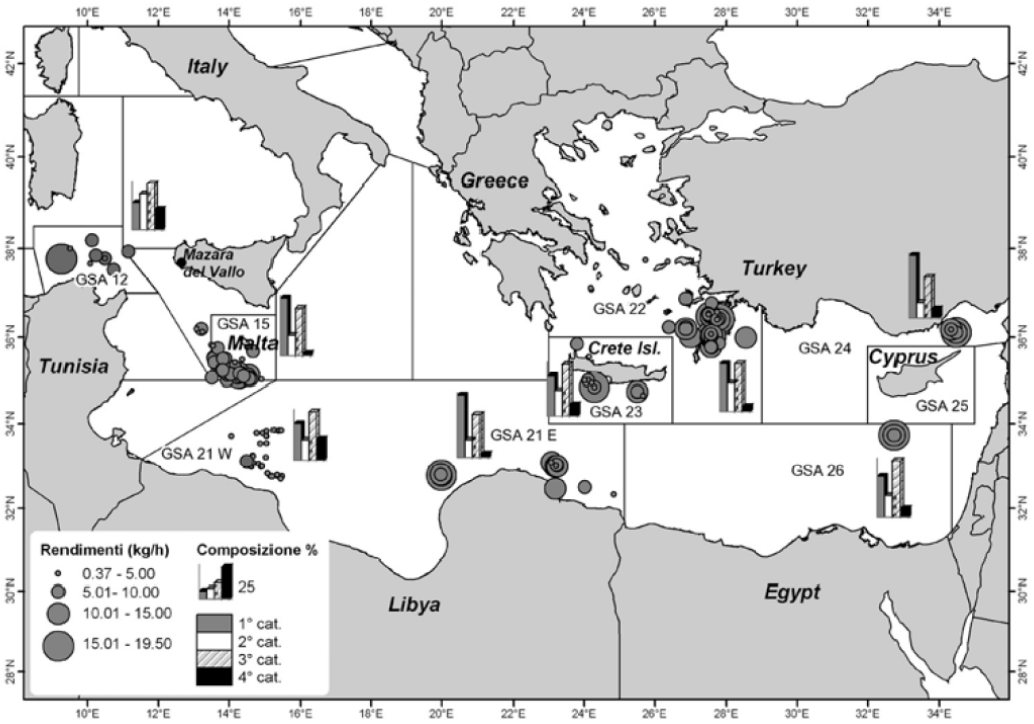


Figure 4.3.1.3 - Catches by unit of effort and relative percentage composition of the giant red shrimp commercial categories in the different GSAs exploited by the trawlers of Mazara del Vallo (2004-2006; Garofalo et al., 2007).

The purse seine are characterized by medium size (18-24 m LFT), are located in the ports of Trapani and Porto Empedocle and operate mainly in coastal waters.

The boats that use drifting longline for large pelagic fish are characterized by medium size (12-24 m LFT), are located in the ports of Trapani, Syracuse and Porto Empedocle and operate mainly in international waters.

Regarding the management, at various levels, of the resources involved in the activities selected fisheries (UoA) - international (ICCAT), regional (GFCM), Community (EU / EC) and national (MIPAAFT) - see Chapter 3.

4.3.2 Status of the stocks exploited by the selected UoAs

Euroepan anchovy (*Engraulis encrasicolus*)

The European anchovy is caught in the Sicilian Channel[2] mainly with the purse seine and the pelagic pair trawl, even if in this GSA the selected UoA is only the one constituted by the fishing with the purse seine (PS) for small pelagic fish. In terms of the status of the resource, the evaluation was carried out with an analytical model (XSA; GFCM, 2017), which did not provide reliable results due to inconsistencies in the input data. The analytical model has indeed highlighted very high SSB values (figure 4.3.2.1) and unrealistically low fishing mortality values. As a result, this

[2] Sicilian Channel or Strait of Sicily are synonyms of Southern Sicily, in indicating GSA 16.

assessment was considered preliminary and it was suggested to continue with the data review process.

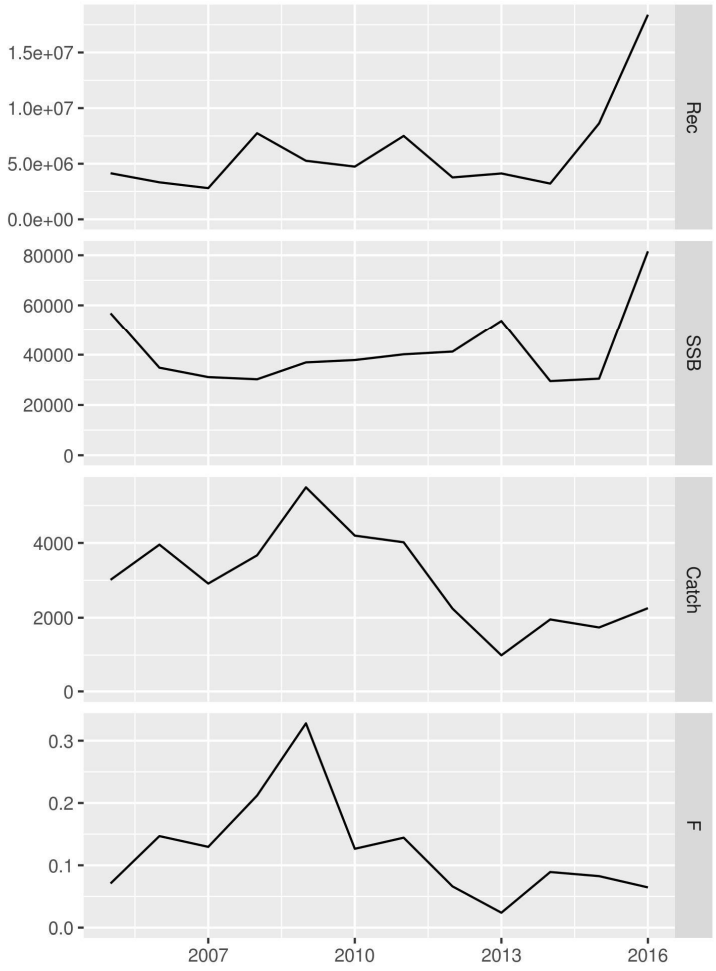


Figure 4.3.2.1 – Results of the evaluation of the European anchovy (Engraulis encrasicolus) in GSA 16 (GFCM, 2017).

Deep-water rose shrimp (*Parapenaeus longirostris*)

The deep-water rose shrimp is fished in the Sicilian Channel mainly with trawl nets having as target group demersal fish (DEF: 75%). This stock was assessed by combining catches, biological and abundance data from GSAs 12, 13, 14, 15 and 16 using an analytical model (XSA, GFCM 2017). The results of these calculations show a state of over-exploitation with an increase in fishing mortality above the reference level (F0.1 = 0.83; Figure 4.3.2.2). Spawning stock biomass (SSB) showed a stable trend and is estimated at around 12,354 tonnes in 2016 (Figure 4.3.2.2). Recruitment also remained stable throughout the period investigated (Figure 4.3.2.2).

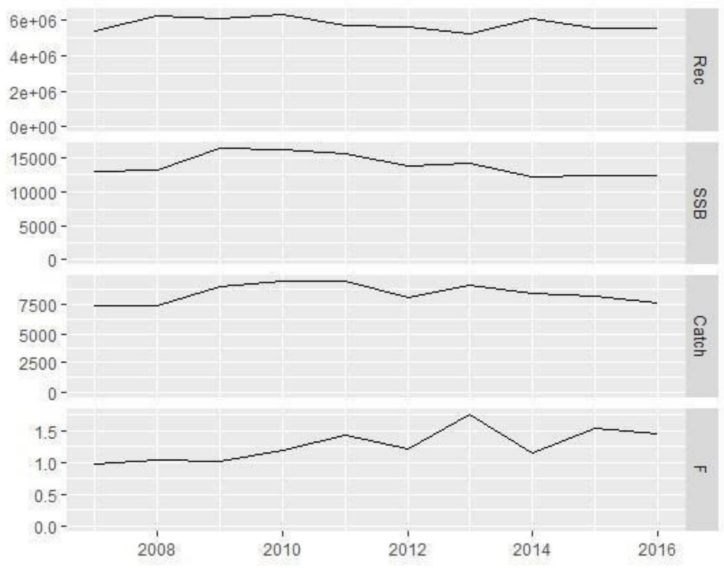


Figure 4.3.2.2 – Results of the evaluation of the Deep-water rose shrimp (Parapenaeus longirostris) in GSA 12-16 (GFCM, 2017).

Giant red shrimp (*Aristeomorpha foliacea*)

The giant red shrimps are fished in the Sicilian Channel mainly with trawl nets having deep-sea species as their target group (DWS: 84%). The species is not currently subject to an analytical evaluation, nor are empirical reference points available that can be used to evaluate the exploitation status. The biomass index for this species, estimated as part of the MEDITS trawling campaign, shows clear fluctuations in the period 1994-2015 with a general decreasing trend (MIPAAFT, 2017; Figure 4.3.2.3).

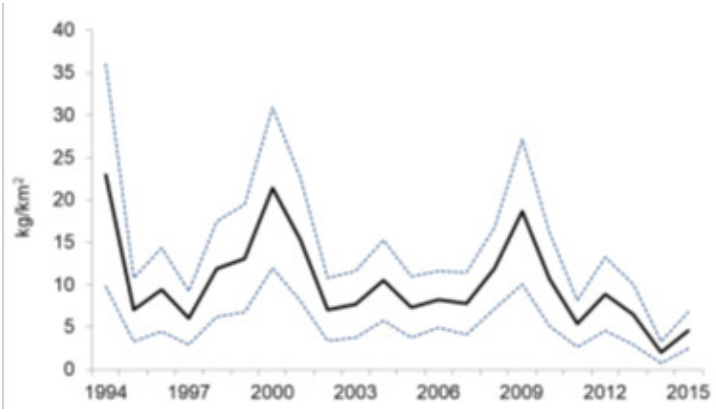


Figure 4.3.2.3 – Biomass index trend of giant red shrimp (*Aristeomorpha foliacea*) in GSA16. MEDITS data for the period 1994-2015 (MIPAAFT, 2017).

Blue and red shrimp (*Aristeus antennatus*)

The blue and red shrimp is fished in the Sicilian Channel mainly with trawl nets having deep-sea species as a target group (DWS: 82%). For this species there is no evaluation of the status of the resource in this area nor abundance indices are available. The landed data available from the economic data-call (AER, 2018) show a

stable pattern of the species in GSA 16 from 2008 to 2014 followed by a clear increase over the next two years (Figure 4.3.2.4).

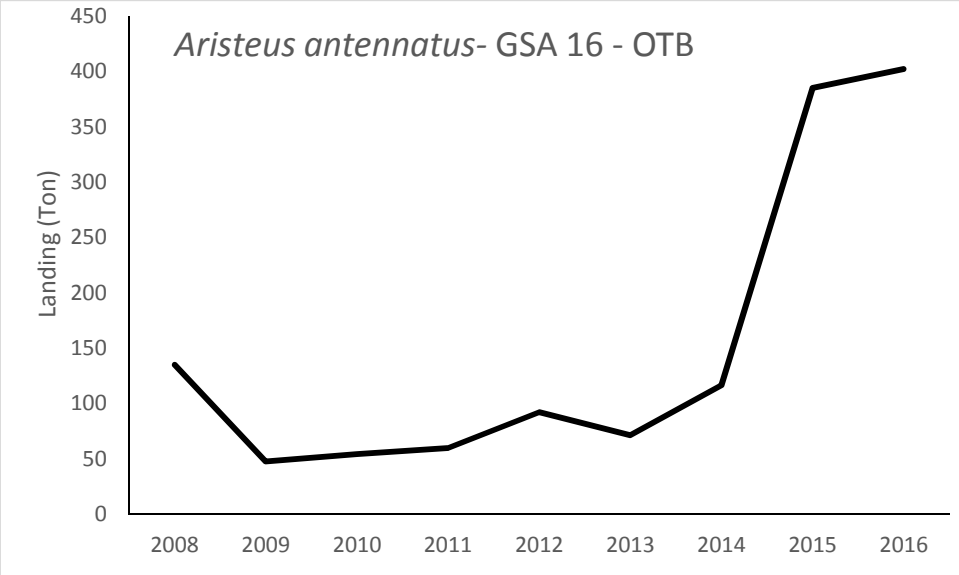


Figure 4.3.2.4 – Trend of blue and red shrimp (*Aristeus antennatus*) landings fished with bottom otter trawl (OTB) in GSA 16 (AER, 2018).

Musky octopus (*Eledone moschata*)

The musky octopus is fished in the Sicilian Channel mainly with trawl nets having as target group demersal fish (DEF: 94%). The species is not currently subject to an analytical evaluation, nor are empirical reference points available that can be used to evaluate the exploitation status. The biomass index for this species, estimated as part of the MEDITS trawling campaign, shows clear fluctuations in the period 1994-2008, followed by a general trend decreasing in the following period (MIPAAFT, 2017; Figure 4.3.2.5).).

