

Blue lines indicate the area meeting the ISRA Criteria; dashed lines indicate the suggested buffer for use in the development of appropriate place-based conservation measures

BALEARIC ISLANDS

Mediterranean and Black Seas Region

SUMMARY

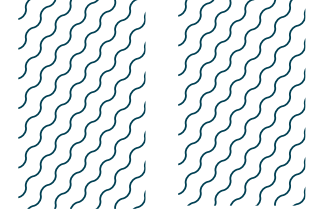
Balearic Islands is located east of Spain in the central Balearic Sea. The area consists of continental shelf and deeper waters around the two main islands of the archipelago and is characterised by the lowest productivity levels of the Western Mediterranean Basin. Habitats in the area include rhodolite and maërl beds, seagrass meadows, sandy substrates, and pelagic waters. Within this area there are: **threatened species** (e.g., Rough Skate *Raja radula*); **range-restricted species** (e.g., Speckled Skate *Raja polystigma*); **reproductive areas** (e.g., Spinetail Devil Ray *Mobula mobular*); **feeding areas** (Blackmouth Catshark *Galeus melastomus*); **undefined aggregations** (Common Smoothhound *Mustelus mustelus*); and the area sustains a **high diversity of sharks** (22 species).

CRITERIA

Criterion A - Vulnerability; Criterion B - Range Restricted;
Sub-criterion C1 - Reproductive Areas; Sub-criterion C2 - Feeding Areas;
Sub-criterion C5 - Undefined Aggregations; Sub-criterion D2 - Diversity

—	—
SPAIN	—
—	—
0-1,700 metres	—
—	—
12,195.52 km²	—
—	—





DESCRIPTION OF HABITAT

Balearic Islands is located in the Western Mediterranean Basin, ~175 km from the Iberian Peninsula coastline of Spain. The continental shelf is in general narrow except on the southern coast of Mallorca Island (~35 km width) and between Mallorca and Menorca (the Menorca Channel). The continental slope is gradual on the western and southern sides, while the northern and eastern sides display an abrupt shelf-break (Serrat et al. 2023).

Balearic Islands act as an oceanographic barrier between the Balearic sub-basin to the north and the Algerian sub-basin to the south. The Ibiza and Mallorca channels play an important role in the highly dynamic water exchange between the northern basin (cooler and more saline with a mean sea surface temperature [SST] of 13.46°C and salinity of 38.0 in the boreal winter; and mean SST of 23.2°C and salinity of 37.9 in summer) and the Algerian basin (warmer and less saline; mean SST of 14.08°C and salinity of 37.81 in winter and mean SST of 24.9°C and salinity of 37.5 in summer). A southward current predominates through the Ibiza Channel and a northward current through the Mallorca Channel (Vargas-Yañez et al. 2017; Pinot et al. 2022).

Waters around Balearic Islands are oligotrophic, presenting the lowest productivity values in the Western Mediterranean Basin (Bosc et al. 2004; Basterretxea et al. 2018). The high transparency of the water column enables algal growth down to 90-100 m depth (Ballesteros 1994). Maërl and rhodolites characterise the benthic habitats together with detrital substrates (Julià et al. 2019).

Balearic Islands is included in two Ecologically and Biologically Significant Marine Areas (EBSAs): North-west Mediterranean Pelagic Ecosystems and North-west Mediterranean Benthic Ecosystems (CBD 2023a, 2023b). The area partially overlaps with six Key Biodiversity Areas: Archipélago de Cabrera; Aguas del Sur de Mallorca y Cabrera; Aguas del Poniente de Mallorca; Aguas del Norte de Mallorca; Aguas del Norte y Oeste de Menorca; and Aguas del Sureste de Menorca (KBA 2023). It also partially overlaps with 14 Natura 2000 sites and four Marine Protected Areas.

This Important Shark and Ray Area is delineated from surface waters (0 m) to a depth of 1,700 m based on the bathymetry of the area and the depth distribution of the Qualifying Species.

