

3.2 Azores ecoregion – Fisheries overview

Table of contents

Executive summary	1
Introduction.....	1
Who is fishing	2
Catches over time.....	3
Description of the fisheries.....	5
Fisheries management	7
Management plans.....	8
Status of the fishery resources	8
Mixed fisheries	8
Species interactions.....	9
Effects of fisheries on the ecosystem	9
Sources and references	10
Annex.....	12

Executive summary

The majority of the fisheries in the Azores ecoregion are targeted by Azorean vessels. Only a small proportion of catch is taken by surface longliners from mainland Portugal and Spain targeting swordfish. The fisheries are classified as small scale, because around 60% of the vessels are less than nine metres in length and target many different species. The most important targets are tuna and tuna-like species, small pelagic species, and deep-water species. The most important fishing methods are surface longlining, live bait fishing, small purse-seining, and demersal mixed hook and line fishing. Fishing with bottom trawls is forbidden in the Azores Exclusive Economic Zone (EEZ).

Fisheries in the ecoregion are managed under the EU Common Fisheries Policy (CFP), with some fisheries managed by the North East Atlantic Fisheries Commission (NEAFC), the International Commission for the Conservation of Atlantic Tunas (ICCAT), and national Portugal and regional Azores governments.

The status of the 12 stocks in this ecoregion assessed by ICES remain unknown. These stocks are considered as data limited and are managed following the precautionary approach (category 3–5 stocks).

Introduction

For this overview, the Azores ecoregion corresponds to the Azores EEZ inside ICES Subarea 10 (Figure 1). The ecoregion lies within a much larger open ocean ecosystem, and straddles the Mid-Atlantic Ridge (MAR). The Azores is a Portuguese archipelago composed of nine islands with almost no geological continental shelf, and the Azores EEZ includes 461 identified seamounts.

This overview covers ICES Subdivision 27.10.a.2 (Figure 1). Vessel monitoring system (VMS) data are available for static gears only as there is no bottom trawling in this ecoregion.

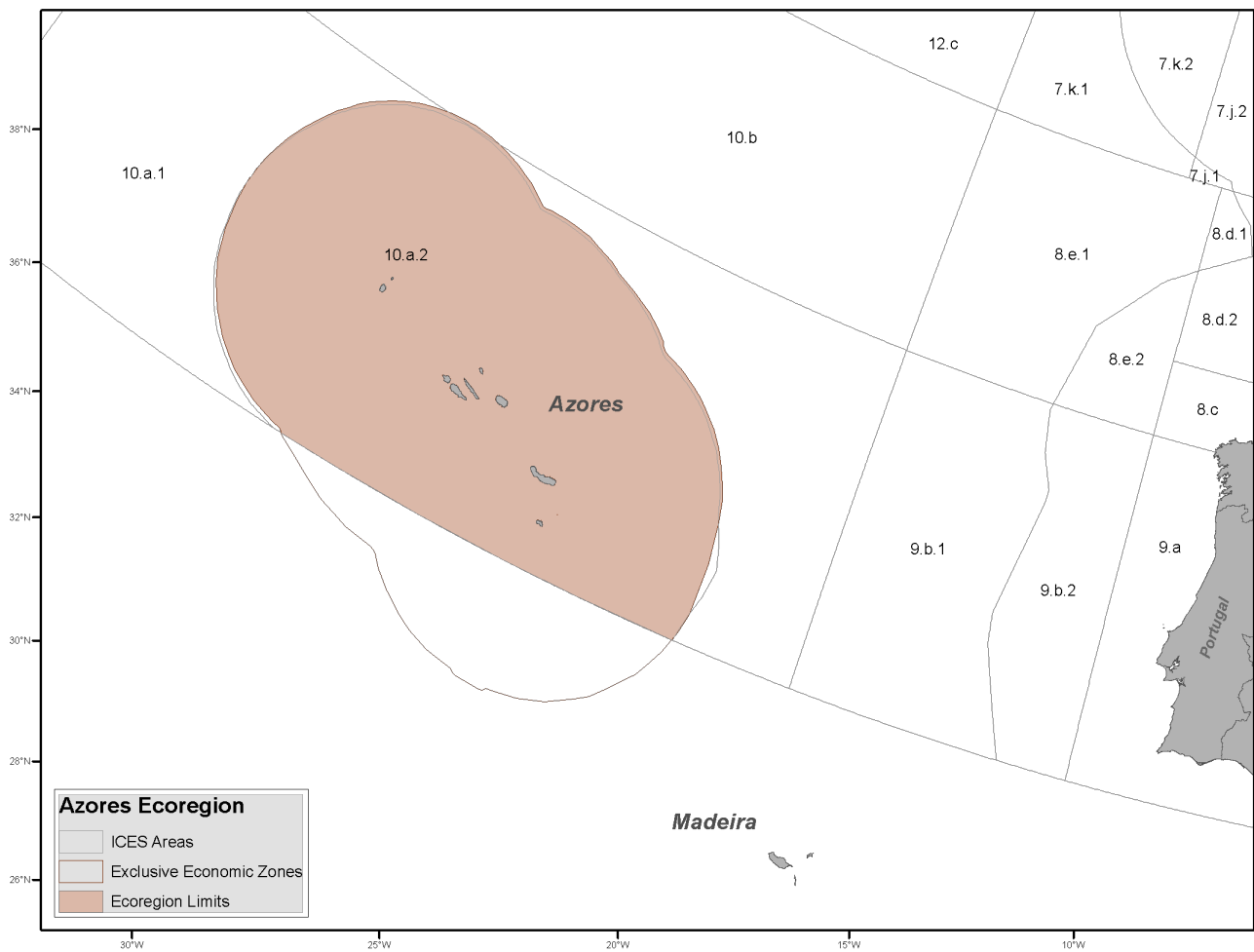


Figure 1 The Azores ecoregion (highlighted in brown) and ICES statistical areas.