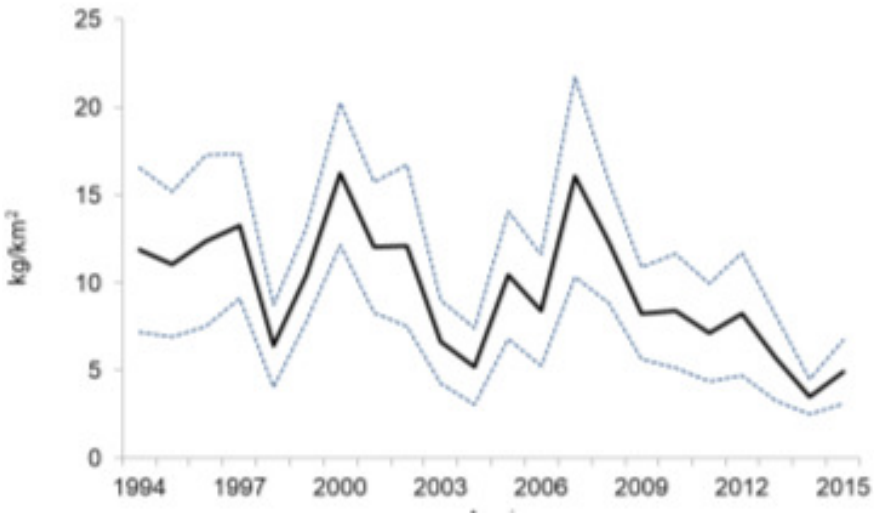


Figure 4.3.2.5 – Biomass index trend of Musky octopus (*Eledone moschata*) in GSA16. MEDITS data for the period 1994-2015 (MIPAAFT, 2017).

European hake (*Merluccius merluccius*)

The European hake is fished in the Sicilian Channel mainly with trawl nets having as a group of target species demersal fish (DEF: 73%). The evaluation is performed by combining the data of the GSAs 12, 13, 14, 15 and 16 together and using an analytical model (XSA, GFCM 2017). The exploitation status in terms of fishing mortality shows a decreasing trend from 2007 to 2016 with the current F (0.73) much higher than the reference value estimated as 0.20 (FMSY = F0.1; GFCM 2017; 4.3.2.6). Recruitment shows general stability while spawning biomass (SSB) has shown a continuous increasing trend throughout the historical series (Figure 4.3.2.6).

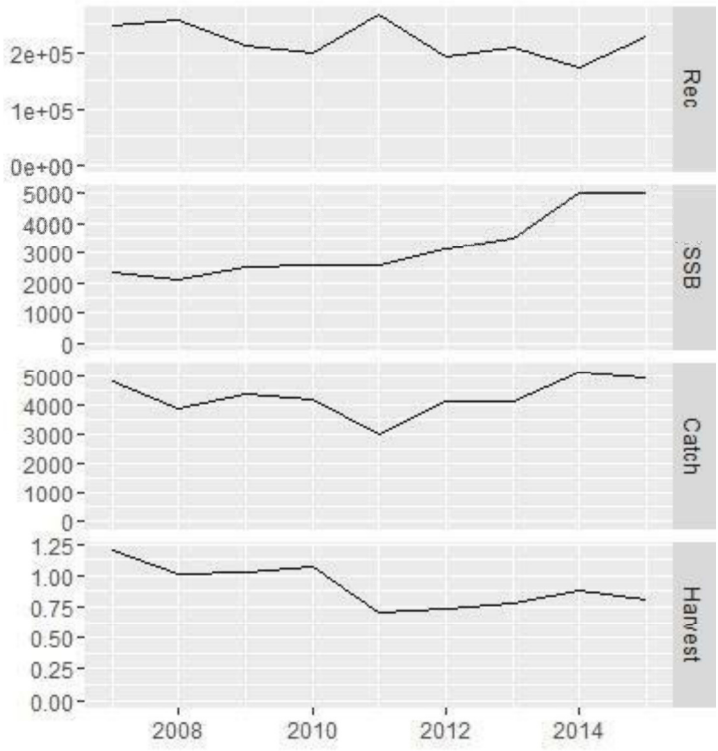


Figure 4.3.2.6 – Results of the evaluation of the European hake (Merluccius merluccius) in GSA 12-16 (GFCM, 2017).

Swordfish (*Xiphias gladius*)

Swordfish is fished in the strait of Sicily mainly with drifting long lines. In terms of the status of the resource, the evaluation is carried out with an analytical model (XSA, ICCAT, 2017) combining the fishing statistics of the entire Mediterranean basin, considering that this species is distributed throughout the area as a single stock. The results of this evaluation are reported in the chapter on the results concerning the GSA 10 (Annex I, Paragraph 4.1.2).

European pilchard (*Sardina pilchardus*)

The European pilchar is fished in the Sicilian Channel mainly with the purse seine and pelagic pair trawl, even if in this GSA the selected UoA is only that constituted by the

fishing with the purse seine (PS). In terms of the status of the resource, the evaluation was carried out with an analytical model (XSA; GFCM, 2017), which however did not provide reliable results due to inconsistencies in the input data. Indeed, the analytical model highlighted high residues with an irregular distribution. As a result, this assessment was considered preliminary and it was suggested to continue with the data and model review process.

Bluefin tuna (*Thunnus thynnus*)

The bluefin tuna is fished in the Sicily Channel mainly with drifting longlines. In terms of the status of the resource, the assessment is carried out with an analytical model (VPA, ICCAT, 2017b) combining the fishing statistics of the whole Mediterranean basin and the Eastern Atlantic, considering that this species is distributed throughout the area and is considered as a single stock. The trend of fishing mortality (F) for young specimens (2-5 years) has shown a continuous increase up to the last years. Since 2008, fishing mortality of bluefin tuna 2 and 5 years has dropped dramatically to reach historically lower values. For the most adult fish (aged 10 years and over), fishing mortality showed a negative trend until 1980 and then increased in the following years until 2010. From 2010 onwards, a clear reduction in fishing mortality is observed (Figure 4.3.2.7). Spawning stock biomass has clearly increased in recent years while recruitment has shown a reverse trend. These recent trends are consistent with those obtained during the 2012 stock evaluation (ICCAT, 2017b).

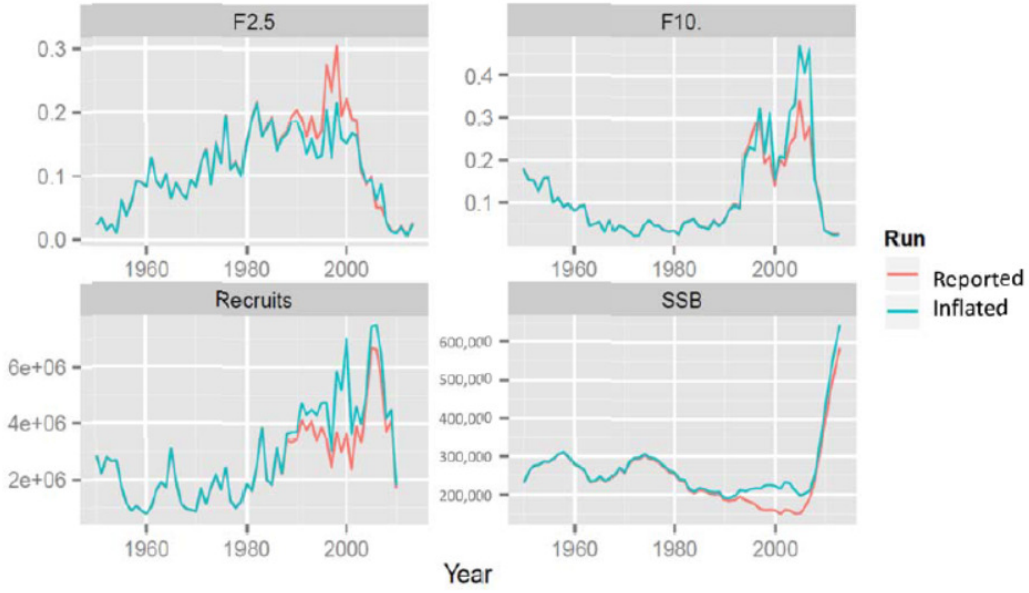


Figure 4.3.2.7 – Result of the evaluation of Bluefin tuna (*Thunnus thynnus*) in Mediterranean and the eastern Atlantic (ICCAT, 2015).

From what is reported in Table 4.3.2.1 it is evident that the fishing mortality is below the reference point (F0.1 = 0.07), while if a high recruitment rate is assumed the breeding biomass is below the precautionary one (SSB0,1).

Table 4.3.2.1 – Diagnosis of the status of the bluefin tuna (Thunnus thynnus) stock in the Mediterranean and the eastern Atlantic (ICCAT, 2017b).

EAST ATLANTIC AND MEDITERRANEAN BLUEFIN TUNA SUMMARY		
Current reported yield (2014)	13,243 t*	
	Reported catch	Inflated catch
Maximum Sustainable Yield[1]		
Low recruitment scenario (1970s)	23,256 t	23,473 t
Medium recruitment scenario (1950-2006)	33,662 t	36,835 t
High recruitment scenario (1990s)	55,860 t	74,248 t
$F_{0.1}$ [2,3]	$0.07yr^{-1}$	$0.07\ yr^{-1}$
$F_{2013}/F_{0.1}$	0.40	0.36
$SSB_{F0.1}$		
Low recruitment scenario (1970s)	351,500 t	354,600 t
Medium recruitment scenario (1950-2006)	508,700 t	556,600 t
High recruitment scenario (1990s)	843,800 t	1,121,000 t
$SSB_{2013}/SSB_{F0.1}$		
Low recruitment scenario (1970s)	1.60	1.74
Medium recruitment scenario (1950-2006)	1.10	1.11
High recruitment scenario (1990s)	0.67	0.55
Stock Status:		
Overfished		
Low recruitment scenario	No	
Medium recruitment scenario	No	
High recruitment scenario	Yes	
Overfishing	No	
TAC (2013 - 2015)	13,400 t – 13,400 t – 16,142 t	
TAC (2016-2017)	19,296 t – 23,155 t	

[1] Approximated as the average of the potential longterm yield that is expected at a $F_{0.1}$ strategy. The levels of these yields have been computed using the selectivity pattern over 2009-2011 and can substantially change according to different selectivity patterns.
[2] The Committee decided, on the basis of current published literature, to adopt $F_{0.1}$ as the proxy for F_{MSY}. $F_{0.1}$ has been indeed shown to be more robust to uncertainty about the true dynamics of the stock and observation errors than F_{MAX}. Values are given for both reported and inflated catch scenarios, respectively. $F_{0.1}$ have been also computed using the 2012 selectivity pattern and can thus substantially change according to different selectivity patterns.
[3] The recruitment levels do not impact $F_{0.1}$.
* As of 25 September 2015.

Red mullet (*Mullus barbatus*)

The red mullet in the Sicilian Channel is fished mainly with trawl nets having as target group demersal fish (DEF; 80%). The evaluation of this species is carried out by combining the GSAs 15 and 16 and using an analytical method (XSA, GFCM 2017). The results of the last available evaluation show fishing mortality generally decreasing, but with the current value slightly higher than F0.1 (0.45), chosen as FMSY proxy (Figure 4.3.2.8). Furthermore, according to the results of the evaluation, SSB shows a decreasing trend in the period 2006-2016 (Figure 4.3.2.8). Recruitment showed a decline in the first six years of the historical series, reaching the minimum value in 2012, followed by an increasing trend in the following period (Figure 4.3.2.8).

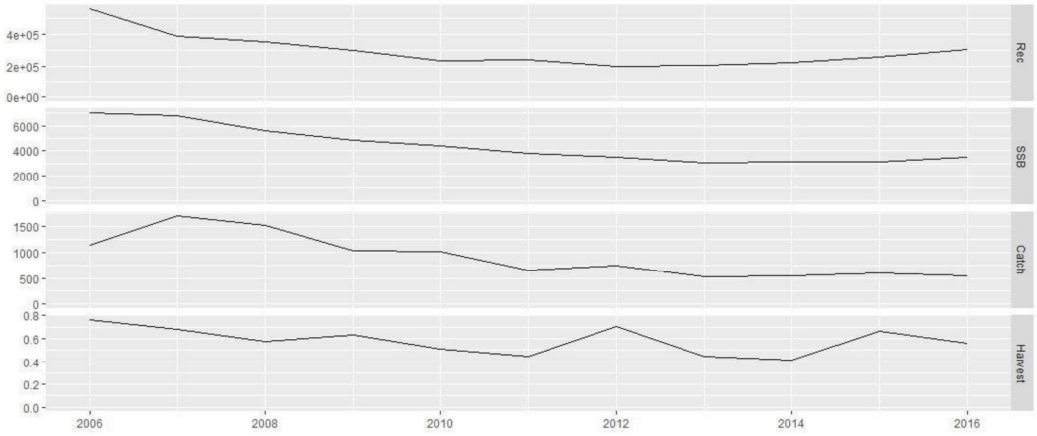


Figure 4.3.2.8 – Results of the evaluation of red mullet (*Mullus barbatus*) in GSA 15-16 (GFCM, 2017).

4.3.3 List of the species exploited by the selected UoAs

This section shows the lists of species or groups of species that result in the capture of a specific fishing gear for the respective UoAs selected in the GSA 16. Specifically:

Table 4.3.3.1 shows the list of species or groups of species detected for the UoA using the bottom otter trawl (OTB) operating in the GSA 16.

Table 4.3.3.2 shows the list of species or groups of species detected for the UoAs using the purse seine (PS) small pelagic fish (SPF) operating in GSA 16.

Table 4.3.3.3 shows the list of species or groups of species detected for the UoA using the drifting longlines (LLD) for large pelagic fish (LPF) operating in the GSA 16.

Table 4.3.3.1 – – List of species detected for the UoA using bottom otter trawl (OTB) in the GSA 16. The species underlined are the species detected for the selected UoA.