ISRA CRITERIA

CRITERION A - VULNERABILITY

Twenty Qualifying Species considered threatened with extinction according to IUCN Red List of Threatened Species™ regularly occur in the area. Threatened sharks comprise two Critically Endangered, four Endangered, and three Vulnerable species; threatened rays comprise two Critically Endangered, five Endangered, and three Vulnerable species; and threatened chimaeras comprise one Vulnerable species (IUCN 2023).

CRITERION B - RANGE RESTRICTED

This area holds the regular presence of the Rough Skate and Speckled Skate as resident range-restricted species. These two species occur year-round in the area in high abundance (Morey et al. 2006; Mancusi et al. 2016; Follesa et al. 2019; Ramírez-Amaro et al. 2020; Ferragut-Perello et al. 2022). The Speckled Skate is mostly caught by benthic trawlers, whereas the Rough Skate is mostly captured by the small-scale fleet (Morey & Navarro 2010; G Morey unpubl. data 2023). This is related to habitat and depth preferences of both species, with the Speckled Skate preferring deep shelf



sandy-mud substrates, and the Rough Skate being more abundant on shallow shelf substrates over sand or maërl (Ramírez-Amaro 2017). Rough Skates and Speckled Skates are restricted to the Mediterranean Sea Large Marine Ecosystem.

SUB-CRITERION C1 – REPRODUCTIVE AREAS

Balearic Islands is an important reproductive area for two ray species.

The Speckled Skate is widely distributed around the Balearic Islands. Based on catches (n = 236 individuals) from the Mediterranean International Trawl Surveys (MEDITS) carried out between 2003 and 2018 in Geographical Subarea (GSA) 5 (corresponding to the Balearic Islands) at depths of 46–375 m, the species reproduces throughout the year in the Balearic Islands. However, a spawning peak was identified in the boreal winter when the highest number of egg capsules are recorded (~4% of females) followed by a spring cohort of individuals 16–25 cm TL (~9% of the catch in spring, n = 62) (Ferragut-Perelló et al. 2022). This is greater than the size-at-birth (11.5 cm TL and 11.8 cm TL for males and females, respectively) but overlapping with young-of-the-year size estimates (~20 cm TL) in Sardinia, Italy (Porcu et al. 2020). The spatial distribution of the catches revealed a hotspot off the northwest coast of Mallorca, in the Menorca Channel and off the east coast of Menorca.

Balearic Islands is an important mating ground for the Spinetail Devil Ray. Fishers and researchers have collected 82 opportunistic records with >350 sightings of Spinetail Devil Rays around the Balearic Islands since 2018 (Save the Med Foundation unpubl. data 2023). Seasonality in sightings, size of individuals, and population structure were uniform across the archipelago. Most individuals have been reported from late May to mid-August, with a peak in June and July. Most (70%) of the Spinetail Devil Ray sightings (n = 239) were reported from the area, with the main sighting hotspots located along the Tramuntana coast, around Cabrera Island, and along the north coast of Menorca (Save the Med Foundation unpubl. data 2023). Almost half of the observations (42%) corresponded to aggregations of two or more individuals (range 2–30 individuals) and courtship behaviour has been recorded multiple times. Females with mating scars have also been reported in the area (Morey et al. 2022a). Most of the individuals (75%) in the area were adults, based on visual estimations of their size (~200–300 cm disc width [DW]; male size-at-maturity, 206 cm DW; female size-at-maturity, 218 cm DW; Rambahiniarison et al. 2018).

SUB-CRITERION C2 – FEEDING AREAS

Balearic Islands is an important feeding area for one shark species.