Who is fishing

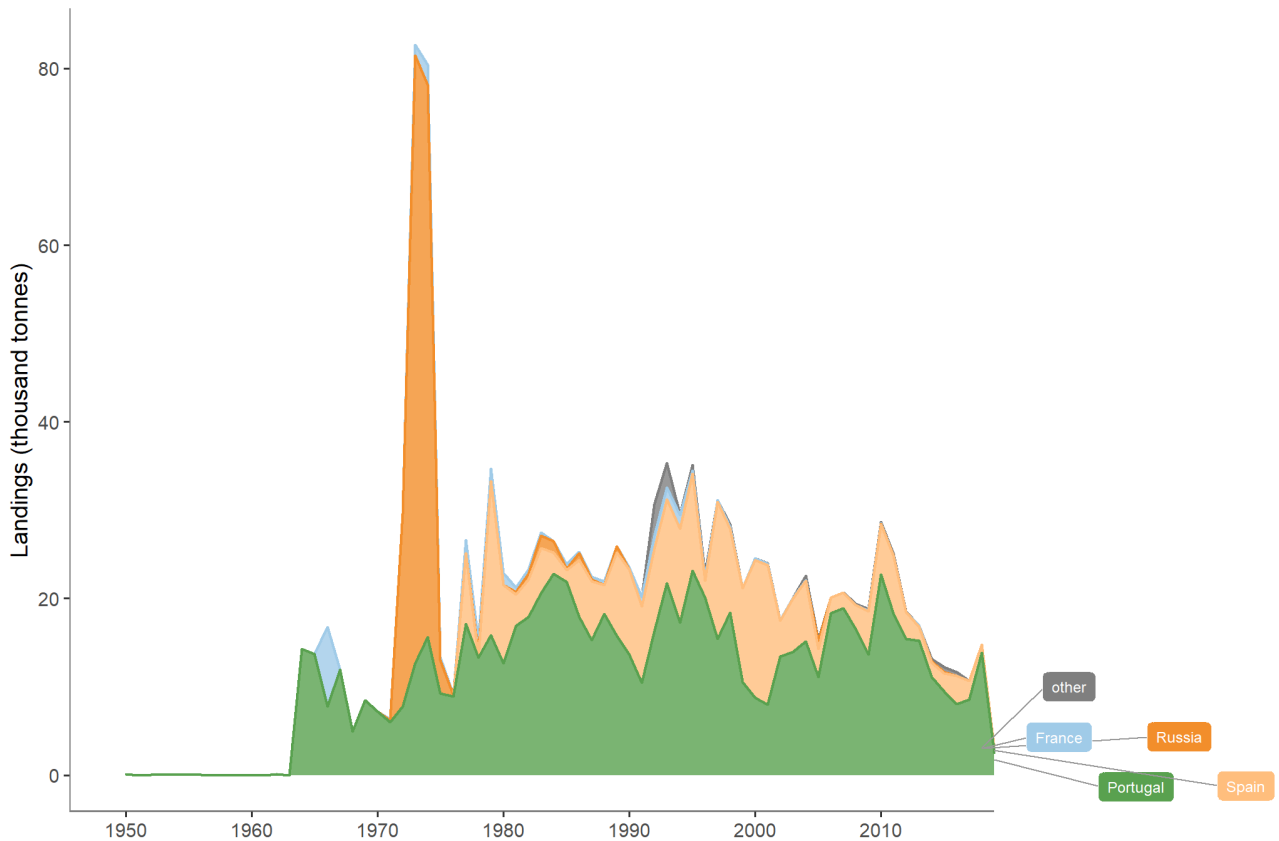
Portugal and Spain are currently the main countries fishing in the Azores ecoregion. France, the United Kingdom, and Faroe Islands also fish but take lesser amounts. The Russian fleet was fishing in the ecoregion until the early 1980s.

Portugal

The Portuguese fleet operating in the ecoregion is currently composed of around 800 vessels. Most of these have a length of less than 12 m, and they are typically licensed to use several different gear types around the archipelago and seamounts to target pelagic (small pelagics and tuna) and demersal deep-water species (such as blackspot seabream (sbr.27.10), alfonosinos (alf.27.nea), and Atlantic wreckfish; Santos *et al.*, 2019, 2020a). There is also a longline surface fishery from the Portuguese mainland targeting swordfish.

Spain

Spain has historically been fishing in the ecoregion and currently has around ten vessels that use surface longline to target swordfish and blue shark inside the Azores EEZ.



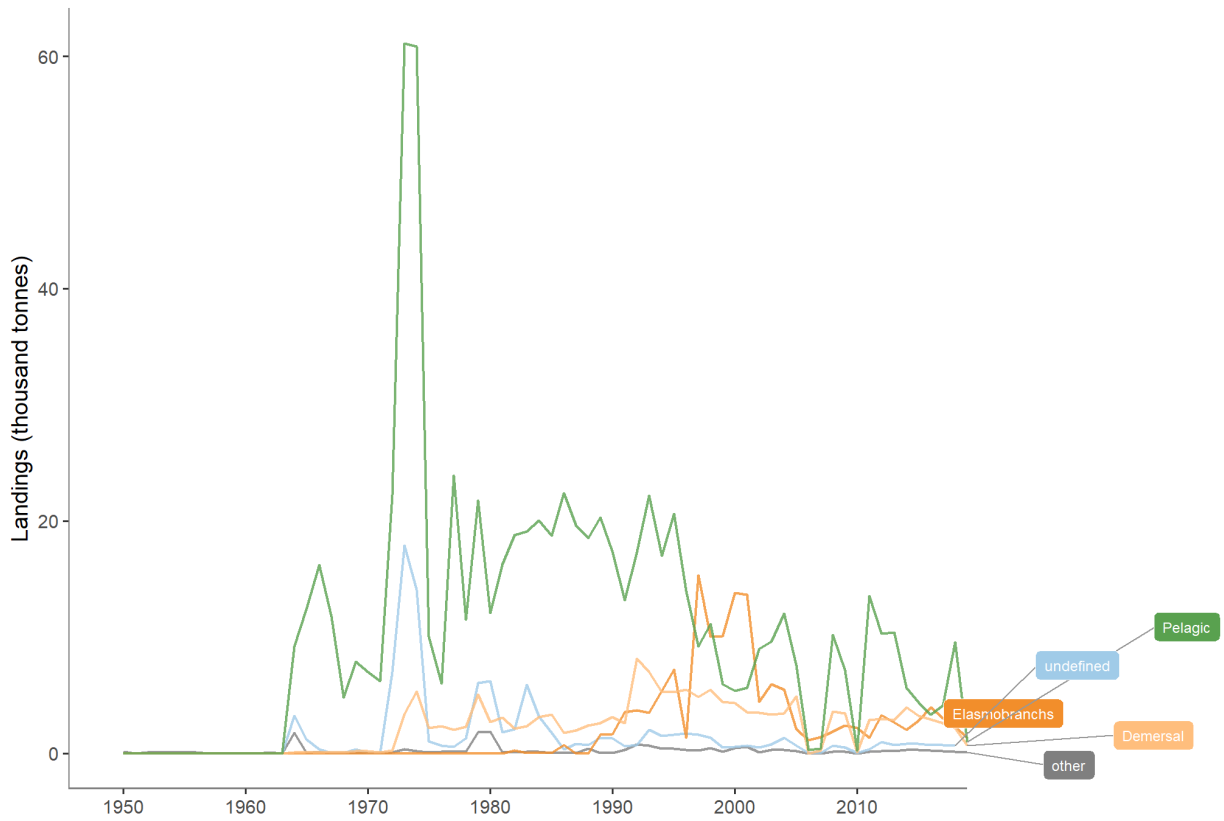
Historical Nominal Catches 1950-2010,
Official Nominal Catches 2006-2018
Preliminary Catches 2019
ICES, Copenhagen.

