

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

## STRAIT OF SICILY AND TUNISIAN PLATEAU ISRA

### Mediterranean and Black Seas Region

#### SUMMARY

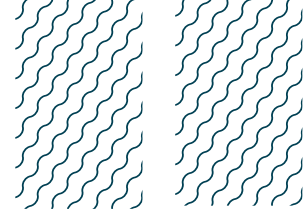
Strait of Sicily and Tunisian Plateau is located between Sicily, Malta, western Libya, and Tunisia, encompassing Pantelleria Island, Kerkennah Islands, and the Egadi and the Pelagie Archipelagos. The area is characterised by diverse habitat features, such as submerged volcanic seeps, trenches, canyons, seamounts, banks, and sensitive habitats (e.g., cold-water corals and seagrass beds). The area overlaps with the Sicilian Channel Ecologically or Biologically Significant Marine Area. Within this area there are: **threatened species** (e.g., Common Guitarfish *Rhinobatos rhinobatos*); **range restricted species** (e.g., Rough Skate *Raja radula*); **reproductive areas** (e.g., White Shark *Carcharodon carcharias*); **undefined aggregations** (e.g., Sandbar Shark *Carcharhinus plumbeus*); and the area sustains **a high diversity of sharks** (32 species).

#### CRITERIA

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

Italy	—
Libya	—
Malta	—
Tunisia	—
—	—
<b>0-2,000 metres</b>	—
—	—
<b>219,913 km<sup>2</sup></b>	—
—	—





## DESCRIPTION OF HABITAT

Strait of Sicily and Tunisian Plateau is located between Sicily, Malta, Tunisia, and Western Libya, encompassing Pantelleria Island, Kerkennah Islands, and the Egadi and the Pelagie Archipelagos. The area delimits the border between the western and eastern Mediterranean sub-basins and includes part of the Sicilian and Tunisian shelves. It is considered topographically complex resulting in highly diverse habitats. It is characterised by an extended continental shelf on the southern part of Sicily, several trenches in the central part of the area, seamounts (e.g., Aceste, Tiberio, and Scuso) and banks (e.g., Skerki and Marettimo) in its northwestern side, and the Malta Bank in the eastern part. Emerging volcanic Islands include Linosa and Pantelleria Island and 12 submerged volcanoes (Civile et al. 2016). The seafloor is characterised by high heterogeneity of benthic communities, including sensitive habitats (e.g., deep cold-water corals, maërl habitats, and shallow seagrass meadows), and shallow areas covered by sandy beds (Calcinai et al. 2013). The slope is irregular, characterised by steep trenches, troughs, and escarpments.

The Atlantic Ionian Stream flows eastward through the area and is the main driver of surface circulation, promoting the formation of two large cyclonic vortices on the Adventure and Malta Banks. The Atlantic Ionian Stream also promotes the formation of coastal upwellings as it interacts with complex bottom topographies, which, together with the mesoscale vortices, support high levels of primary and secondary production. The Levantine Intermediate Water is a westward flowing water mass in the intermediate layers (200–400 m).

The area overlaps with the Sicilian Channel Ecologically or Biologically Significant Marine Area (EBSA; CBD 2023).

This Important Shark and Ray Area is benthopelagic and is delineated from inshore and surface waters (0 m) to 2,000 m based on the depth range of the Qualifying Species.

## ISRA CRITERIA

### CRITERION A - VULNERABILITY

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

### CRITERION B - RANGE RESTRICTED

This area holds the regular presence of two resident range-restricted species. Maltese Skate and Rough Skate are regularly encountered and caught in the area by fisheries that operate locally (Kadri et al. 2014a; Lauria et al. 2015; Tiralongo et al. 2018; Follesa et al. 2019; Geraci et al. 2021; Di Lorenzo et al. 2022; Falsone et al. 2022; Saidi et al. 2023; C Cattano unpubl. data 2023). The area is considered more important for Rough Skate than other areas in the Mediterranean Sea. The Maltese Skate and Rough Skate occur only in the Mediterranean Sea Large Marine Ecosystem.



## SUB-CRITERION C<sub>1</sub> – REPRODUCTIVE AREAS

Strait of Sicily and Tunisian Plateau is an important reproductive area for four shark and three ray species.