Italian name	English name	Scientific name	Mean landing in weight 2015-2016 (Ton)	Percentage (%)
Gamberi bianchi o rosa	Deep-water rose shrimp	*Parapenaeus longirostris*	5726.322	42.023
Gamberi rossi	Giant red shrimp	*Aristaeomorpha foliacea*	1439.801	10.566
Nasello	European hake	*Merluccius merluccius*	1303.487	9.566
Triglie di fango	Red mullet	*Mullus barbatus*	732.621	5.376
Moscardino muschiato	Musky octopus	*Eledone moschata*	447.536	3.284
Gambero viola	Blue and red shrimp	*Aristeus antennatus*	393.654	2.889
Totano comune	Broadtail shortfin squid	*Illex coindetii*	310.004	2.275
Seppia mediterranea o comune	Common cuttlefish	*Sepia officinalis*	254.861	1.870
Scampi	Norway lobster	*Nephrops norvegicus*	251.838	1.848
Calamaro mediterraneo	European squid	*Loligo vulgaris*	202.947	1.489
Triglie di scoglio	Surmullet	*Mullus surmuletus*	198.073	1.454
Sugarello o suro	Atlantic horse mackerel	*Trachurus trachurus*	186.642	1.370
Pesce sciabola	Silver scabbardfish	*Lepidopus caudatus*	171.931	1.262
Molluschi	Marine molluscs nei	*Mollusca*	165.195	1.212

Italian name	English name	Scientific name	Mean landing in weight 2015-2016 (Ton)	Percentage (%)
Polpo comune o di scoglio	Common octopus	*Octopus vulgaris*	159.457	1.170
Pannocchie	Spottail mantis squillid	*Squilla mantis*	159.386	1.170
Budego	Blackbellied angler	*Lophius budegassa*	137.984	1.013
Razza chiodata	Thornback ray	*Raja clavata*	127.046	0.932
Calamaretto	Alloteuthis squids nei	*Alloteuthis spp*	80.975	0.594
Pagello fragolino	Common pandora	*Pagellus erythrinus*	74.330	0.545
Moscardino bianco	Horned octopus	*Eledone cirrhosa*	73.261	0.538
Mendola, mennola	Blotched picarel	*Spicara maena*	66.430	0.487
Pesce san pietro	John dory	*Zeus faber*	64.099	0.470
Altri pesci	Marine fishes nei	*Osteichthyes*	53.565	0.393
Boghe	Bogue	*Boops boops*	48.062	0.353
Pastinaca	Shortnose greeneye	*Chlorophthalmus agassizi*	46.439	0.341
Scorfano rosso	Red scorpionfish	*Scorpaena scrofa*	42.121	0.309
Sardine	European pilchard(=Sardine)	*Sardina pilchardus*	41.931	0.308
Pagello mafrone	Axillary seabream	*Pagellus acarne*	37.752	0.277
Gattuccio	Small-spotted catshark	*Scyliorhinus canicula*	34.517	0.253
Alici	European anchovy	*Engraulis encrasicolus*	30.991	0.227
Rana pescatrice	Angler(=Monk)	*Lophius piscatorius*	30.437	0.223
Capone testola	Piper gurnard	*Trigla lyra*	25.581	0.188
Capone coccio	Red gurnard	*Aspitrigla cuculus*	24.868	0.182
Gallinella o cappone	Tub gurnard	*Chelidonichthys lucerna*	24.061	0.177
Sogliola comune	Common sole	*Solea solea*	21.739	0.160
Scorfani di fondale	Blackbelly rosefish	*Helicolenus dactylopterus*	21.487	0.158
Linguattola	Spotted flounder	*Citharus linguatula*	20.573	0.151
Razza quattrocchi	Brown ray	*Raja miraletus*	20.445	0.150
Pesce prete	Stargazer	*Uranoscopus scaber*	18.169	0.133
Sugarello maggiore	Mediterranean horse mackerel	*Trachurus mediterraneus*	17.804	0.131
Musdea	Forkbeard	*Phycis phycis*	17.531	0.129
Gronghi	European conger	*Conger conger*	17.465	0.128
Argentine	Argentines	*Argentina spp*	17.391	0.128
Squali	Dogfishes nei	*Squalus spp*	17.075	0.125
Zerro musillo	Curled picarel	*Centracanthus cirrus*	16.610	0.122
Palombo	Blackspotted smooth-hound	*Mustelus punctulatus*	16.054	0.118
Tracine	Weeverfishes nei	*Trachinidae*	14.876	0.109
Cappellano	Poor cod	*Trisopterus minutus*	14.697	0.108
Zerro, menola	Picarel	*Spicara smaris*	13.572	0.100
Sarago sparaglione o sparlotto	Annular seabream	*Diplodus annularis*	12.461	0.091
Sgombro	Atlantic mackerel	*Scomber scombrus*	10.149	0.074
Gobetto	Plesionika shrimps nei	*Plesionika spp*	9.585	0.070
Scorfano nero	Black scorpionfish	*Scorpaena porcus*	9.443	0.069
Melu' o potassolo	Blue whiting(=Poutassou)	*Micromesistius poutassou*	9.337	0.069
Zanchetta	Mediterranean scaldfish	*Arnoglossus laterna*	8.040	0.059
Lanzardo atlantico	Atlantic chub mackerel	*Scomber colias*	7.694	0.056
Capone ubriaco	Streaked gurnard	*Chelidonichthys lastoviza*	7.672	0.056

Italian name	English name	Scientific name	Mean landing in weight 2015-2016 (Ton)	Percentage (%)
Razza bianca	White skate	*Raja alba*	7.323	0.054
Razza maculata	Spotted ray	*Raja montagui*	7.170	0.053
Mazzancolle	Caramote prawn	*Penaeus kerathurus*	6.909	0.051
Cepola	Red bandfish	*Cepola macrophthalma*	6.781	0.050
Pagro comune	Red porgy	*Pagrus pagrus*	6.359	0.047
Serranidae	Groupers, seabasses nei	*Serranidae*	6.147	0.045
Sarago fasciato	Common two-banded seabream	*Diplodus vulgaris*	6.126	0.045
Rombi altri	Turbots nei	*Scophthalmidae*	5.926	0.043
Scorfano rosa	Slender rockfish	*Scorpaena elongata*	4.608	0.034
Elasmobranchi	Sharks, rays, skates, etc, nei	*Elasmobranchii*	4.395	0.032
Aragosta	Common spiny lobster	*Palinurus elephas*	4.376	0.032
Sarago maggiore	White seabream	*Diplodus sargus*	3.691	0.027
Palombo liscio	Smooth-hound	*Mustelus mustelus*	3.347	0.025
Dentici	Common dentex	*Dentex dentex*	3.321	0.024
Sogliole miste	Soles nei	*Soleidae*	3.132	0.023
Occhiate	Saddled seabream	*Oblada melanura*	3.034	0.022
Orate	Gilthead seabream	*Sparus aurata*	2.871	0.021
Alalunga	Albacore	*Thunnus alalunga*	2.785	0.020
Rombo chiodato	Turbot	*Psetta maxima*	2.376	0.017
Pesce spada	Swordfish	*Xiphias gladius*	2.265	0.017
Lanzardo	Chub mackerel	*Scomber japonicus*	2.127	0.016
Salpa	Salema	*Sarpa salpa*	1.987	0.015
Altri crostacei	Marine crustaceans nei	*Crustacea*	1.976	0.014
Razza stellata	Mediterranean starry ray	*Raja asterias*	1.821	0.013
Cefalo volpina	Flathead grey mullet	*Mugil cephalus*	1.720	0.013
Cernia di scoglio	Dusky grouper	*Epinephelus marginatus*	1.690	0.012
Cefali altri	Mullets nei	*Mugilidae*	1.335	0.010
Rombo liscio	Brill	*Scophthalmus rhombus*	1.147	0.008
Palamita	Atlantic bonito	*Sarda sarda*	1.117	0.008
Pagello rovello	Blackspot(=red) seabream	*Pagellus bogaraveo*	1.113	0.008
Ricciole	Greater amberjack	*Seriola dumerili*	1.110	0.008
Musdea bianca	Greater forkbeard	*Phycis blennoides*	0.997	0.007
Razze altre	Raja rays nei	*Raja spp*	0.922	0.007
Tanute	Black seabream	*Spondyliosoma cantharus*	0.902	0.007
Spigole	European seabass	*Dicentrarchus labrax*	0.809	0.006
Lampughe	Common dolphinfish	*Coryphaena hippurus*	0.727	0.005
Scorfanotto	Small red scorpionfish	*Scorpaena notata*	0.624	0.005
Totano viola	European flying squid	*Todarodes sagittatus*	0.538	0.004
Seppioline altre	Cuttlefish, bobtail squids nei	*Sepiidae, Sepiolidae*	0.521	0.004
Granchi	Marine crabs nei	*Brachyura*	0.452	0.003
Astice	European lobster	*Homarus gammarus*	0.401	0.003
Latterino	Silversides(=Sand smelts) nei	*Atherinidae*	0.373	0.003
Pesce serra	Bluefish	*Pomatomus saltatrix*	0.226	0.002
Aguglie	Garfish	*Belone belone*	0.205	0.002

Italian name	English name	Scientific name	Mean landing in weight 2015-2016 (Ton)	Percentage (%)
Alaccia	Round sardinella	*Sardinella aurita*	0.174	0.001
Luccio	European barracuda	*Sphyraena sphyraena*	0.129	0.001
Cicerello	Sandeels(=Sandlances) nei	*Ammodytes spp*	0.127	0.001
Tonnetto	Little tunny(=Atl,black skipj)	*Euthynnus alletteratus*	0.123	0.001
Murene	Mediterranean moray	*Muraena helena*	0.122	0.001
Sarago pizzuto	Sharpsnout seabream	*Diplodus puntazzo*	0.071	0.001
Pesce pettine o pesce rasoio	Pearly razorfish	*Xyrichtys novacula*	0.042	< 0.001
Scombroidei	Frigate and bullet tunas	*Auxis thazard, A, rochei*	0.036	< 0.001
Passera	European flounder	*Platichthys flesus*	0.028	< 0.001

Source: estimates from MIPAAFT/National Fisheries Data Collection Programme

Table 4.3.3.2 – List of species detected for the UoA using purse seine (PS) for small pelagic fish (SPF) in the GSA 16. The species underlined are the species detected for the selected UoA.

Italian name	English name	Scientific name	Mean landing in weight 2015-2016 (Ton)	Percentage (%)
Alici	European anchovy	*Engraulis encrasicolus*	1257.148	53.751
Sardine	European pilchard(=Sardine)	*Sardina pilchardus*	851.856	36.422
Salpa	Salema	*Sarpa salpa*	106.359	4.548
Alaccia	Round sardinella	*Sardinella aurita*	53.093	2.270
Sgombro	Atlantic mackerel	*Scomber scombrus*	19.690	0.842
Sugarello o suro	Atlantic horse mackerel	*Trachurus trachurus*	11.205	0.479
Ricciole	Greater amberjack	*Seriola dumerili*	9.430	0.403
Lanzardo atlantico	Atlantic chub mackerel	*Scomber colias*	6.877	0.294
Boghe	Bogue	*Boops boops*	4.476	0.191
Scombroidei	Frigate and bullet tunas	*Auxis thazard, A. rochei*	4.437	0.190
Occhiate	Saddled seabream	*Oblada melanura*	3.979	0.170
Tonnetto	Little tunny (=Atl.black skipj)	*Euthynnus alletteratus*	3.001	0.128
Lampughe	Common dolphinfish	*Coryphaena hippurus*	2.686	0.115
Altri pesci	Marine fishes nei	*Osteichthyes*	1.827	0.078
Sugarello pittato	Blue jack mackerel	*Trachurus picturatus*	1.008	0.043
Palamita	Atlantic bonito	*Sarda sarda*	0.789	0.034
Zerro musillo	Curled picarel	*Centracanthus cirrus*	0.515	0.022
Calamaro mediterraneo	European squid	*Loligo vulgaris*	0.216	0.009
Totano comune	Broadtail shortfin squid	*Illex coindetii*	0.088	0.004
Sarago maggiore	White seabream	*Diplodus sargus*	0.086	0.004
Pesce sciabola	Silver scabbardfish	*Lepidopus caudatus*	0.061	0.003

Source: estimates from MIPAAFT/National Fisheries Data Collection Programme

Table 4.3.3.3 – List of species detected for UoA using drift longlines (LLD) in GSA 16. The species underlined are the species detected for the selected UoAs.

Italian name	English name	Scientific name	Mean landing in weight 2015-2016 (Ton)	Percentage (%)
Pesce spada	Swordfish	*Xiphias gladius*	677.884	73.018
Tonno rosso	Atlantic bluefin tuna	*Thunnus thynnus*	224.209	24.151
Alalunga	Albacore	*Thunnus alalunga*	9.790	1.055
Nasello	European hake	*Merluccius merluccius*	6.939	0.747
Capone coccio	Red gurnard	*Aspitrigla cuculus*	2.872	0.309
Scorfano rosso	Red scorpionfish	*Scorpaena scrofa*	1.423	0.153
Pesce sciabola	Silver scabbardfish	*Lepidopus caudatus*	1.216	0.131
Istiophoridae	Marlins,sailfishes,etc, nei	*Istiophoridae*	1.103	0.119
Squali	Dogfishes nei	*Squalus spp*	1.012	0.109
Tonnetto	Little tunny (=Atl,black skipj)	*Euthynnus alletteratus*	0.526	0.057
Palombo	Blackspotted smooth-hound	*Mustelus punctulatus*	0.518	0.056
Verdesca	Blue shark	*Prionace glauca*	0.233	0.025
Luccio	European barracuda	*Sphyraena sphyraena*	0.219	0.024
Razza chiodata	Thornback ray	*Raja clavata*	0.186	0.020
Rana pescatrice	Angler(=Monk)	*Lophius piscatorius*	0.167	0.018
Lampughe	Common dolphinfish	*Coryphaena hippurus*	0.044	0.005
Ricciole	Greater amberjack	*Seriola dumerili*	0.039	0.004

Source: estimates from MIPAAFT/National Fisheries Data Collection Programme

4.3.4 Environmental context

The strait of Sicily contains a wide area of sea between the southern coast of Sicily and the one facing North Africa. On the west side it is bounded by the Banco Skerki while to the east by the 1,000 m isobath, beyond which the Ionian Sea begins. The whole area is characterized by a complex morphology of the seabed and is home to important hydrodynamic processes linked to the exchange of water between the western and eastern Mediterranean basin (Figure 4.3.4.1).