Figure 2 Landings (thousand tonnes) from the Azores ecoregion in 1950–2019, by country. The four countries with the highest landings are displayed separately; the remaining countries are aggregated and displayed as “other”.

Catches over time

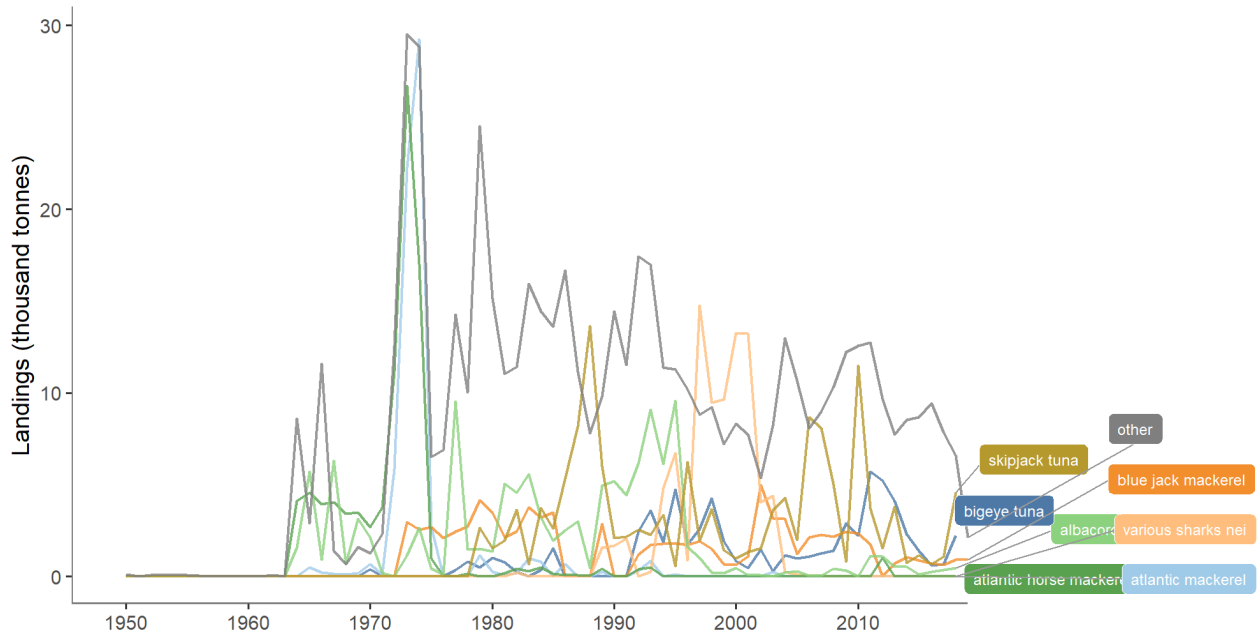
Landings in the Azores ecoregion showed an increasing trend from the 1960s to the late 1990s. During the 1970s landings peaked at over 80 000 tonnes as a result of Russian fishing activity. This was followed by an abrupt decrease in the early 1980s. From the 1980s to the early 1990s landings increased again to close to 40 000 tonnes and have since decreased to 10 000 tonnes (Figure 2). Total landings comprise pelagic, demersal, and benthic species, including crustacean and elasmobranch species, with pelagic fisheries contributing the highest proportion. Other species not assigned to any of these groups are combined in a very large "Undefined" category (Figure 3). The five top species in terms of numbers landed are: blue jack mackerel (jaa.27.10a2), skipjack tuna, bigeye tuna, albacore, and horse mackerel.

As the highest proportion of the landings comprises large pelagic and deep-water species, it follows that purse-seine targeting blue jack mackerel and bait boats targeting tuna produce the highest landings, followed by static gears used to catch demersal species in the deep waters around the islands.



Historical Nominal Catches 1950-2010,
Official Nominal Catches 2006-2018
Preliminary Catches 2019
ICES, Copenhagen.

Figure 3 Landings (thousand tonnes) from the Azores ecoregion in 1950–2018, by fish category. Table A2 in the Annex details which species belong to each fish category.



Historical Nominal Catches 1950-2010,
Official Nominal Catches 2006-2018
Preliminary Catches 2019
ICES, Copenhagen.

Figure 4 Landings (thousand tonnes) from the Azores ecoregion in 1950–2018, by species.

Discards

Discard estimates are available in the ecoregion for all years since 1950 (Pham *et al.*, 2013; Fauconnet *et al.*, 2019). Discard rates are generally low (less than 20% by weight), particularly in pelagic fisheries. However, very high annual bycatch rates of 49% have been observed in some longline and handline fisheries. Discard estimates for elasmobranchs are highly uncertain.

Description of the fisheries

Fishing in the Azores ecoregion occurs mostly around the island slopes and the numerous surrounding offshore seamounts. This represents less than 1% of the total area that can potentially be fished to a depth of 700 metres (Figure 5). The surface longline fishery from Spain and mainland Portugal occurs in offshore areas (beyond 100 nautical miles from the islands; Figure 6).