The Blackmouth Catshark is one of the two most common shark species in the upper and middle slopes of the western Mediterranean Sea (Ramírez-Amaro et al. 2020) where they segregate bathymetrically by size, with juveniles being most abundant on the upper slope between 300–500 m (Ordines et al. 2021, Massutí and Morata 2003). Juvenile Blackmouth Catsharks have higher nourishment in the Balearic Islands compared to the Alboran Sea, despite the Balearic Islands having lower productivity levels overall. Nourishment was evaluated based on condition indicators (Le Cren's relative condition factor, heptosomatic index, and digestivosomatic index) and stomach contents (Ordines et al. 2021). Blackmouth Catshark juveniles showed better condition indicators and higher food ingestion in the Balearic Islands (Ordines et al. 2021). In the Balearic Islands, juvenile Blackmouth Catsharks inhabit a relatively narrow bathymetric range (~300–500 m) with little overlap with adult populations compared to the Alboran Sea, but also with fewer other demersal small shark species. Therefore, they benefit from low intra- and inter- competition for food resources (Ordines et al. 2021). In the area, Blackmouth Catsharks display specialist feeding behaviour whereby they

predate mainly on euphausiids (Valls et al. 2011). This prey resource in this bathymetric range is only shared with adult Smallspotted Catshark; this competition may be mitigated by the size selection of prey (Valls et al. 2011). Therefore, the upper slope of the Balearic Islands provides an exclusive niche for juvenile Blackmouth Catsharks. Furthermore, a modelling study based on MEDITS data also supports that statement since it identified a persistent hotspot for recruits in northern Menorca and southern Mallorca (Giannoulaki et al. 2013).

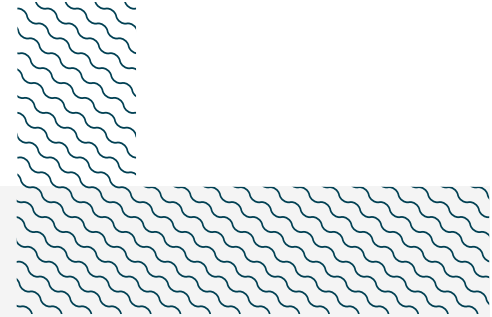
SUB-CRITERION C5 - UNDEFINED AGGREGATIONS

Balearic Islands is an important area for undefined aggregations of one shark species.

Local Ecological Knowledge and fisher interviews showed that Common Smoothhounds are regularly caught by fishers operating benthic trawls at ~150 m depth off the southern coast of Mallorca (G Morey unpubl. data 2023). Daily catches of >20 individuals recorded from a single vessel have been reported. Additionally, small-scale vessels operating at shallower depths in the same area also catch them although they catch fewer individuals. Sizes commonly range 47-65 cm TL. The size-at-birth of Common Smoothhounds is 34-42 cm TL (Saïdi et al. 2008), suggesting that these individuals were young-of-the-year, and this area could be important in the early stages of their lives although further research is needed to examine if this is a nursery area for the species. Multiple large, mature individuals (130-192 cm TL; male size-at-maturity, 108 cm TL; female size-at-maturity, 121 cm TL; Riginella et al. 2020) have also been caught in the same net within the area, suggesting potential aggregations of adults, although further research is needed to examine whether these represent mating aggregations.

SUB-CRITERION D2 - DIVERSITY

Balearic Islands sustains a high diversity of Qualifying Species (22 species). This exceeds the regional diversity threshold (19 species) for the Mediterranean and Black Sea region. The regular presence of Qualifying Species has been documented through published and unpublished sources (Carbonell et al. 2003; Massuti & Morata 2003; Mancusi et al. 2005, 2020; FAO Fisheries and Aquaculture 2008; Morey & Navarro 2010; Gouraguine et al. 2011; Valls et al. 2011; Grau et al. 2015; Abril et al. 2020; Morey et al. 2022a, 2022b; Prat-Varela et al. 2023; Serrat et al. 2023; G Morey unpubl. data 2023).