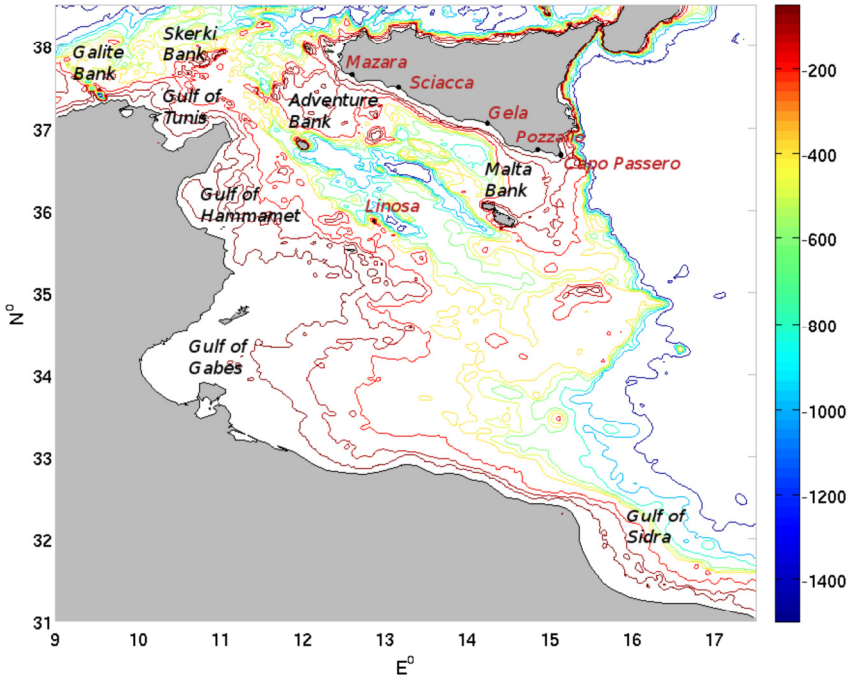


Figure 4.3.4.1 – Strait of Sicily bathymetry (MIPAAFT, 2017)

Although in the strait of Sicili there are no significant watercourses, the area is known for the high productivity of fisheries resources, in particular the demersal ones (Fiorentino et al., 2011). Among the factors contributing to this high productivity are mentioned:

- the vast extension of the continental shelf on both the Sicilian and African sides and the presence of numerous large banks of the open sea;
- the transparency of the water that allows the photosynthetic activity, even in the benthic area, up to a fair depth;
- the stable presence of nutrient enrichment processes (vortexes and upwellings) and concentration of marine organisms (fronts);
- the high biodiversity due to the nature of the biogeographical border between the western and eastern basins.

Along the southern coast of Sicily, the continental shelf is characterized by two large banks, the Banco Avventura to the west and the Banco di Malta to the east, separated by a narrow platform in the central area. The African platform is very wide along the Tunisian coasts, while it tapers along the Libyan coasts except for the Gulf of Sirte. The profile of the continental slope between Sicily and Tunisia is steep and irregular, reducing its inclination between Malta and the Libyan coasts. The slope again returns to be very steep to the east of the Banco di Malta.

The central part of this area is characterized by a narrow continental shelf with, on its sides, two imposing rocky banks: to the east the Adventure bench and to the west the Banco di Malta. At the edge of the platform, although the bottom slopes steeply, the presence of many canyons and submarine mounts make the nature of this area highly irregular.

The thickness of the platform is influenced by the influx of terrigenous material transported by the Atlantic Ionian Stream (AIS, one of the two most important

currents of the Mediterranean); in fact, the thickness of clay and sand varies depending on the distance from the coast, about 5-6 meters near and almost zero along the margins of the platform. Although the Banco Avventura is characterized by a flat surface with a depth of about 80-90 meters, thanks to the strong currents that come from the east and from the west, this bench is cut off from the influx of terrigenous material, therefore, leaving space to sediment mainly of biological origin:

1) sand formed by the accumulation of skeletons and shells of organisms (eg bryozoans, shells, tubes of polychaetes, foraminifera)

2) fragments of biogenic concretions (corals).

The volcanic activity that has characterized this area of the Mediterranean for millions of years has caused the erection of many marine mountains (the shoals: Tethys, Amphitrite, Galatea, Cimotoe, Graham, Terrible and Nameless) that led to the creation of important habitats . Two of these banks form the island of Pantelleria and the island of Linosa. The subsequent rift caused the formation of three Pantelleria, Linosa and Malta depressions, located in the central part of the strait. The Graham bench, located in the North-East sector of the platform, is an active volcano characterized by lava flows and is located at a depth between 50 and 160 meters.

Given its central position, the Sicilian Channel plays a fundamental role in the Mediterranean thermohaline circulation; in fact, this area is characterized by a complex circulation system that exchanges masses of water between the eastern part of the southern basin and the west part. In particular, a superficial ocean current coming from the Atlantic enters the Mediterranean from the Strait of Gibraltar and, flowing along the Moroccan and Algerian coast, it is divided into two branches: one continues towards the Sardinian channel and the lower Tyrrhenian and the other sinks towards the Strait of Sicily (Figure 4.3.4.2).

This area is also characterized by the presence of vortexes and upwelling (rising currents) whose intensity is influenced by the AIS. The AIS is associated with two large cyclonic vortexes: one that blows over the Banco Avventura and the other outside Capo Passero. This circulation favors the creation of permanent upwelling. In fact, the wind also allows the movement of the water almost in the same direction. As a result, an upward recall is created for the conservation of the mass and the water tends to flow right along the edge of the platform. These rising currents carry nutrient-rich cold waters that increase the production of a large amount of organic matter that supplies food to coastal and pelagic communities.

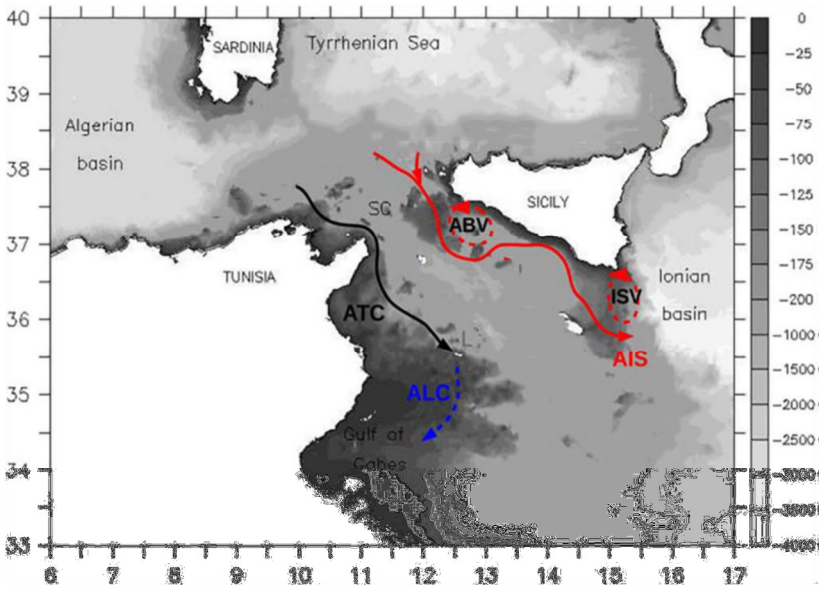


Figure 4.3.4.2 - Map of the Sicilian Channel with the main currents (MIPAAFT, 2017)

The Strait of Sicily is also characterized by the presence of a high variety of benthic communities along the continental shelf. Recent studies have identified different benthic biocenoses: SFBC (fine-calibrated fine sand), HP (Posidonia oceanica), VTC (coastal terrigenous mud), C (coralligenous), DC (Coastal detritus), DL (debris of the open sea), RL (Rocks) of the wide), VB-VSG (sand and mud with gravel), VB-C (compact mud), VB-PSF, (soft mud) (Figure 4.3.4.3).

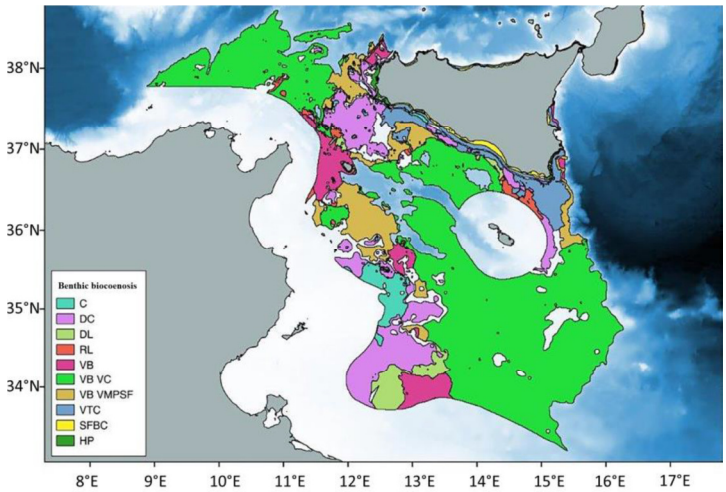


Figure 4.3.4.3 - Biocenosis of the strait of Sicily (MIPAAFT, 2017).

Furthermore, in accordance with the Convention on Biological Diversity (CHM, 2017), the Sicilian Channel is part of one of the significant areas EBSA (Ecologically or Biologically Significant Areas) of the Mediterranean. In this area, there is an exchange of water masses and organisms between the western and eastern Mediterranean basins that determines a biodiversity hotspot. Submarine mountains and deep-water corals are found near Sicily, including communities of white corals, which are vulnerable species and provide a valuable habitat for a number of other species. The

complex oceanographic conditions in this area lead to high productivity and translate into good conditions for the deposition of fish, making the Sicilian Channel an important breeding area for a number of commercially important fish species, including tuna. red, swordfish and anchovy, as well as a number of demersal fish species. The area is a key feeding area for the populations of the greater reserve (Calonectris diomedea), the Yelkouan berta (Puffinus yelkouan) and the European storm bird (Hydrobates pelagicus). The area is also considered an important nursery area for white sharks and Raja militensis.

Moreover, it is known that in this area the common fin whales (Balaenoptera physalus) meet at the end of February and at the beginning of March in the coastal waters of the island of Lampedusa (Italy). However, there is limited information on the presence and use of habitat for this species. Bottlenose dolphins (Tursiops truncatus) have been recorded in the waters around the Pelagie islands. Local subpopulations appear to be habitat dependent, as the biogeographic and hydrographic characteristics influence their distribution and movement patterns. In the Sicilian channel, Lampedusa and Linosa (two Natura 2000 sites) are among the last nesting sites of the Carretta carretta sea turtle) in this part of the Mediterranean (Casale and Mariani, 2014).

Distribution of marine seagrasses

In the Sicilian channel there are the Cymodocea nodosa, the Ruppia maritima and the P. oceanica on almost the entire coast of the island, as shown in the map in Figure 4.1.4.2 (Annex I, GSA 10).

Distribution of coralligenous

In the Sicily channel some information on the distribution of coralligenous is available from several studies. For Sicily and Malta, all available information on the location of the mäerl habitats is provided in the map in Figure 4.1.4.3 (Annex I, GSA 10).

Deep coral biocoenosis

In the Sicilian Channel, there is a remarkable variety of deep coral communities. The sessile benthos in the Sicilian Channel is dominated by the I. elongata, pennatulacean octocorals such as Funiculina quadrangularis and the red coral (C. rubrum) (Freiwald et al., 2009). According to Ragonese et al. (2003), in the Sicily channel there are hard bottoms characterized by huge communities of white corals formed by madrepora (M. oculata and L. prolifera) and barnacles (Balanus sp.). Another yellow coral, Dendrophyllia cornigera lives at higher depths (ie over 500 m), colonizing rocky substrates more exposed to hydrodynamism. Surveys of living colonies of white coral communities dominated by colonies of L. pertusa, M. oculata and D. cornigera were recently identified in the Linosa depression. Near the coral habitats detected in the Sicilian Channel, ninety-six different species have been identified, including four species of black coral (Antipathes dicotoma, Antipathes subpinnata, Parantipathes larix and Leiopathes glaberrima) were recorded during 2012. Community type " cold-seep "have been mapped to the deepest area of the Sicilian Channel near the Gulf of Gela (Taviani et al., 2013; Figure 4.3.4.4).