Bottom longline and handline (hooks and lines)

The bottom hook and line fishery targeting deep-water and demersal species is the main fishery in the ecoregion in terms of landed value of catches, number of boats, and jobs. It is a small-scale fishery operating all year round from coastal areas to offshore seamounts. Total landings from the commercial bottom fisheries constitute on average 40% of all landed weight in the Azores. Bottom fisheries are also by far the most valuable, representing about 75% of all landed value.

Many different types of longlines and handlines are used (Menezes, 2003). The artisanal fleet operates mainly during the summer months, with fishing trips lasting for a day or week at most. The large-scale fleet operates all year round, with fishing trips lasting up to a month. This fishery targets mostly deep-water demersal fish such as blackspot seabream, Atlantic wreckfish, alfonsinos, and the blackbelly rosefish (Santos *et al.*, 2019).

Drifting pelagic longline

The Spanish surface longline is the most common gear used in the Azores (Ferreira *et al.*, 2001). Larger vessels can be fishing at sea for about a month, starting in the period May/June and continuing through to December, and they extend their fishing areas beyond the Azores EEZ (Ferreira *et al.*, 2001). The pelagic longline fishery targets swordfish and blue shark (Santos *et al.*, 2020b).

Drifting deep-water longline

The drifting deep-water longline fishery targets black scabbardfish (bsf.27.nea) (Machete *et al.*, 2011).

The pole and line tuna fishery

The tuna fishery is concentrated mainly around the central and eastern parts of the archipelago, as well as around offshore seamounts (Silva *et al.*, 2002; Dâmaso, 2007; Morato *et al.*, 2008). All tuna fishing vessels operate with pole and line using live bait and water spray. The fishery usually lasts from April to October (Silva *et al.*, 2002) with high interannual variability.

Small pelagic fisheries

A small coastal purse-seine fleet catches small pelagic fish, mostly blue jack mackerel and chub mackerel (Santos *et al.*, 2020a). Fishing operations occur mostly during the night using lights (Vasconcelos *et al.*, 2006). This fishery operates in particular around the island of São Miguel.

Coastal fisheries

Traps and coastal net fisheries are a small component of the artisanal fisheries. The most commonly fished species are parrotfish, grey mullet, Atlantic bonito, yellowmouth barracuda, pompano, white seabream, and salemá.

Invertebrates such as limpets, octopus, and veined squid (Santos *et al.*, 2020a) are also harvested.

Recreational fishing

The main recreational fishing methods in the Azores are spear fishing, boat fishing, rod fishing from shore, and hand collecting (Diogo, 2007). The most important species are white seabream, blacktail comber, chub mackerel, and parrotfish (Santos *et al.*, 2020a). Atlantic blue marlin is an important species in terms of recreational fishing in the tourism sector.

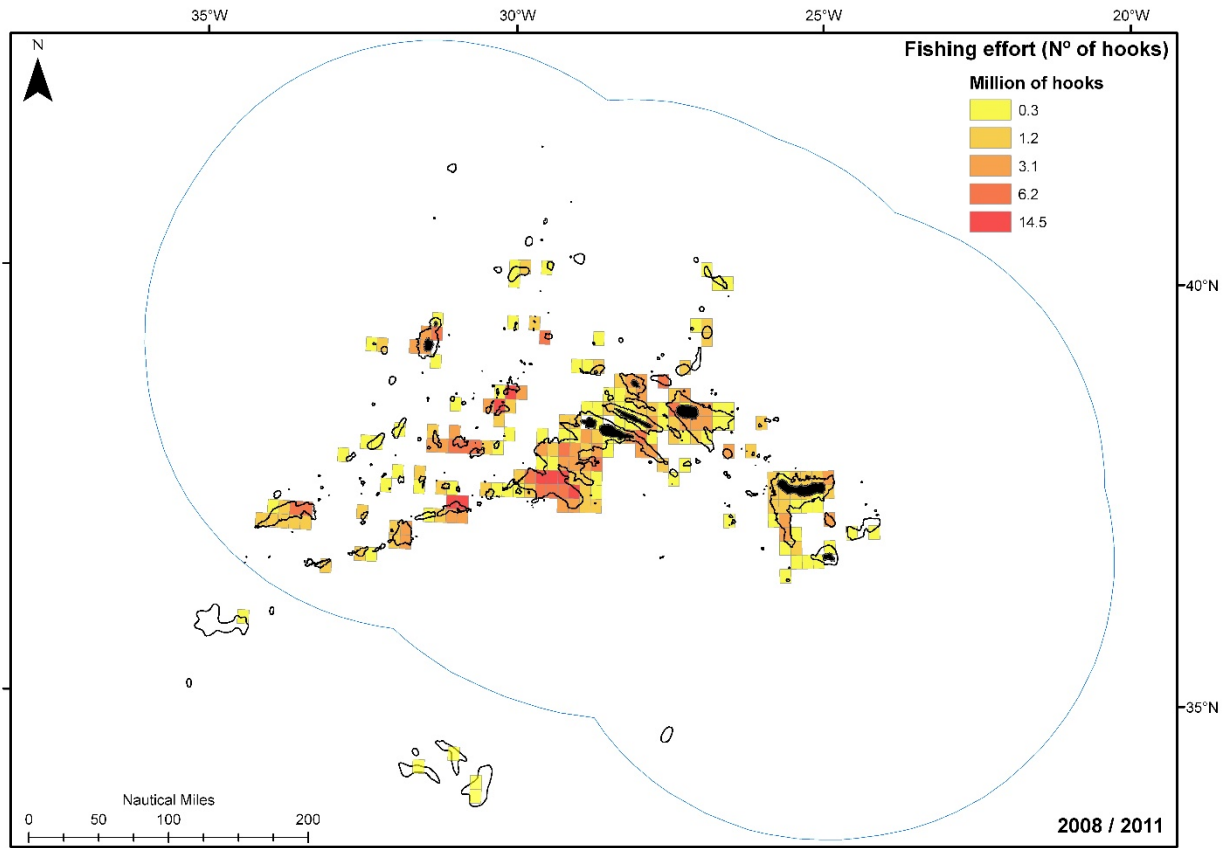


Figure 5 Spatial distribution of average fishing effort (number of hooks) of demersal/deep-water mixed hook and line fishery in the Azores ecoregion in 2008–2011. Black markings show islands; colours represent the proportional fishing effort (habitat until 700 m depth). Blue line indicates the Azores Exclusive Economic Zone (EEZ). Data from the EU Data Collection Framework (DCF) port inquiries.