Fishery-dependent, local ecological knowledge (LEK), and Baited Remote Underwater Video Surveys (BRUVS) data show that the Gulf of Gabès in Tunisia and the Pelagie Islands in Italy are among the most important space-use spots for various lifecycle stages of Sandbar Shark (Echwikihi et al. 2013; Enajjar et al. 2015; Saidi et al. 2019; 2020; 2023; Cattano et al. 2021; 2023). Known parturition sites for Sandbar Shark are reported in the Gulf of Gabès (Enajjar et al. 2015). Parturition occurs in the boreal summer (June–July), with young-of-the-year (YOY) remaining in the area year-round (Enajjar et al. 2015; Saidi et al. 2019; 2020; 2023). Fishery-dependent data show that Sandbar Shark neonates (<70 cm TL) incidentally caught by the grouper longline fishery in the Gulf of Gabès, represented between 6–10% of individuals (n = 140) over two consecutive fishing periods in 2016 and 2017 (Saidi et al. 2023).

The area has been historically considered a reproductive area for White Sharks (Fergusson 1996). Despite significant population declines, one of the highest reported occurrence of young-of-the-year individuals (n = 14) from the Mediterranean Sea has been recorded in the area, especially from May to August (Boldrocchi et al. 2017). Pregnant females or young-of-the-year have been reported on the continental shelf waters of Sicily, Tunisia, and Libya (e.g., Saïdi et al. 2005; ICSEM 2013; Boldrocchi et al. 2017; Jambura et al. 2021). The number of reliable capture reports between 2000 and 2012 is 34 (n = 59 from 1953 to 2012). Neonates are caught mainly in trawls (ICSEM 2013).

Local ecological knowledge, pelagic BRUVS, and fishery-dependent surveys suggest that young-of-the-year Shortfin Mako are recurrently encountered or caught on longlines around banks, shoals, and slope zones in the southeastern part of the area, off the Pelagie Islands and off the Tunisian coast (Saidi et al. 2023; C Cattano & M Milazzo unpubl. data 2023). Sizes captured or documented on BRUVS in July and August are between 71–81 cm TL (average of 3.1 young-of-the-year for every 1,000 hooks) which is within the reported global size-at-birth for the species (Stevens 1983; University of Palermo 2023). These data suggest the area provides advantage to the young and supports them at various lifecycle stages.

Pregnant Common Smoothhounds are recurrently caught from February to April both in the northern and the southern sectors of the Strait of Sicily and Tunisian Plateau according to scientific trawl surveys, monitoring of fishery landings, and LEK (Enajjar et al. 2015; Colloca et al. 2020; Di Lorenzo et al. 2022; Saidi et al. 2023). In addition, studies conducted in the Gulf of Gabès over a four-year period documented neonates with open umbilical scars which represented 12% of animals landed from April to July (Enajjar et al. 2015).

Neonate Blackchin Guitarfish (<38 cm TL, n = 95) and Common Guitarfish (<29 cm TL, n = 40) are regularly caught in the shallow waters of the Gulf of Gabès by trawl and trammel nets in late summer and early autumn (Enajjar et al. 2015). Evidence of neonates of these species is only available for this specific location, highlighting the importance of this area for the early life stage of these species.

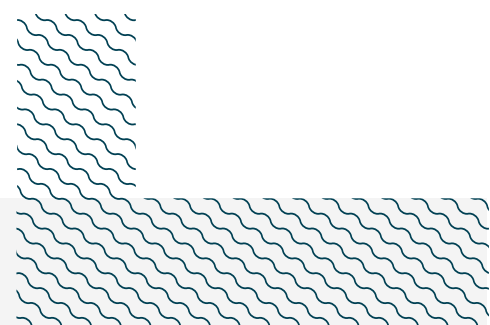
A seasonal reproductive area for the Common Eagle Ray has been identified in the Egadi islands (Grancagnolo & Arculeo 2021; University of Palermo 2023). Public videos uploaded on social media platforms in September 2019, 2020, and 2021, as well as field studies using underwater visual censuses, diver operated video systems, fixed video cameras, and BRUVS conducted in the summers of 2020, 2021, and 2022 recorded up to 93 individuals aggregating and five pregnant females (University of Palermo 2023). Courtship (n = 78) and mating (n = 99) events were also recorded mostly during the first daylight hours (University of Palermo 2023).

## SUB-CRITERION C5 - UNDEFINED AGGREGATIONS

This area hosts undefined aggregations of the Sandbar Shark. Adults and sub-adults aggregate from mid-July to October in the Pelagie Archipelago (Italy). Aggregations have been documented since the late 1950s around Lampione Island and monitored continuously by BRUV and diver operated video systems from 2019 onwards (Merlo 1964; Cattano et al. 2021, 2023; SZN 2023). Data from BRUVS recorded up to five individuals in a single frame in 2019, at a depth of 20–40 m (Cattano et al. 2021). Divers' videos have documented aggregations of up to 18 individuals using an area at the same time (SZN 2023). Further information is required to understand the function of these aggregations.