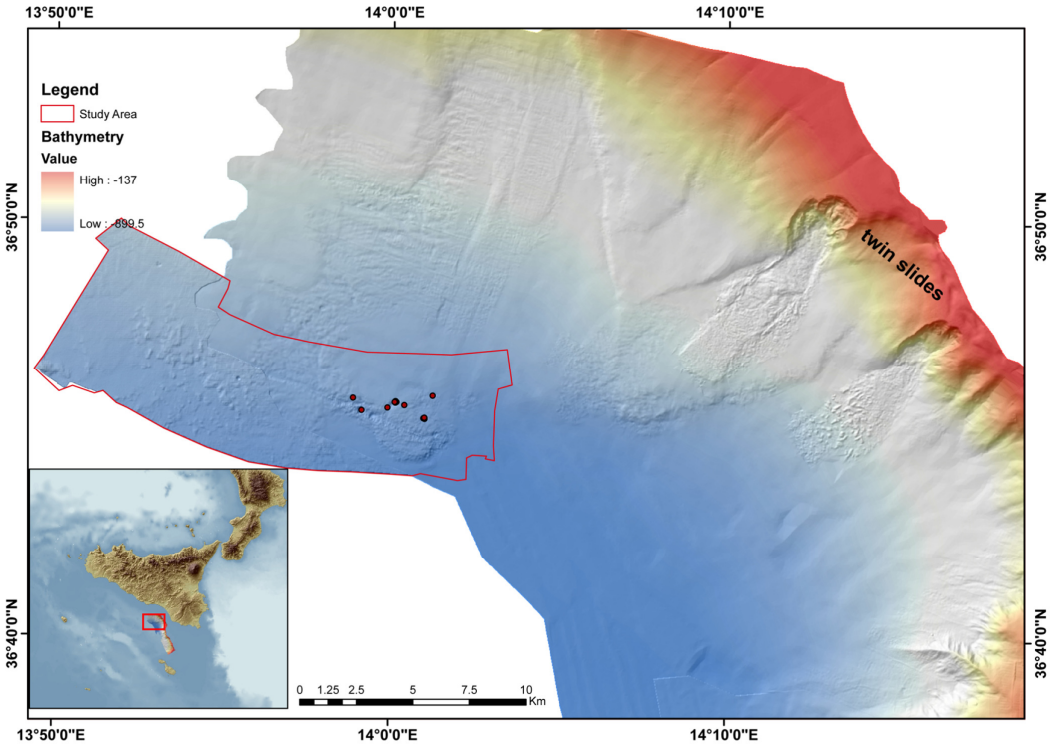


Figure 4.3.4.4 - Map showing the digital survey of the bottom of the Gela basin and the location of the cold seeps (Taviani et al., 2013).

The ecosystem of the Sicilian Channel

From an ecosystem point of view, the Sicilian Channel (GSA 16) is located in the wider ionic ecoregion and the central Mediterranean, and covers the median portion of the Mediterranean from the Italian and Greek coasts to the Libyan ones. In a study conducted all over the Mediterranean modeling the role and impact of primary production and fishing in this area (Piroddi et al., 2016), this large area was found to be the ecoregion with fewer biomass variations during the course of the years, with the exception of the pinnipeds, for which the model has been able to resume the decline since the end of 1970, despite the presence of few data, all the other groups have not shown any directional variation but are characterized by a series of fluctuations. However, observing the overall period (1950-2011), the model has suggested a small increase in biomass since the early 1990s for small demersal fish and crustaceans. The model has not been able to capture the biomass trends for sardines and demersal fish and does not represent well the tendency for benthos (Figure 4.3.4.5).

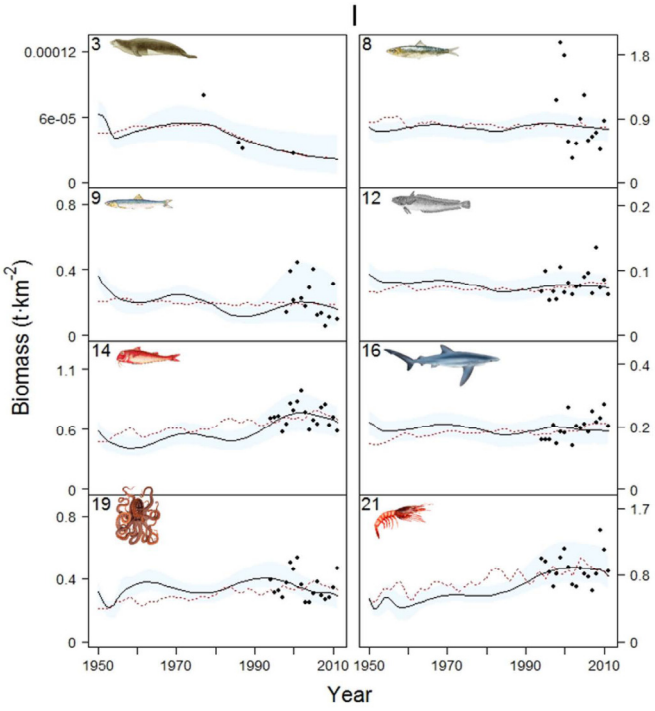


Figure 4.3.4.5 - Representation of the results of the ecosystem model for some functional groups observed in the Ionian and Central Mediterranean for the period 1950-2011 (Piroddi et al., 2016)

4.3.5 Socio-economic context. Analysis of the main socio-economic indicators and of market trends in the 10 UoAs selected for the Deeper Mapping

In 2017, the fishing fleet registered in GSA 16 consisted of 1,171 vessels that accounted for about 32,000 GT.

The strongest segments were those represented by vessels, both shorter and longer than 12 m LOA, employing passive gears (696 boats; 59%) and by trawlers (35%); longliners ranked third, whereas boats targeting predominantly small pelagics (purse seiners and pelagic trawls) accounted for 3% each. Despite the prevalence of artisanal fishing vessels, trawlers were quite numerous, especially south of Sicily and along the northern Apulian coast, where they were 35% of the fleet (national average, 18%).

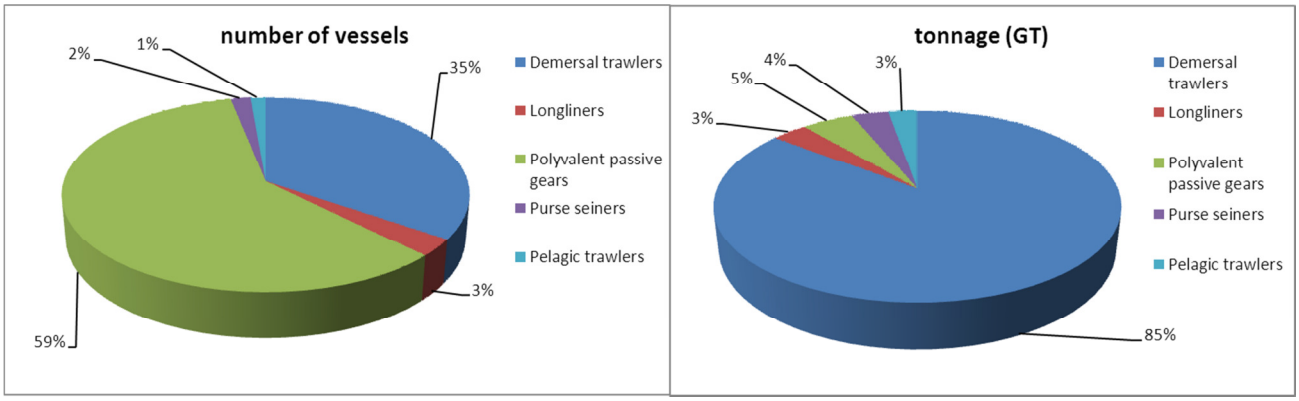


Figure 4.3.5.1 - Composition of the fleet registered in the ports of GSA 16 in relation to predominant fishing technique, vessel number, and tonnage (2017 data). *Source:* MIPAAFT / National Fisheries Data Collection Programme. Data processed by NISEA.

Trawling plays a major role in Sicily. It includes the traditional technique practiced close to the coast and high-sea fishing in the Strait of Sicily and in other areas of the southern and eastern Mediterranean. The two techniques are profoundly different and are characterised by different structural and production features (MIPAAFT, 2017). Whereas coastal trawlers (12 m to 24 m LOA) are at sea for 1 or 2 days and their range is about 30 nm from their home port in GSA 16 or 15, the cruises of high-sea trawlers (>24 m LOA) last up to 4 weeks and their fishing grounds range from Italian open sea areas to the international waters of the central and southern Mediterranean. In 2017, the high-sea trawler fleet with a LOA greater than 24 m registered in GSA 16 comprised little more than 100 vessels (58% of the Italian trawlers >24 m LOA) and was concentrated in the compartment of Mazara del Vallo. The Italian trawlers share their main target species (deep-water rose shrimp) with Tunisian and Maltese trawlers (MIPAAFT, 2017).

In the past few years, about 20 Sicilian trawlers (>24 m LOA) have consistently been exploiting the international waters of Greece, Turkey, Cyprus, Lebanon, Israel, Egypt, and Libya, targeting giant red shrimp during their fishing season (March to September) at a depth of 500-800 m. Cruises in this case may last up to three months, although every 20-30 days the catch (giant red shrimp, deep-water rose shrimp, Norway lobster, large cod, *Lepidorombhus spp.*, and large scorpionfish) is landed in the closest foreign port to be flown to Italy (MIPAAFT, 2017).

Small fishing vessels (<12 m LOA) and polyvalent passive vessels that use gears such as gillnets, drifting nets, longlines, handlines, pots and traps, and harpoons also play

an important role. The polyvalent nature of these boats entails a considerable flexibility and easy adjustment to the season and the morphology of the area through the use of different gears depending on species abundance. Notably, their gears are highly selective, both terms of species and of size (MIPAAFT, 2017).

Given the lack of systematic data on wholesale markets trading the catch of GSA 16 fleets, information was obtained from the demersal species Management Plan of GSA 16 (MIPAAFT, 2017), which are based on direct interviews with the managers of the Trapani fish market and the PO reference persons in Trapani and Marsala. Since the PO of Mazara del Vallo has drawn up its own production and sales operative plan only until 2014, no data are available after this date. However, the interviews highlighted a scarce propensity of producers to use fish markets, since less than 10% of locally caught fish is traded there. In fact, most of the catch is given to local wholesalers, who supply fish shops and the HoReCa segment. Moreover, at some landing sites the catch is sold directly to the final consumer.

The amount of local catch traded in Sicily's fish markets should increase further. This effect may be induced by the provisions of Decree no. 459 of 8.8.2018[3] which states that in areas where wholesale markets and fishermen's markets have been set up with 2007-2013 European Fisheries Fund (EFF) and 2014-2020 EMFF financing, the landed product is to be sold at these facilities.

The fishing activities carried out in the 10 UoAs of GSA 16 that have been selected for the Deeper Mapping, which are listed in Table 4.3.3.1, largely employ purse seines, drifting longlines, and trawls. The next table reports the estimated number of vessels which in 2017 practiced a *métier* based on a combination of gear and group of target species according to DCF programme codifications. Notably, since the utilisation of a gear does not exclude the use of another gear in the course of the same year and, in some cases, even of the same day, it is impossible to sum vessel and crew numbers.

Table 4.3.5.1 - Structural and production indicators for the 10 UoAs selected in GSA 16 (2017 data)[4]

Gear (species defining the selected UoA)	Group of target species	Number of vessels	Estimated crew number	Total value of landings (€ 000)	Value of landings of species of the selected UoA (%)
Drifting longlines *(Swordfish, Atlantic bluefin tuna)*	LPF	44	88	5,638,661	97%
Purse seines (*European anchovy, European pilchard)*	SPF	19	173	1,460,705	234%
Bottom otter trawl *(Deep-water rose shrimp, Giant red shrimp, Blue and red shrimp, Musky octopus,*	DEF	278	1,112	68,159,069	45%
	DWS	49	343	49,271,939	98%

[3] Decree no. 459 of 8.8.2018 of the MIPAAFT General Fisheries Directorate: Provisions concerning the wholesale in Sicily of fish products in wholesale markets and fishermen's markets set up with 2007-2013 EFF and 2014-2020 EMFF financing.

[4] Crew numbers are based on the average job figures reported in the period in question for the fleet segment to which the 10 UoAs belong (where a segment includes vessels using predominantly a given gear)..

Gear (species defining the selected UoA)	Group of target species	Number of vessels	Estimated crew number	Total value of landings (€ 000)	Value of landings of species of the selected UoA (%)
European hake, Red mullet)	MDD	53	210	19,971,968	70%

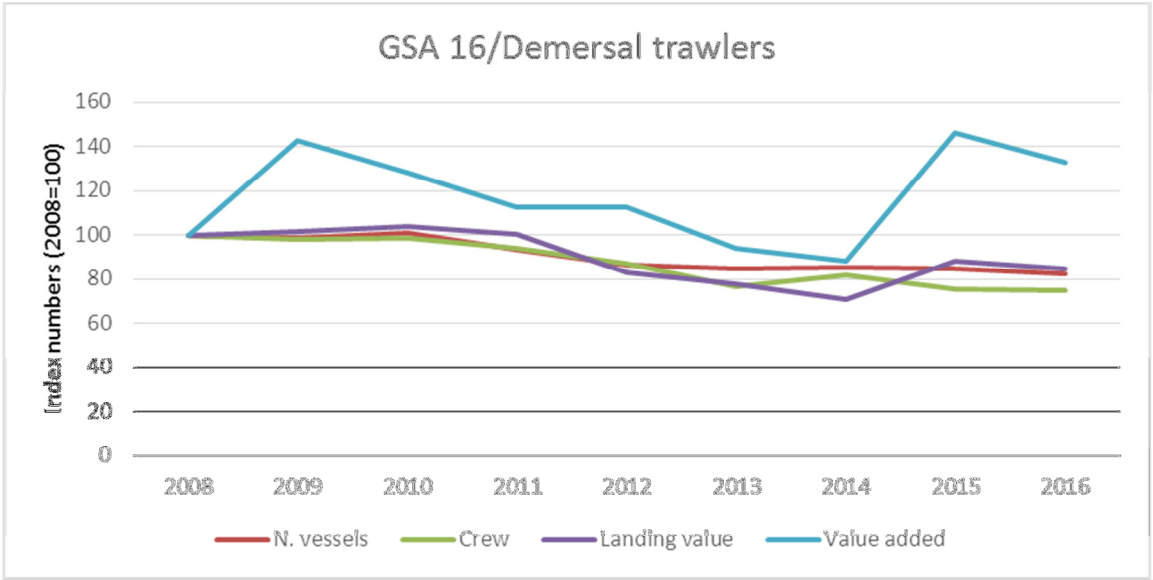
- DEF: Demersal fish
- DWS: Deep-water species
- MDD: Mixed demersal and deep-water species SPF: Piccoli pesci pelagici
- LPF: Large pelagic fish