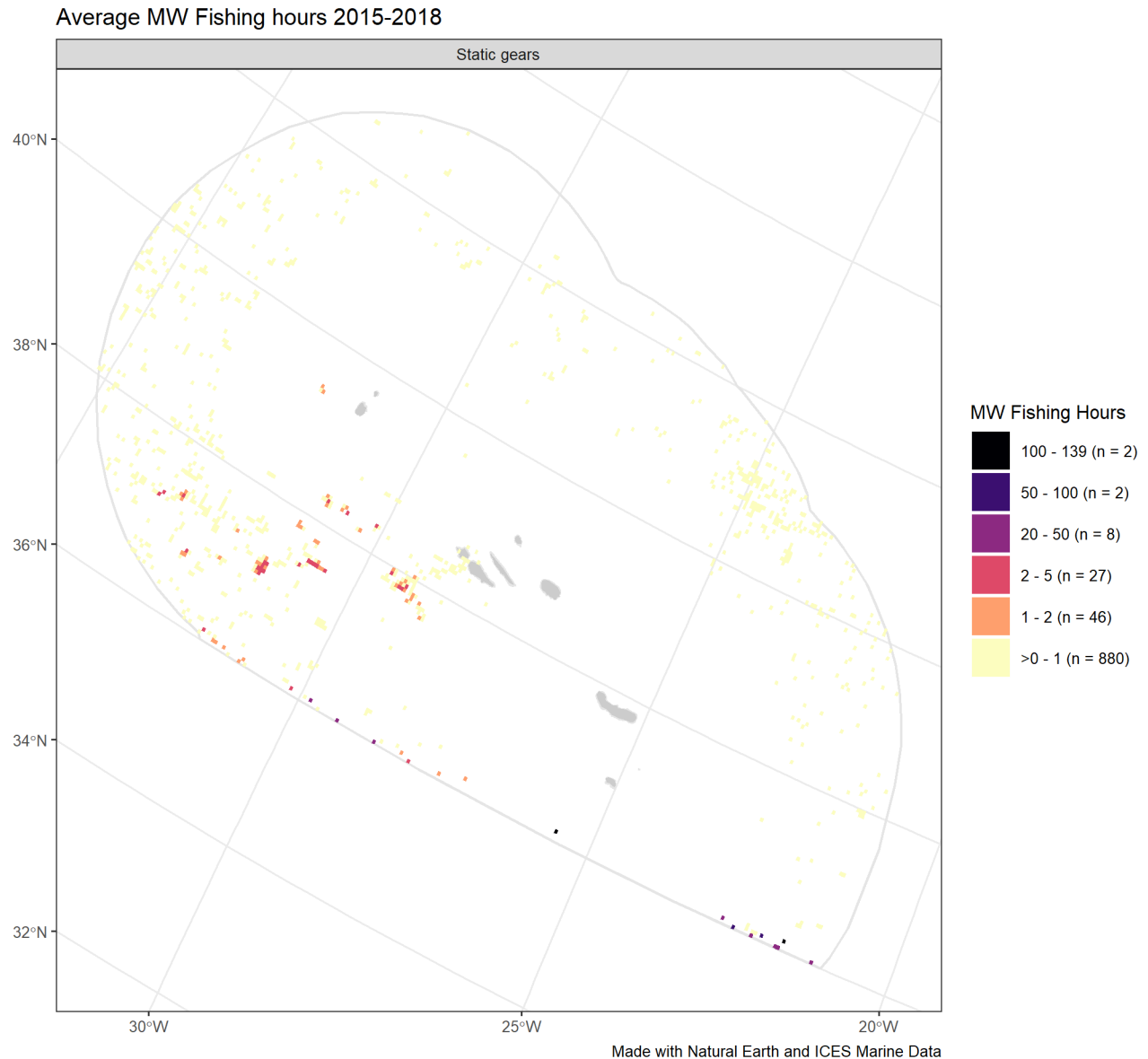


Figure 6 Spatial distribution of average annual fishing effort (MW fishing hours) in the Azores ecoregion in 2015–2018, by gear type. Fishing effort data are only shown for vessels > 12 m that also have vessel monitoring systems (VMS).

Fisheries management

Fisheries in the Azores ecoregion are managed under the EU Common Fisheries Policy (CFP), with some managed by the North East Atlantic Fisheries Commission (NEAFC), the International Commission for the Conservation of Atlantic Tunas (ICCAT), and the regional government of the Azores. Fisheries advice is provided by the International Council for the Exploration of the Sea (ICES), the European Commission’s Scientific Technical and Economic Committee for Fisheries (STECF), the South West Waters Advisory Council (SWWAC), and the Long Distance Advisory Council (LDAC). For large pelagic fish (tuna and tuna-like species) fisheries advice is provided by ICCAT. Whaling is managed by the International Whaling Commission (IWC).

Under the CFP, TACs were introduced for some stocks, such as blackspot seabream, black scabbardfish, and deep-water sharks.

Fishing with bottom trawls is forbidden in the Azores EEZ. A demarcation of 100 nautical miles limiting fishing for deep-water species to vessels registered in the Azores was created in 2003 under the CFP’s management of fishing effort.

There are 35 coastal and 15 offshore marine protected areas (MPAs) as well as 12 coastal and one offshore areas closed to fishing, all of which have been established to prevent overexploitation of resources. Most of these only allow sustainable fishing or function as no-take areas under different management regimes.

A NEAFC regulation exists for deep-sea fisheries in the NEAFC regulatory area. Among other effort regulations, the use of gillnets is prohibited beyond the depth of 200 m. Also, specific measures, including the TAC, were introduced for grenadiers, orange roughy, blue ling, and deep-water sharks. In 2015, the fishery for orange roughy was closed; the directed fishery for deep-water sharks has been prohibited.

Management plans

There are no management plans defined for this area.

Status of the fishery resources

With the exception of blackspot seabream in Subarea 10 and blue jack mackerel in Subdivision 10.a.2 (Table A3), the stocks exploited in the Azores ecoregion are defined as parts of Northeast Atlantic stock units.

In 2019 ICES provided catch advice for 12 stocks in the ecoregion. The majority of the species are deep-water, encompassing four demersal, seven elasmobranch, and two pelagic stocks. All stocks are considered data-limited stocks (category 3–5 stocks) and the fisheries are managed according to the precautionary approach. The state of these stocks is unknown because no reference points have yet been defined.

