

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

PELAGIE ARCHIPELAGO AND LEVANTE SHOAL ISRA

Mediterranean and Black Seas Region

SUMMARY

Pelagie Archipelago and Levante Shoal is located on the African continental shelf of the southern Mediterranean Sea. It represents the southernmost part of Italian waters and lies within the Sicilian Channel. It includes the area around Lampedusa, Linosa, and Lampione Islands, and the channel between Lampedusa and Linosa Islands. The seafloor of this area is mostly flat and characterised by seagrass meadows, rhodolith and maërl beds, and coralligenous assemblages. The area partially overlaps with a Marine Protected Area, two Natura 2000 sites, and falls within an Ecologically or Biologically Significant Marine Area. The influence of Atlantic currents makes it a high-energy area. Within this area there are: **threatened species** (e.g., Shortfin Mako *Isurus oxyrinchus*); **reproductive areas** (Shortfin Mako); and **undefined aggregations** (Sandbar Shark *Carcharhinus plumbeus*).

CRITERIA

Criterion A - Vulnerability; Sub-criterion C1 - Reproductive Areas; Sub-criterion C5 - Undefined Aggregations

— —
ITALY — —
 — —
0-800 metres
 — —
4,257 km²
 — —





DESCRIPTION OF HABITAT

Pelagie Archipelago and Levante Shoal is located in the Sicilian Channel lying on the African lithosphere, i.e., the Pelagian Block. This area is mostly characterised by sedimentary substrates corresponding to diverse marine sensitive habitats, such as underwater caves, Neptune Grass (*Posidonia oceanica*) meadows, coralligenous areas, and rhodolith and maërl beds (Tonielli et al. 2016; Innangi et al. 2019). These have been recognised as Vulnerable Marine Ecosystems by the European Union and other environmental commissions.

Pelagie Archipelago and Levante Shoal is a high-energy area with intense hydrodynamics caused by wave motion and influenced by a highly variable current system (the Atlantic Tunisian Current), including deepwater upwellings along the coast. A water mass (~200 m thick) of Modified Atlantic Mediterranean Water flows from the west, and after entering the Sicilian Channel, splits into the Atlantic Ionian Stream and the Atlantic Tunisian Current, the latter moving through the Pelagie Archipelago (Innangi et al. 2019).

The area partially overlaps with a Marine Protected Area (MPA), and two Natura 2000 sites, and it falls within the Sicilian Channel Ecologically or Biologically Significant Marine Area.

This Important Shark and Ray Area is delineated from surface waters (0 m) to a depth of 800 m based on the maximum depth range of the habitat used by the Qualifying Species.

ISRA CRITERIA

CRITERION A - VULNERABILITY

Two Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species™ regularly occur in the area. These are the Endangered Sandbar Shark (Rigby et al. 2021), and Shortfin Mako which is assessed as Endangered globally (Rigby et al. 2019) and Critically Endangered in the Mediterranean Sea (Walls & Soldo 2016).

SUB-CRITERION C₁ - REPRODUCTIVE AREAS

Pelagie Archipelago and Levante Shoal is an important reproductive area for one shark species.

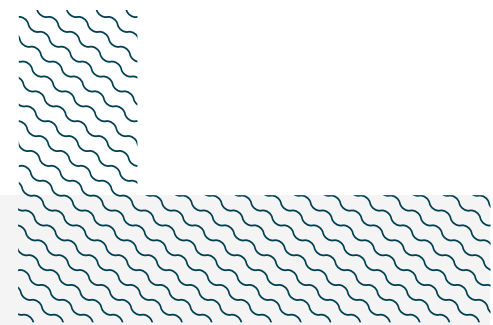
There is interannual evidence that young Shortfin Mako use the area between Levante shoal, Lampedusa, and Linosa Islands during the boreal summer. In July 2021 and 2022, 15 young-of-the-year (YOY) (71-81 cm total length [TL]) were incidentally captured in pelagic longlines deployed between Lampedusa, Levante Shoal, and Linosa Islands (3.4 were caught on average per 1,000 hooks, for four separate longlines; 100% of occurrence). In addition, one individual (~80 cm TL) was filmed in Levante Shoal (4.5% of occurrence in Baited Remote Underwater Video Surveys [BRUVS] [C. Cattano et al. unpubl. data 2023]). These are considered neonate or YOY as the known size-at-birth for the species is ~70 cm TL (Rigby et al. 2019) and they can grow from 16 cm TL (Cerna & Licandeo 2009) to 50 cm TL (Natanson et al. 2020) during the first year. These were caught at the end of July; parturition in the Mediterranean Sea occurs mainly in late winter to mid-spring (Mollet et al. 2000). In addition, in early June 2023, a questionnaire survey aimed at gathering information on the occurrence of Shortfin Mako YOY in the region was administered to 15 out of 17 longline fishers of Lampedusa Island. All fishers (100%) stated that incidental catches of YOY Shortfin Mako predictably occur every year from late July to September in the same area of the Archipelago (i.e.,