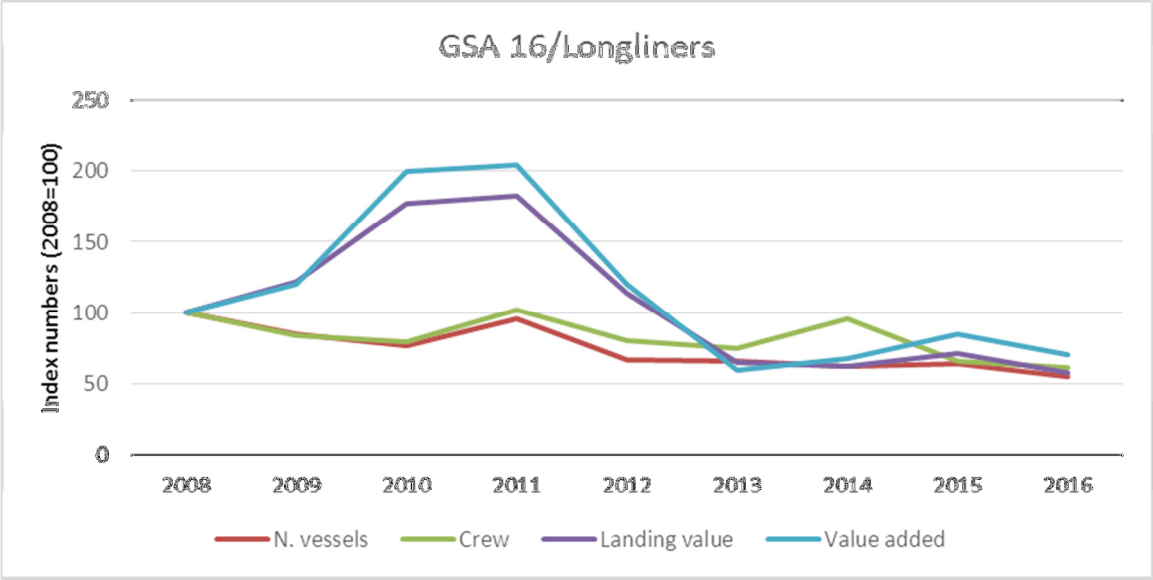
***Source*: MIPAAFT / National Fisheries Data Collection Programme. Data processed by NISEA.**

The 10 UoAs selected for the Deeper Mapping belong to the three main fleet segments defined by Commission Regulation (EC) No 1639/2001, as follows:

- purse seiners (PS): for the UoAs using predominantly *ciancioli*;
- vessels using hooks (HOK): for the UoAs using predominantly longlines, especially to catch swordfish;
- polyvalent passive vessels (PGP) less than 12 m LOA: for the UoAs where vessels use predominantly passive gears and, in the case of those selected for the Deeper Mapping, also longlines but not as the predominant gear;
- demersal trawlers and demersal seiners (DTS): for UoAs using predominantly bottom otter trawls.

The next figure shows the 2008-2016 trends of the main structural indicators (vessel and crew number) and production variables (value of landings and value added) of the fleet segments to which the 10 UoAs of GSA 16 belong.


GSA 16/Demersal trawlers
Index numbers (2008=100)
160
140
120
100
80
60
40
20
0
2008
2009
2010
2011
2012
2013
2014
2015
2016
N. vessels
Crew
Landing value
Value added


GSA 16/Longliners
Index numbers (2008=100)
250
200
150
100
50
0
2008
2009
2010
2011
2012
2013
2014
2015
2016
N. vessels
Crew
Landing value
Value added

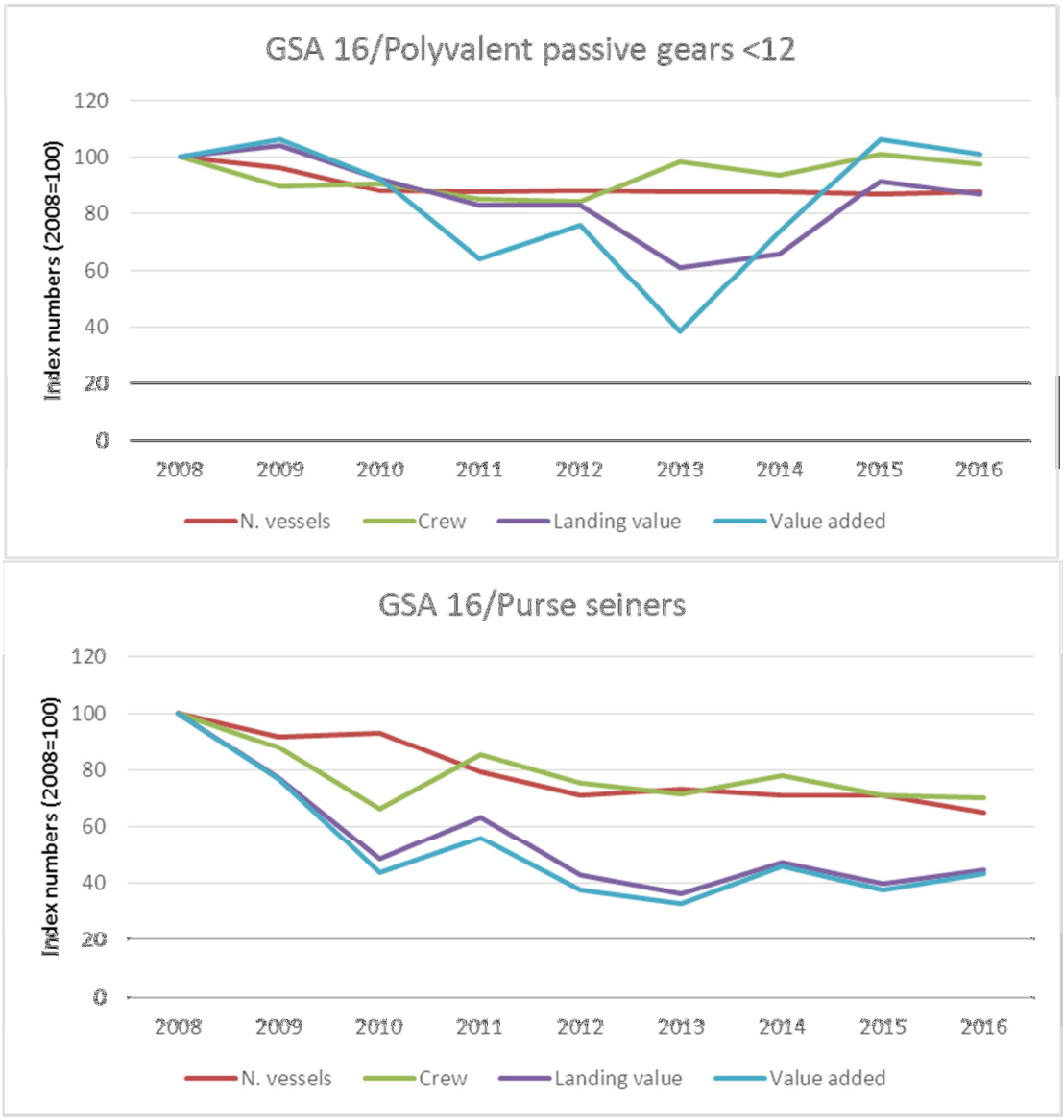


Figure 4.3.5.2 - Trends of the structural and production indicators of the fleet segments to which the 10 UoAs selected in GSA 16 belong; index numbers 2008-2016 (2008=100). *Source:* MIPAAFT / National Fisheries Data Collection Programme. Data processed by NISEA.

The capacity and crew number of trawlers declined throughout the period, whereas the economic performance indicators showed a recovery beginning in 2014, as shown by the rising value added of the segment.

A similar trend regards the longliners, whose indicators surged in 2010-2011 compared with 2008, but subsequently declined and showed a slight recovery in value added beginning in 2014.

In contrast, the economic performance indicators of polyvalent passive vessels less than 12 m LOA fell, at least until 2013, when landings and value added increased.

All the indicators of the vessels using purse seines as the predominant gear declined until 2014, when the fall stopped, albeit at values that are lower than those of the first few years.

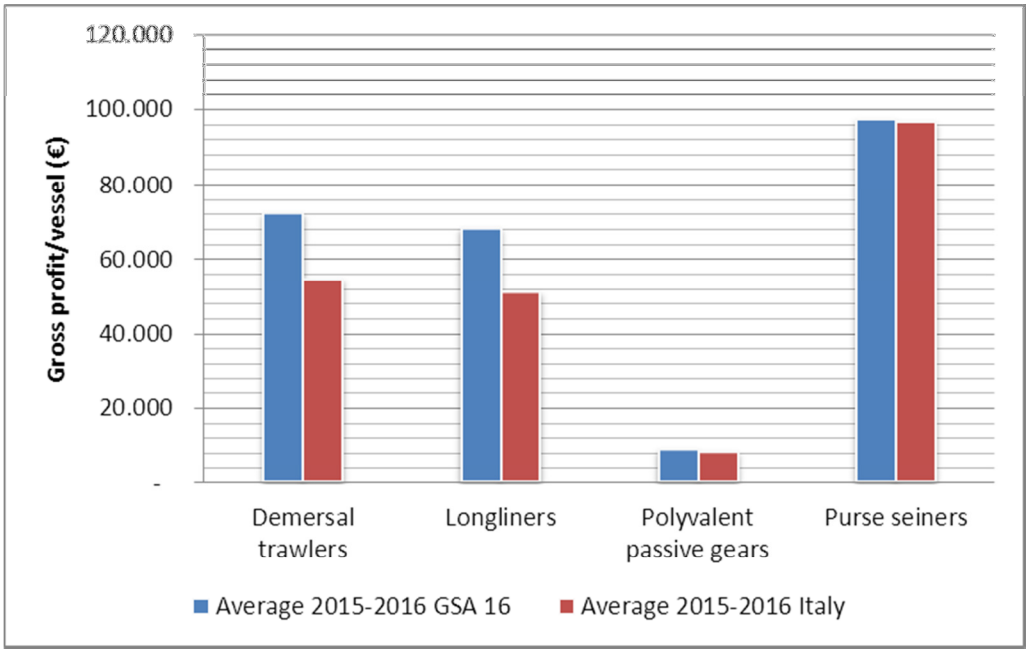


Figure 4.3.5.3 - Gross profit *per* vessel for each fleet segment of the 10 UoAs selected in GSA 16. Comparison with the 2015-2016 Italian national average. *Source:* MIPAAFT / National Fisheries Data Collection Programme. Data processed by NISEA.

The economic performance of the Sicilian GSA 16 vessels was excellent, since for all segments the gross profit *per* vessel was equal to or higher than the Italian average.

The 10 UoAs selected for the Deeper Mapping of GSA 16 are listed below. For each UoA, this report provides quarterly production figures (landed volume and sale price) for 2015-2017, wholesale market volumes and prices (minimum and maximum), and data regarding consumption of domestic and imported product (as available).

- European anchovy: purse seines
- European hake: trawls
- Deep-water rose shrimp: trawls
- Giant red shrimp: trawls
- Blue and red shrimp: trawls
- Musky octopus: trawls
- Swordfish: drifting longlines
- European pilchard: purse seines
- Bluefin tuna: drifting longlines
- Red mullet: trawls.

European anchovy:

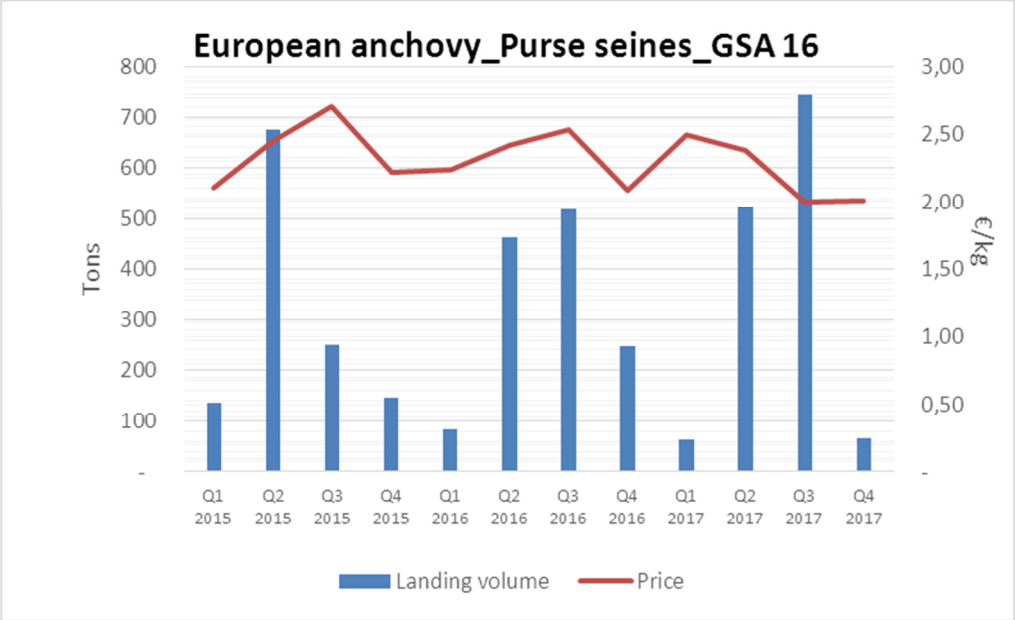


Figure 4.3.5.4 – Average volumes and production prices of European anchovy (ANE) landed by vessels using purse seines (PS) in GSA 16 (2015-2017 quarterly [Q] data). *Source:* MIPAAFT / National Fisheries Data Collection Programme. Data processed by NISEA.