Mixed fisheries

This section gives an overview of the mixed fisheries in the Azores ecoregion.

Fishing gear operations that harvest multiple types of fish simultaneously are defined as mixed fisheries. However, some can be more selective than others. For example, purse-seine and drifting longline catches are composed mainly of the targeted species and lower amounts of bycatch, while demersal longlines, handlines and pole and lines all usually catch a wide spectrum of species in a single fishing event.

Data on catch and fishing effort from the Azorean fisheries are collected under the EU Data Collection Framework (DCF) through sampling schemes and structured interviews to captains of the local fleet. Mean nominal catches were calculated for stocks that occur in the Azores EEZ, both those assessed by ICES and those that are not, and for which some information was available. Mean catches by stock for the 2015–2017 period were aggregated by métier. Métier classification was based on the fishing operation and target assemblage (data obtained from interviews). Métier definitions are described in Table A4.

Catches were available for eight fish stocks exploited by the Azorean fleet and assessed by ICES: red gurnard (gur.27.3-8), greater forkbeard (gfb.27.nea), black scabbardfish (bsf.27.nea), tope (gag.27.nea), blue jack mackerel, rays and skates (raj.27.1012), blackspot seabream, and alfonsinos; Table A3. Blue jack mackerel is for instance the main landed species in the purse-seine fishery regardless of other catches in other métiers (Figure 7a). Blackspot seabream is caught in the longline and handline fisheries targeting that species (Figure 7b).

Figure 8 illustrates stock composition by individual fishing events considering all gears combined in the Azores. Some fishing activity can be seen directed at blue jack mackerel and blackspot seabream (i.e. catches of these stocks represent 50% or more of the total catch in a fishing event). However, most of the stocks were caught in fishing events where they constitute less than 25% of the total catch. This result highlights the multispecificity of the Azorean fisheries (Santos *et al.*, 2019, 2020a, 2020b).

Fisheries in this area are mixed; this often results in restrictive quotas leading to changes in fishing patterns and discarding.

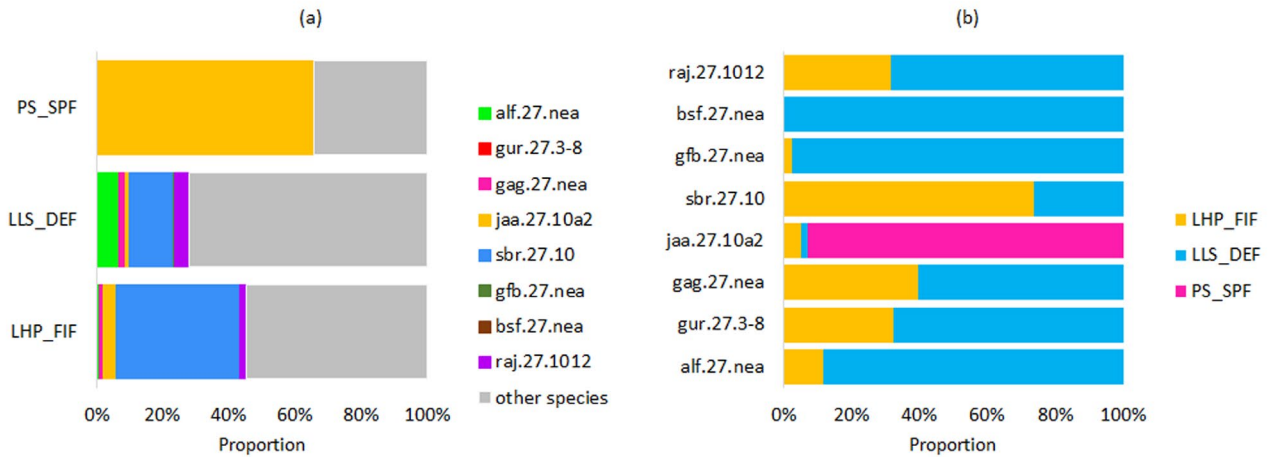


Figure 7 Description of technical interactions in the Azores ecoregion (ICES Subdivision 10.a.2). The left panel (a) shows the stock composition by métiers of the Azorean fleet operating in Azorean waters. The right panel (b) shows the proportion of the catch of each stock accounted for by the different métiers. See Table A4 for métier definitions, and Table A2 for stock definitions. Data obtained from DCF inquiries (2015–2017) of the Azorean fleet.

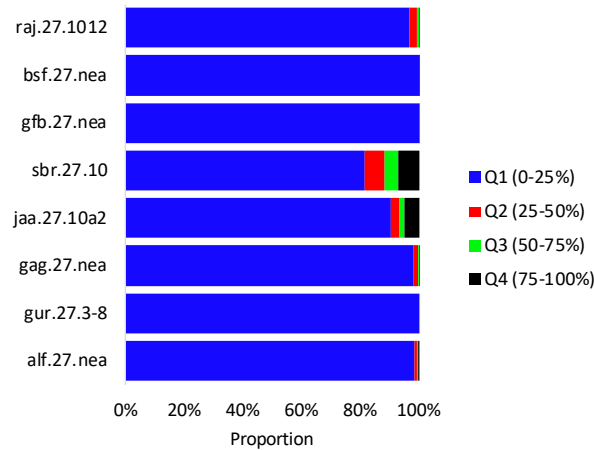


Figure 8 Description of technical interactions in the Azores ecoregion (ICES Subdivision 10.a.2) caught with purse-seines, hooks and lines, gillnets, and static gears (all gears combined). The panel shows the proportion of a stock out of the total catch in a single fishing event (Q1: $\leq 25\%$ of the total catch of a stock, Q2: 25–50%, Q3: 50–75%, and Q4: $\geq 75\%$). See Table A2 for stock definitions.

Species interactions

Commercially-exploited species of fish, invertebrates, and mammals are part of the marine food web and interact in various ways, including through predation and competition. The interactions between the different species in the ecoregion are rather complex, resulting in multiple interactions and impacts of the different fisheries on the different species in the ecoregion, and vice versa. The main top predators identified are toothed whales and the conger eel.