## SUB-CRITERION D2 - DIVERSITY

The area sustains a high diversity of Qualifying Species (32 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 scientific benthic trawl surveys within the Mediterranean International Trawl Survey (MEDITS) and the Italian National Survey Program (GRUND) projects and other published studies (Ragonese et al. 2013; Zava et al. 2016; Boldrocchi et al. 2017; Giovos et al. 2019; Saidi et al. 2019; 2020; 2023; Cattano et al. 2021; Geraci et al. 2021; La Mesa et al. 2021; Di Lorenzo et al. 2022; Falsone et al. 2022), technical reports (University of Palermo 2023), and unpublished data sources (e.g., C Cattano unpubl. data 2023; G Notarbartolo di Sciarra unpubl. data 2023).



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### Acknowledgments

Marco Milazzo (University of Palermo), Desirée Grancagnolo (University of Palermo), Carlo Cattano (Stazione Zoologica Anton Dohrn), Monica Barone (Food and Agriculture Organization of the United Nations), Francesco Colloca (Stazione Zoologica Anton Dohrn), Marco Costantini (WWF Mediterranean), Manfredi Di Lorenzo (Stazione Zoologica Anton Dohrn), Fabio Fiorentino (CNR-IRBIM), Germana Garofalo (CNR-IRBIM), Valentina Lauria (CNR-IRBIM), Agostino Leone (University of Palermo), Simone Niedermueller (WWF Mediterranean), Théophile L. Mouton (IUCN SSC Shark Specialist Group - ISRA Project), Adriana Gonzalez Pestana (IUCN SSC Shark Specialist Group - ISRA Project), Federico Quattrocchi (University of Palermo), and Fabrizio Serena (CNR-IRBIM) contributed and consolidated information included in this factsheet. We thank all participants of the 2023 ISRA Region 3 - Mediterranean and Black Seas workshop for their contributions to this process.

This factsheet has undergone review by the ISRA Independent Review Panel prior to its publication.

This project was funded by the Shark Conservation Fund, a philanthropic collaborative pooling expertise and resources to meet the threats facing the world's sharks and rays. The Shark Conservation Fund is a project of Rockefeller Philanthropy Advisors.

### Suggested citation

IUCN SSC Shark Specialist Group. 2023. Strait of Sicily and Tunisian Plateau ISRA Factsheet. Dubai: IUCN SSC Shark Specialist Group.

## 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	D2		
<b>SHARKS</b>														
<i>Carcharhinus brevipinna</i>	Spinner Shark	VU	0-250	X										X
<i>Carcharhinus plumbeus</i>	Sandbar Shark	EN	0-280	X		X					X			
<i>Carcharodon carcharias</i>	White Shark	VU	0-1,280	X		X								
<i>Centrophorus uyato</i>	Little Gulper Shark	EN	150-1,490	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>Isurus oxyrinchus</i>	Shortfin Mako	EN	0-888	X		X								
<i>Mustelus asterias</i>	Starry Smoothhound	VU*	0-199	X										
<i>Mustelus mustelus</i>	Common Smoothhound	EN	5-800	X		X								
<i>Mustelus punctulatus</i>	Blackspotted Smoothhound	VU	0-300	X										

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	D2		
<b>SHARKS</b>														
<i>Oxynotus centrina</i>	Angular Roughshark	EN	35-805	X										X
<i>Prionace glauca</i>	Blue Shark	CR*	0-1,000	X										
<i>Scyliorhinus stellaris</i>	Nursehound	VU	0-380	X										
<i>Squalus acanthias</i>	Spiny Dogfish	VU	0-1,978	X										
<i>Squatina aculeata</i>	Sawback Angelshark	CR	30-500	X										
<i>Squatina oculata</i>	Smoothback Angelshark	CR	20-500	X										
<i>Squatina squatina</i>	Angelshark	CR	0-150	X										
<b>RAYS</b>														
<i>Aetomylaeus bovinus</i>	Duckbill Eagle Ray	CR	0-150	X										X
<i>Dasyatis pastinaca</i>	Common Stingray	VU	0-200	X										
<i>Glaucostegus cemiculus</i>	Blackchin Guitarfish	CR	0-100	X		X								
<i>Gymnura altavela</i>	Spiny Butterfly Ray	EN	10-150	X										
<i>Leucoraja circularis</i>	Sandy Skate	EN	50-800	X										