Landings of European anchovy by purse seiners registered in the ports of GSA 16 were stable in 2015-2017. Their average annual volumes ranged from 1,200 to 1,300 tons and their average price was about €2.30 / kg. As in the other GSAs, landings peaked in the second and third quarter.

As regards consumption and import-export figures, the reader is referred to the national figures provided in Annex I (GSA 10).

European hake:

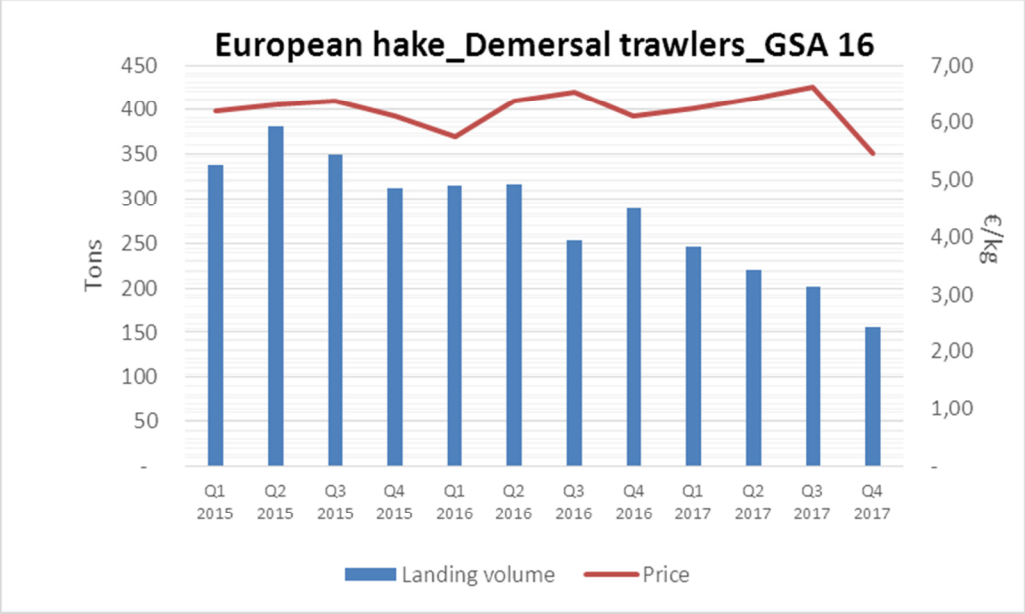


Figure 4.3.5.5 – Average volumes and production prices of European hake (HKE) landed by vessels using trawls (OTB) in GSA 16 (2015-2017 quarterly [Q] data). Source: MIPAAFT / National Fisheries Data Collection Programme. Data processed by NISEA.

Annual trawler landings of European hake plummeted (-43%) in 2015-2017, to around 800 tons in 2017 from an average of 1,400 tons in 2015. The average price was roughly stable, around €6.50-7.00 / kg, even in 2017, when landings declined consistently throughout the year.

For the import-export figures the reader is referred to the national trends reported in Annex I (GSA 10), and for the local sale figures to the MIPAAFT document (2017); the latter reports some data on European hake and deep-water rose shrimp – the target species of two GSA 16 UoAs – obtained from the production and sales plans of the local POs[5]. The data reported in the next figure show a clear trend for the two species, where a reduction in landing volume is paralleled by an increase in first sale price. Part of the increment is to be ascribed to strong initiatives, taken by the Trapani PO and the local GACs, to enhance product value. These actions included the introduction of a label that has made it easier for the final consumer to recognise the local product.

[5] In fact, there are no wholesale markets in the GSA 16 area.

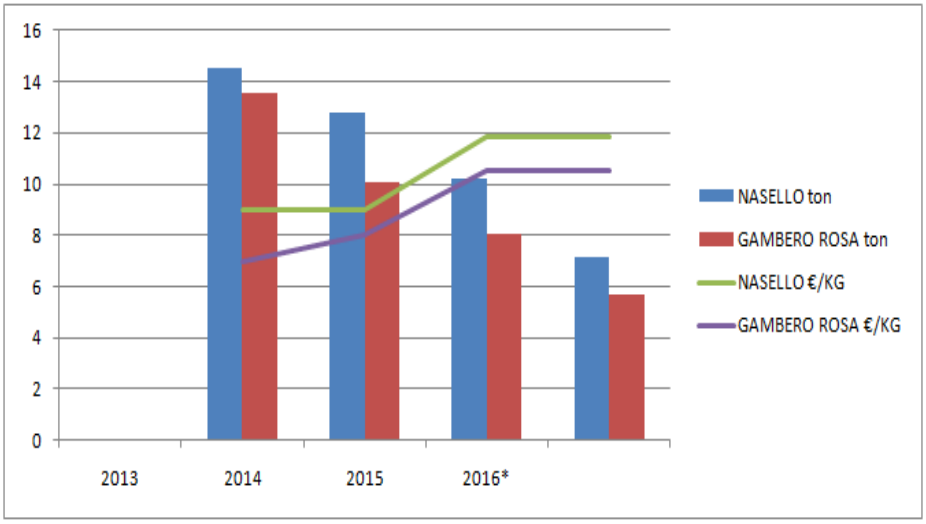


Figure 4.3.5.6 – Average price and volumes of the target species fish and shrimp handled by Trapani's PO in GSA 16 (year 2017). Note: Nasello=Hake, Gambero rosa=Deepwater rose shrimp. Source: MIPAAFT, 2017.

Deep-water rose shrimp:

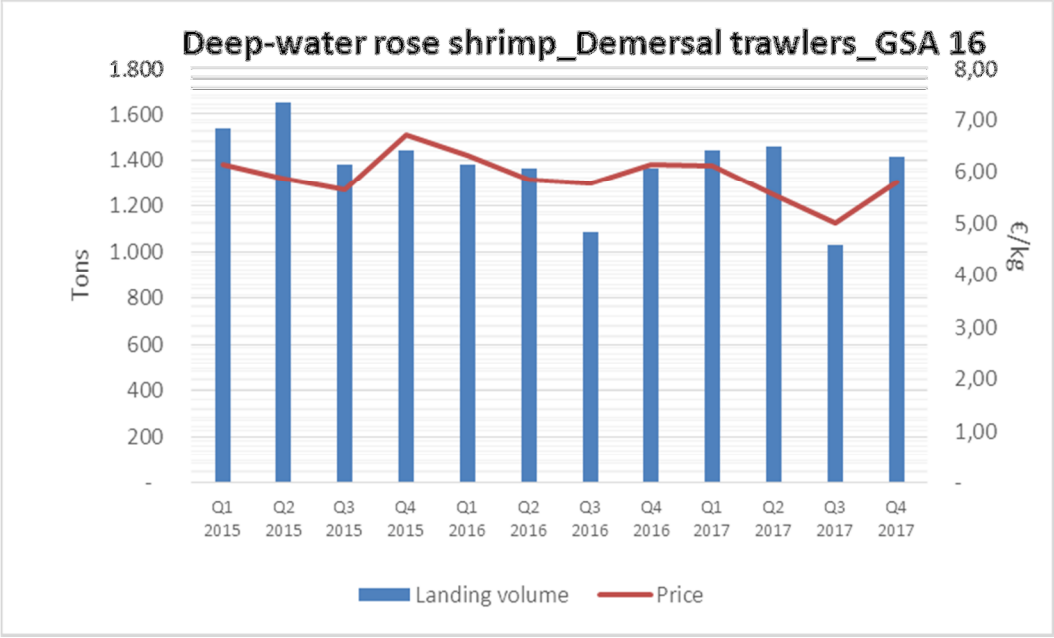


Figure 4.3.5.7 – Average volumes and production prices of deep-water rose shrimp (DPS) landed by vessels using trawls (OTB) in GSA 16 (2015-2017 quarterly [Q] data). Source: MIPAAFT / National Fisheries Data Collection Programme. Data processed by NISEA.

The average annual trawler landings of deep-water rose shrimp in GSA 16 declined by 11% in 2015-2017, from more than 6,000 to 5,300 tons. Data analysis did not highlight a seasonal pattern for this species. The average price also declined slightly (-9%) to a little more than €5.50 / kg in 2017.

Giant red shrimp:

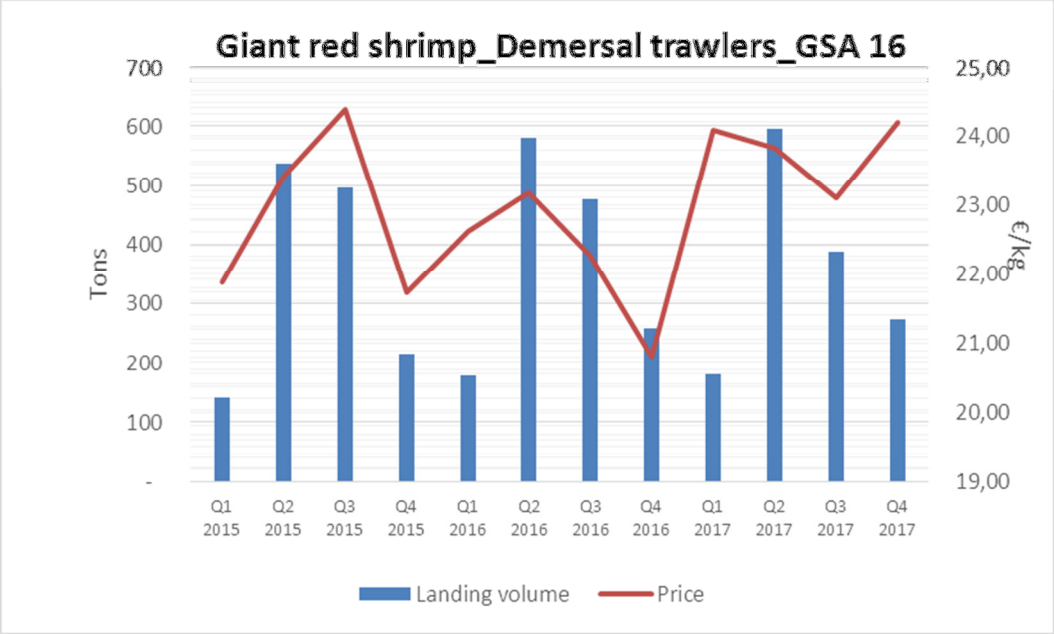


Figure 4.3.5.8 – Average volumes and production prices of giant red shrimp (ARS) landed by vessels using trawls (OTB) in GSA 16 (2015-2017 quarterly [Q] data). Source: MIPAAFT / National Fisheries Data Collection Programme. Data processed by NISEA.

In contrast, the average annual production of giant red shrimp – landed predominantly by the trawlers of Mazara del Vallo – was fairly stable around 1,400 tons. The demand for this species was strong both on the local and the national market, since sales and prices were favourably influenced by the marketing strategy (labelling) adopted by the local operators. In 2016, the average landing price of giant red shrimp caught around Mazara Del Vallo showed a slight reduction (to €22 / kg) compared with 2015 as a result of the higher supply (nearly 1,500 tons), and rose again to €23 / kg in 2017.

Blue and red shrimp:

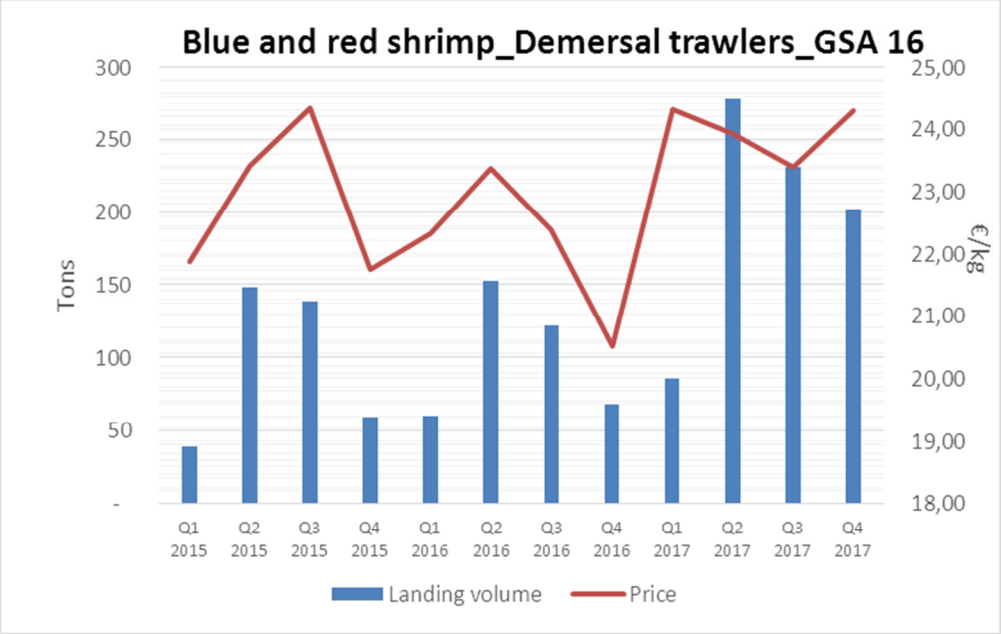


Figure 4.3.5.9 – Average volumes and production prices of blue and red shrimp (ARA) landed by vessels using trawls (OTB) in GSA 16 (2015-2017 quarterly [Q] data). Source: MIPAAFT / National Fisheries Data Collection Programme. Data processed by NISEA.