Effects of fisheries on the ecosystem

Deep-water sharks are taken as bycatch in the bottom longline fishery and drifting longline fishery (Machete *et al.*, 2011; Ramos *et al.*, 2013), accounting for a respective 4.9% and 15.2% of the total catch of those fisheries (Fauconnet *et al.*, 2019). Many of those species are under fishing prohibition under EU regulations (EC 2025/2018), and several are listed as threatened under the IUCN Red List of Threatened species (Nieto *et al.*, 2015).

In the pelagic longline fisheries, catches of sharks are very high. These are composed mainly of blue sharks and shortfin mako, although bycatch of this fishery can also occasionally include species under fishing prohibition such as bigeye thresher (thr.27.nea) and smooth hammerhead sharks, as well as the protected loggerhead turtles (Pham *et al.*, 2013;

Fauconnet *et al.*, 2019). Bycatch rates in 2018 ranged from 0.003 to 0.006 specimens per monitored days-at-sea for the leatherback sea turtle (ICES, 2020a).

This ecoregion is known as a hotspot for cold-water corals. Mostly medium-sized, three-dimensional, and branched colonies of coral often occur as bycatch in bottom longlining fisheries, with *Leiopathes* spp., *Errina dabneyi*, and *Dendrophyllia* sp. most frequently encountered. Given the high incidence of coral bycatch in bottom longline fisheries around the Azores and the decrease in corals bycatch in traditional fishing grounds, conservation measures may be required (Sampaio *et al.*, 2012).

Sources and references

- Dâmaso, C. 2007. Interação de cetáceos na pescaria de atum com arte de salto-e-vara do Arquipélago dos Açores. MSc thesis, Universidade dos Açores.
- Diogo, H. 2007. Contribution to the characterisation of recreational fishing activities on the islands of Faial and Pico, Azores. Master Thesis, University of the Azores.
- Fauconnet, L., Pham, C. K., Canha, A., Afonso, P., Diogo, H., Machete, M., Silva, H. M., *et al.* 2019. An overview of fisheries discards in the Azores. *Fisheries Research*, 209: 230–241. <https://doi.org/10.1016/j.fishres.2018.10.001>.
- Ferreira, R. L., Martins, H. M., da Silva, A. A., and Bolten, A. B. 2001. Impact of swordfish fisheries on sea turtles in the Azores. *Arquipélago Life and Marine Sciences*, 18: 75–79.
- ICES. 2020a. Working Group on Bycatch of Protected Species (WGBYC). ICES Scientific Reports, 2:81. 209 pp. <http://doi.org/10.17895/ices.pub.7471>.
- ICES. 2020b. Azores ecoregion. Fisheries overview Data Outputs. <http://doi.org/10.17895/ices.data.7608>.
- Machete, M., Morato, T., and Menezes, G. 2011. Experimental fisheries for black scabbardfish (*Aphanopus carbo*) in the Azores, Northeast Atlantic. *ICES Journal of Marine Science*, 68(2): 302–308. <https://doi.org/10.1093/icesjms/fsq087>.
- Menezes, G. M. M. 2003. Demersal Fish Assemblages in the Atlantic Archipelagos of the Azores, Madeira, and Cape. PhD Thesis, University of the Azores, Portugal. 226 pp.
- Morato, T., Varkey, D. A., Dâmaso, C., Machete, M., Santos, M., Prieto, R., Santos, R. S., *et al.* 2008. Evidence of a seamount effect on aggregating visitors. *Marine Ecology Progress Series*, 357: 23–32. <https://doi.org/10.3354/meps07269>.
- Nieto, A., Ralph, G. M., Comeros-Raynal, M. T., Kemp, J., García Criado, M., Allen, D. J., Dulvy, N. K., *et al.* 2015. European red list of marine fishes. Publications Office of the EU. <https://doi.org/10.2779/082723>.
- Pham, C. K., Canha, A., Diogo, H., Pereira, J. G., Prieto, R., and Morato, T. 2013. Total marine fishery catch for the Azores (1950–2010). *ICES Journal of Marine Science*, 70(3): 564–577. <https://doi.org/10.1093/icesjms/fst024>.
- Ramos, H., Silva, E., and Gonçalves, L. 2013. Reduction of deep-sea sharks by-catches in the Portuguese long-line black scabbard fishery—Final Report to the European Commission MARE 2011/06 (SI2.602201). 214 pp. seaExpert, Lda.
- Sampaio, I., Braga-Henriques, A., Pham, C., de Matos, V., Morato, T., and Porteiro, F. M. 2012. Cold-water corals landed by bottom longline fisheries in the Azores (north-eastern Atlantic). *Journal of the Marine Biological Association of the United Kingdom*, 92: 1547–1555. <https://doi.org/10.1017/S0025315412000045>.
- Santos, R. V. S., Silva, W. M. M. L., Novoa-Pabon, A. M., Silva, H. M., and Pinho, M. R. 2019. Long term changes in the diversity, abundance and size composition of deep sea demersal teleosts from Azores assessed through surveys and commercial landings. *Aquatic Living Resources*, 32. 20 pp. <https://doi.org/10.1051/alr/2019022>.
- Santos, R., Medeiros-Leal, W., and Pinho, M. 2020a. Stock assessment prioritization in the Azores: procedures, current challenges and recommendations. *Arquipélago. Life and Marine Sciences*, 37: 45–64.
- Santos, R. V. S., Novoa-Pabon, A. M., Silva, H. M., and Pinho, M. R. 2020b. Elasmobranch species richness, fisheries, abundance and size composition in the Azores archipelago (NE Atlantic). *Marine Biology Research*, 16(2): 103–116. <https://doi.org/10.1080/17451000.2020.1718713>.

Silva, M. A., Feio, R., Prieto, R., Gonçalves, J. M., and Santos, R. S. 2002. Interactions between cetaceans and the tuna fishery in the Azores. *Marine Mammal Science*, 18(4): 893–901. <https://doi.org/10.1111/j.1748-7692.2002.tb01080.x>.

Vasconcelos, J., Alves, A., Gouveia, E., and Faria, G. 2006. Age and growth of the blue jack mackerel, *Trachurus picturatus* Bowdich, 1825 (Pisces: Teleostei) off the Madeira archipelago. *Arquipélago. Life and Marine Sciences* 23A: 47–57.

Recommended citation: ICES. 2020. Azores ecoregion – Fisheries overview. *In* Report of the ICES Advisory Committee, 2020. ICES Advice 2020, section 3.2. <https://doi.org/10.17895/ices.advice.7600>.