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QUALIFYING SPECIES

Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met							
				A	B	C1	C2	C3	C4	C5	D1
SHARKS											
<i>Centrophorus uyato</i>	Little Gulper Shark	EN	150-1,490	X							X
<i>Cetorhinus maximus</i>	Basking Shark	EN	0-1,264	X							
<i>Dalatias licha</i>	Kitefin Shark	VU	37-1,800	X							
<i>Etmopterus spinax</i>	Velvet Belly Lanternshark	VU	70-2,000	X							
<i>Galeorhinus galeus</i>	Tope	CR	0-826	X							
<i>Galeus melastomus</i>	Blackmouth Catshark	LC	55-2,000				X				
<i>Mustelus mustelus</i>	Common Smoothhound	EN	5-800	X					X		
<i>Oxynotus centrina</i>	Angular Roughshark	CR	30-850	X							
<i>Prionace glauca</i>	Blue Shark	CR*	0-1,000	X							
<i>Scyliorhinus stellaris</i>	Nursehound	VU	0-380	X							
RAYS											
<i>Aetomylaeus bovinus</i>	Duckbill Eagle Ray	CR	0-150	X							X
<i>Bathytoshia lata</i>	Brown Stingray	VU	0-800	X							
<i>Dasyatis pastinaca</i>	Common Stingray	VU	0-200	X							

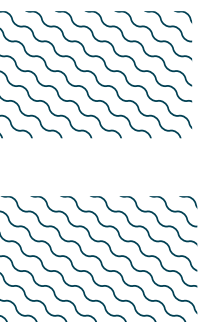
<i>Gymnura altavela</i>	Spiny Butterfly Ray	EN	10-150	X									
<i>Leucoraja circularis</i>	Sandy Skate	EN	50-800	X									
<i>Mobula mobular</i>	Spinetail Devil Ray	EN	0-1,112	X		X							
<i>Myliobatis aquila</i>	Common Eagle Ray	CR	0-537	X									
<i>Raja polystigma</i>	Speckled Skate	LC	20-633		X	X							
<i>Raja radula</i>	Rough Skate	EN	0-350	X	X								
<i>Rostroraja alba</i>	White Skate	EN	0-750	X									
<i>Torpedo marmorata</i>	Marbled Torpedo Ray	VU	0-370	X									
CHIMAERAS													
<i>Chimaera monstrosa</i>	Rabbitfish	VU	200-1,663	X									X

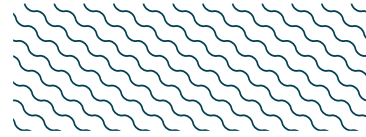
SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
<i>Hexanchus griseus</i>	Bluntnose Sixgill Shark	NT
<i>Isurus oxyrinchus</i>	Shortfin Mako	EN
<i>Mustelus asterias</i>	Starry Smoothhound	VU*
<i>Scyliorhinus canicula</i>	Smallspotted Catshark	LC
<i>Squalus blainville</i>	Longnose Spurdog	DD
RAYS		
<i>Dipturus oxyrinchus</i>	Longnose Skate	NT
<i>Leucoraja naevus</i>	Cuckoo Skate	LC
<i>Pteroplatytrygon violacea</i>	Pelagic Stingray	LC
<i>Raja brachyura</i>	Blonde Skate	NT
<i>Raja clavata</i>	Thornback Skate	NT
<i>Raja miraletus</i>	Brown Skate	LC

*Assessed as threatened in a Mediterranean regional assessment but considered NT globally.

IUCN Red List of Threatened Species Categories are available by searching species names at www.iucnredlist.org. Abbreviations refer to: CR, Critically Endangered; EN, Endangered; VU, Vulnerable; NT, Near Threatened; LC, Least Concern; DD, Data Deficient.





SUPPORTING INFORMATION

There are additional indications that Balearic Islands is an important area for the reproduction of one shark species.

Large catches of Little Gulper Sharks were made by trammel nets on the shelf slope off northern Mallorca between 1994-1998 (Guallart 1998, 2022). Several hundred specimens were landed each day. Trawlers operating in the same area during that time only caught few individuals (J. Guallart pers. comm. 2023). The catch was composed of subadults and adults of both sexes, with an abundance of pregnant females. The trammel fishery stopped, likely because the population of Little Gulper Sharks crashed as a result of the fishery. Since then, only trawlers operate in this area, and few Little Gulper Sharks have been caught. Some landings of the species have been reported recently (G Morey unpubl. data 2023). It is thus possible that the population has recovered and that this area is once more important for Little Gulper Shark reproduction. Further information is required to understand the importance of this area for this species.



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