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	D2
<b>RAYS</b>												
<i>Leucoraja melitensis</i>	Maltese Skate	CR	60-800	X	X							X
<i>Mobula mobular</i>	Spinetail Devil Ray	EN	0-1,112	X								
<i>Myliobatis aquila</i>	Common Eagle Ray	CR	0-537	X		X						
<i>Torpedo marmorata</i>	Marbled Torpedo Ray	VU	0-370	X								
<i>Torpedo torpedo</i>	Ocellate Torpedo	VU	0-320	X								
<i>Raja radula</i>	Rough Skate	EN	0-350	X	X							
<i>Rhinobatos rhinobatos</i>	Common Guitarfish	CR	0-180	X		X						
<i>Rostroraja alba</i>	White Skate	EN	0-750	X								
<b>CHIMAERAS</b>												
<i>Chimaera monstrosa</i>	Rabbitfish	VU	200-1,663	X								X

## SUPPORTING SPECIES

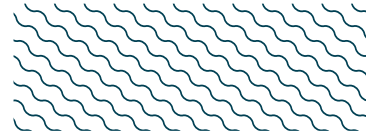
Scientific Name	Common Name	IUCN Red List Category
<b>SHARKS</b>		
<i>Alopias vulpinus</i>	Common Thresher	VU
<i>Galeus melastomus</i>	Blackmouth Catshark	LC
<i>Heptranchias perlo</i>	Sharpnose Sevengill Shark	NT
<i>Hexanchus griseus</i>	Bluntnose Sixgill Shark	NT
<i>Odontaspis ferox</i>	Smalltooth Sand Tiger	VU
<i>Scyliorhinus canicula</i>	Smallspotted Catshark	LC
<i>Squalus blainville</i>	Longnose Spurdog	DD
<b>RAYS</b>		
<i>Dipturus oxyrinchus</i>	Longnosed Skate	NT
<i>Pteroplatytrygon violacea</i>	Pelagic Stingray	LC
<i>Raja asterias</i>	Starry Skate	NT
<i>Raja brachyura</i>	Blonde Skate	NT
<i>Raja clavata</i>	Thornback Skate	NT
<i>Raja miraletus</i>	Brown Skate	LC
<i>Raja polystigma</i>	Speckled Skate	LC
<i>Taeniurops grabatus</i>	Round Fantail Stingray	NT
<i>Tetronarce nobiliana</i>	Great Torpedo Ray	LC

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

IUCN Red List of Threatened Species Categories are available by searching species names at [www.iucnredlist.org](http://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 the area is an important reproductive area for two shark and three ray species and an important feeding area for one shark species.

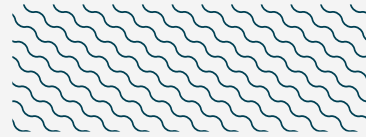
Results from trawl surveys indicate that the northern Tunisian coast could be important for the reproduction and feeding of Smallspotted Catshark (Mnasri et al. 2012; Capapé et al. 2014). Further information is required on the regularity of these activities in the area.

Between January 2007 and May 2009, 124 female (25-100 cm TL) and 108 male (23-83 cm TL) Longnose Spurdogs were collected (Marouani et al. 2012). The size-at-birth for this species is ~23 cm TL (Ebert & Dando 2021). Therefore, some specimens collected represent newborns and young-of-the-year of this species. Further information is necessary to understand the importance of the area for the reproduction of this species.

Across all months of the year in 2007, 650 female (13.5-56.0 cm TL) and 520 male (13.5-58.0 cm TL) Brown Skates were collected (Kadri et al. 2012). Size-at-hatching for this species is ~5 cm TL (Relini et al. 1999). Therefore, these samples included juvenile individuals. In addition, according to the assessment of the reproductive cycle of the species, mating occurred in spring and summer while egg-bearing females occurred in all months with a maximum in spring and summer (Kadri et al. 2012). Further information is necessary to understand the importance of the area for the reproduction of this species.

From January to December 2007, 240 female (16.5-105 cm TL) and 280 male (15.5-95 cm TL) Longnosed Skates were collected (Kadri et al. 2015). The size-at-hatching of this species is ~17 cm TL (Ebert & Dando 2021). Therefore, newborns and young-of-the-year were found in this area. In addition, egg capsules were observed throughout the year, with the highest proportions observed in spring and summer (Kadri et al. 2015). Further information is necessary to understand the importance of the area compared with other areas in the region for the reproduction of this species.

From January to December 2007, 750 female (14-110 cm TL) and 530 male (14.6-89 cm TL) Thornback Skates were collected (Kadri et al. 2014b). The size-at-hatching for this species is ~11.8 cm TL (Ellis & Shackley 1995). Therefore, young-of-the-year individuals were found in this area. In addition, among 353 actively spawning females observed, 125 contained egg capsules in utero. Further information is necessary to understand the importance of the area compared with other areas in the region for the reproduction of this species.



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