Annex

Supporting data used in the Azores ecoregion Fisheries overview is archived at ICES (2020b).

Table A1 Status summary of the Azores ecoregion stocks in 2020, in regards to the ICES maximum sustainable yield (MSY) approach and precautionary approach (PA) for stocks within the Bay of Biscay and Iberian Coast ecoregion. Grey represents unknown reference points. For the MSY approach: green represents a stock that is fished below F_{MSY} or the stock size is greater than $MSY B_{trigger}$; red represents a stock status that is fished above F_{MSY} or the stock size is less than $MSY B_{trigger}$. For the PA: green represents a stock that is fished below F_{pa} or the stock size is greater than B_{pa} ; yellow represents a stock that is fished between F_{pa} and F_{lim} or the stock size is between B_{lim} and B_{pa} ; red represents a stock that is fished above F_{lim} or the stock size is less than B_{lim} . SBL = Safe Biological Limits; MSFD = EU Marine Strategy Framework Directive; D3C1 = MSFD indicator for fishing mortality; D3C2 = MSFD indicator for spawning-stock biomass; GES = good environmental status.

There are no stocks with reference points in the Azores ecoregion.

Table A2 List of those stocks in the Azores ecoregion in 2020 that do not have a full set of reference points

Stock code	Stock name	Latin name	Year of advice	Fish category	Reference point	Data category
por.27.nea	Porbeagle in subareas 1–10, 12, and 14	<i>Lamna nasus</i>	2019	Elasmobranch	PA	6.3
gfb.27.nea	Greater forkbeard in subareas 1–10, 12, and 14	<i>Phycis blennoides</i>	2020	Demersal	PA	3.2
bsf.27.nea	Black scabbardfish in subareas 1, 2, 4–8, 10, and 14, and divisions 3.a, 9.a, and 12.b	<i>Aphanopus carbo</i>	2020	Pelagic	PA	3.2
gag.27.nea	Tope in subareas 1–10, 12, and 14	<i>Galeorhinus galeus</i>	2019	Elasmobranch	PA	5.2
thr.27.nea	Thresher sharks in subareas 10 and 12, and in divisions 7.c–k and 8.d–e	<i>Alopias</i> spp.	2019	Elasmobranch	PA	6.3
jaa.27.10a2	Blue jack mackerel in Subdivision 10.a.2	<i>Trachurus picturatus</i>	2018	Pelagic	PA	5
raj.27.1012	Rays and skates in subareas 10 and 12	Rajidae	2020	Elasmobranch	PA	3.2
sbr.27.10	Blackspot seabream in Subarea 10	<i>Pagellus bogaraveo</i>	2020	Demersal	PA	3.2
sck.27.nea	Kitefin shark in subareas 1–10, 12, and 14	<i>Dalatias licha</i>	2019	Elasmobranch	PA	6.3
alf.27.nea	Alfonsinos in subareas 1–10, 12, and 14	<i>Beryx</i> spp.	2020	Demersal	PA	5.2
cyo.27.nea	Portuguese dogfish in subareas 1–10, 12, and 14	<i>Centroscymnus coelolepis</i> , <i>Centrophorus squamosus</i>	2019	Elasmobranch	PA	6.3
guq.27.nea	Leafscale gulper shark in subareas 1–10, 12, and 14	<i>Centrophorus squamosus</i>	2019	Elasmobranch	PA	6.3

Table A3 Scientific names of species.

Common name	Species name
Albacore	<i>Thunnus alalunga</i>
Alfonsinos	<i>Beryx</i> spp.
Atlantic bonito	<i>Sarda sarda</i>
Atlantic blue marlin	<i>Makaira nigricans</i>
Atlantic wreckfish	<i>Polyprion americanus</i>
Bigeye thresher	<i>Alopias superciliosus</i>
Bigeye tuna	<i>Thunnus obesus</i>
Black scabbardfish	<i>Aphanopus carbo</i>
Blackbelly rosefish	<i>Helicolenus dactylopterus</i>
Blackspot seabream	<i>Pagellus bogaraveo</i>
Blacktail comber	<i>Serranus atricauda</i>
Blue jack mackerel	<i>Trachurus picturatus</i>
Blue ling	<i>Molva dypterygia</i>
Blue shark	<i>Prionace glauca</i>
Chub mackerel	<i>Scomber japonicus</i>
Coldwater corals	<i>Leiopathes</i> spp., <i>Errina dabneyi</i> , and <i>Dendrophyllia</i> spp.
Greater forkbeard	<i>Phycis blennoides</i>
Grenadiers	<i>Marcouridae</i>
Grey mullet	<i>Mugil cephalus</i>
Horse mackerel	<i>Trachurus trachurus</i>
Leatherback sea turtle	<i>Dermochelys coriacea</i>
Limpet	<i>Patella vulgata</i>
Loggerhead turtle	<i>Caretta caretta</i>
Octopus	<i>Octopus vulgaris</i>
Orange roughy	<i>Hoplostethus atlanticus</i>
Parrotfish	<i>Sparisoma cretense</i>
Pompano	<i>Trachinotus ovatus</i>
Red gurnard	<i>Chelidonichthys cuculus</i>
Salema	<i>Sarpa salpa</i>
Shortfin mako	<i>Isurus oxyrinchus</i>
Skipjack tuna	<i>Katsuwonus pelamis</i>
Smooth hammerhead shark	<i>Sphyrna zygaena</i>
Swordfish	<i>Xiphias gladius</i>
Tope	<i>Galeorhinus galeus</i>
Veined squid	<i>Loligo forbesii</i>
White seabream	<i>Diplodus sargus</i>
Yellowmouth barracuda	<i>Sphyaena viridensis</i>

Table A4 Métier categories used in the Azores ecoregion (ICES Subdivision 10.a.2) mixed-fisheries analysis.

Métier label	Gear type	Target assemblage
FPO_CRU	Pots and traps	Crustaceans
GNS_FIF	Gillnets	Coastal demersal and pelagic fish
LHP_CEP	Handlines	Cephalopods – Squids
LHP_FIF	Handlines	Demersal fish
LHP_MPD	Handlines (locally called “corrico”)	Pelagic fish
LHP_LPF	Pole and lines	Pelagic fish
LLD	Drifting longlines	Pelagic and demersal fish
LLS_DEF	Set longlines	Demersal fish
PS_SPF	Purse seines	Small pelagic fish