The landed volumes of blue and red shrimp by the trawlers of Mazara Del Vallo doubled from less than 400 tons in 2015 to 800 tons in 2017. This species is often landed and sold together with giant red shrimp, hence the nearly identical average landing price (€22 / kg). Nonetheless, in 2017 the price showed a slight increase with some peaks exceeding €24 / kg.

Musky octopus:

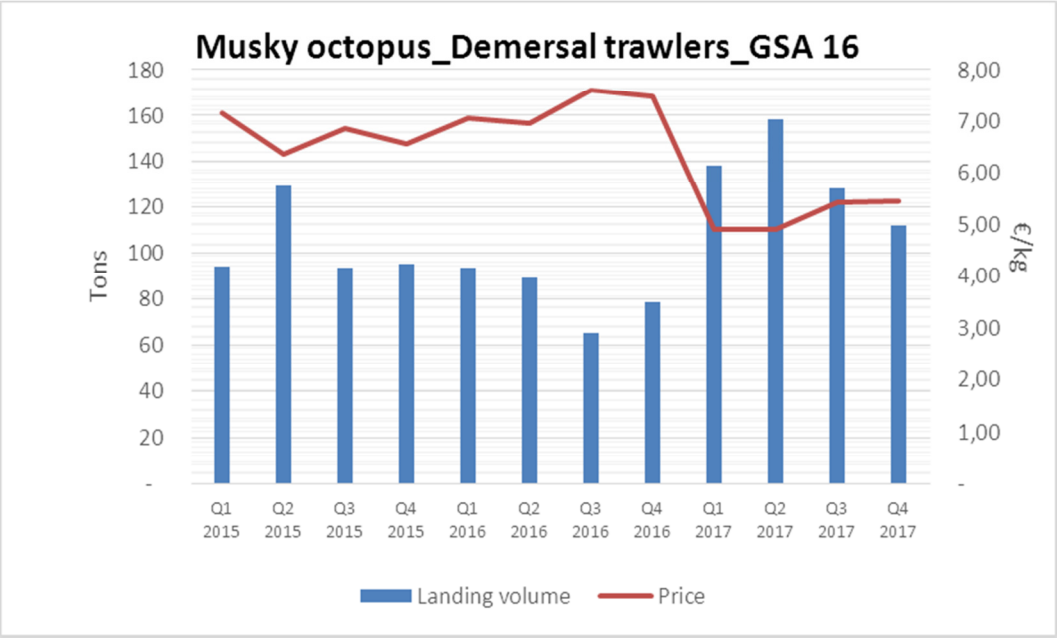


Figure 4.3.5.10 – Average volumes and production prices of musky octopus (EDT) landed by vessels using trawls (OTB) in GSA 16 (2015-2017 quarterly [Q] data). Source: MIPAAFT / National Fisheries Data Collection Programme. Data processed by NISEA.

The landings of musky octopus, caught by trawlers in shallower waters compared with shrimp, increased by 30% in 2015-2017, reaching 350 tons in 2017. Landing prices underwent a commensurate reduction, from €6.70 / kg in 2015 to slightly more than €5 / kg in 2017, with substantial stability of the average value of landings.

Swordfish:

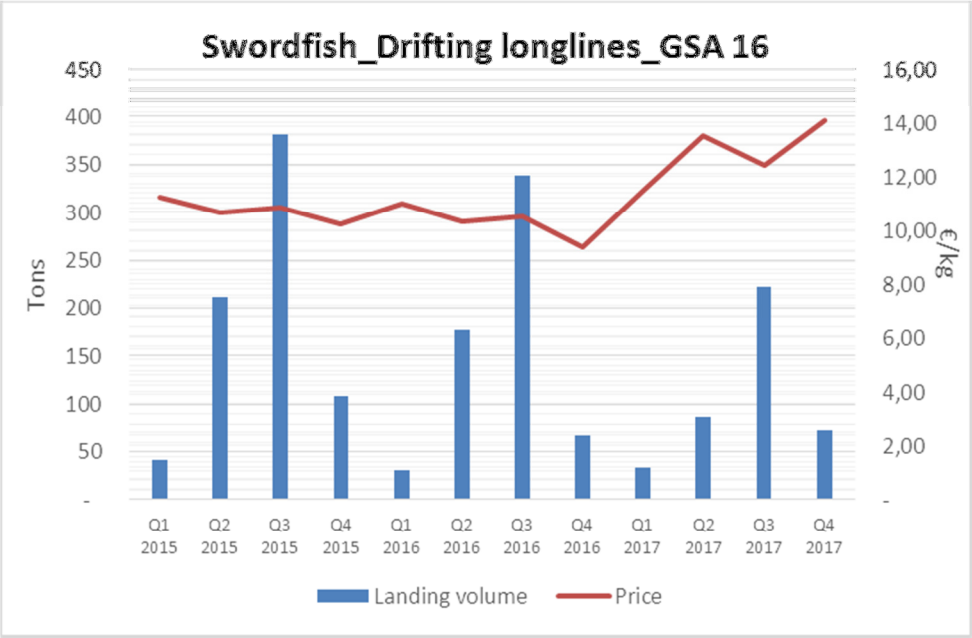


Figure 4.3.5.11 – Average volumes and production prices of swordfish (SWO) landed by vessels using drifting longlines (LLD) in GSA 16 (2015-2017 quarterly [Q] data). Source: MIPAAFT / National Fisheries Data Collection Programme. Data processed by NISEA.

Landings of swordfish caught with longlines diminished, especially in 2017. The average price rose proportionally to €12.85 / kg, peaking at more than €14 / kg in the last quarter of 2017.

European pilchard:

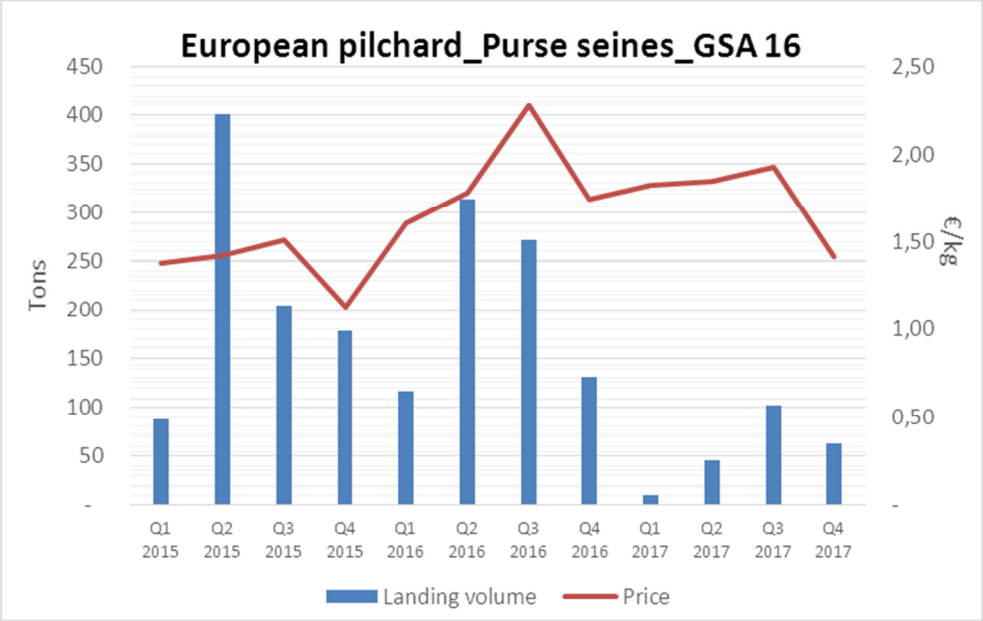


Figure 4.3.5.12 – Average volumes and production prices of European pilchard (PIL) landed by vessels using purse seines (PS) in GSA 16 (2015-2017 quarterly [Q] data). Source: MIPAAFT / National Fisheries Data Collection Programme. Data processed by NISEA.

The decline in the average annual landings of European pilchard with purse seines recorded in 2017 should be attributed to increased landings at other sites, predominantly in GSAs 10 and 18 where, accordingly, higher European pilchard landings are documented. The area around Sciacca has long been home to a flourishing food processing industry. Average landing volumes fell dramatically (-75%) from slightly less than 900 tons in 2015 to 220 tons in 2017. The average price rose from €1.36 / kg in 2015 to €1.86 / kg in 2017.

Bluefin tuna:

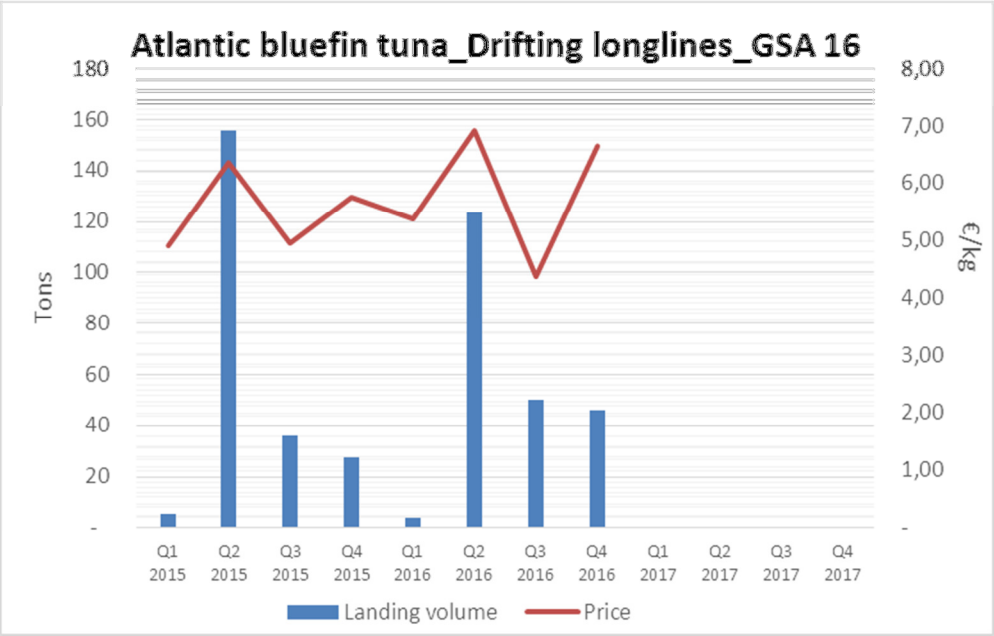


Figure 4.3.5.13 – Average volumes and production prices of bluefin tuna (BFT) landed by vessels using drifting longlines (LLD) in GSA 16 (2015-2017 quarterly [Q] data). Source: MIPAAFT / National Fisheries Data Collection Programme. Data processed by NISEA.

No bluefin tuna landings are recorded in GSA 16 in 2017, because all the catch was landed at sites in other GSAs, predominantly ports on the Sardinian or the Adriatic coast. In 2015 and 2016 the average landing volume was 225 tons and the average price was €5.80 / kg.

Red mullet:

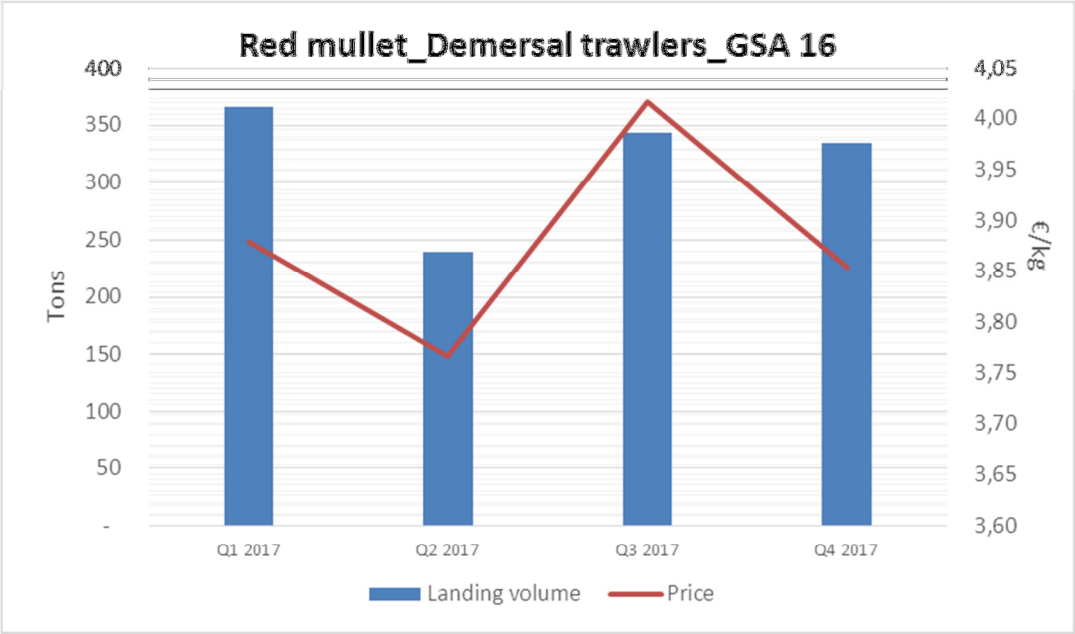


Figure 4.3.5.14 – Average volumes and production prices of red mullet (MUT) landed by vessels using trawls (OTB) in GSA 16 (2017 quarterly [Q] data). Source: MIPAAFT / National Fisheries Data Collection Programme. Data processed by NISEA.

Only the landing data for the four quarters of 2017 are available for this species, since the figures for the other years are being revised.

The 2017 landing volume was 1,281 tons subdivided fairly equally into the four quarters (figures being lowest in the 2nd quarter). The average price, whose trend appears to be in line with the available supply, did not exceed €4 / kg.