South Linosa Island and North and East Lampedusa Island). Fishers noted that is the only fishing ground in the Pelagie Archipelago where Shortfin Mako YOY are captured.

SUB-CRITERION C5 - UNDEFINED AGGREGATIONS

Pelagie Archipelago and Levante Shoal is an important area for the aggregation of one shark species.

Aggregations of Sandbar Sharks in this area were first reported in 1956 (Merlo 1964). These aggregations have been recorded on BRUVS whereby five individuals were observed in a single frame in 2019, at a depth of 20-40 m (Cattano et al. 2021). Aggregations of Sandbar Sharks attract tourists to the area thus divers have made further observations. Diver-operated videos have recorded aggregations of up to 18 individuals. Sandbar Shark aggregations around Lampione have been monitored every July and September/October from 2019 to 2022 (Cattano et al. 2021; C. Cattano et al. unpubl. data 2023). This species is found in this area seasonally (from mid-July to September/October) (Cattano et al. 2021, 2023) but no other information on the purpose of these aggregations is available.



Acknowledgments

Carlo Cattano (Stazione Zoologica Anton Dohrn), Marco Milazzo (University of Palermo), Desirée Grancagnolo (University of Palermo), Giorgio Aglieri (Stazione Zoologica Anton Dohrn), Gabriele Turco (University of Palermo), Federico Quattrocchi (University of Palermo), Fabrizio Serena (The Institute for Marine Biological Resources and Biotechnology of the National Research Council), and Ryan Charles (IUCN SSC Shark Specialist Group - ISRA Project) 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. Pelagie Archipelago and Levante Shoal ISRA Factsheet. Dubai: IUCN SSC Shark Specialist Group.

QUALIFYING SPECIES

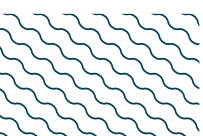
Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met								
				A	B	C1	C2	C3	C4	C5	D1	D2
SHARKS												
<i>Carcharhinus plumbeus</i>	Sandbar Shark	EN	0-280	X						X		
<i>Isurus oxyrinchus</i>	Shortfin Mako	CR*	0-888	X		X						

*Considered CR in Mediterranean Sea regional assessment but EN globally.

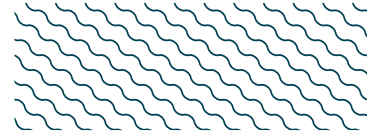
SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
<i>Alopias vulpinus</i>	Common Thresher	VU
<i>Carcharodon carcharias</i>	White Shark	VU
<i>Galeorhinus galeus</i>	Tope	CR
<i>Hexanchus griseus</i>	Bluntnose Sixgill Shark	NT
<i>Odontaspis ferox</i>	Smalltooth Sand Tiger	VU
<i>Prionace glauca</i>	Blue Shark	CR
<i>Squalus blainville</i>	Longnose Spurdog	DD
RAYS		
<i>Dasyatis pastinaca</i>	Common Stingray	VU
<i>Myliobatis aquila</i>	Common Eagle Ray	CR
<i>Pteroplatytrygon violacea</i>	Pelagic Stingray	LC
<i>Raja clavata</i>	Thornback Skate	NT
<i>Raja radula</i>	Rough Skate	EN
<i>Raja undulata</i>	Undulate Skate	EN

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.



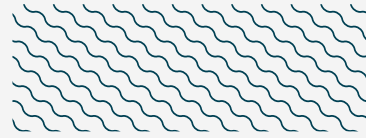
SUPPORTING INFORMATION



There are additional indications that Pelagie Archipelago and Levante Shoal is an important area for range-restricted species and aggregations of three ray species.

The area may hold the regular presence of the Endangered Rough Skate (Mancusi et al. 2016) as a resident range-restricted species. However, further information is required to determine the regional importance of the geographic range of this species in the area. This species occurs yearly and has been recorded during two consecutive BRUVS campaigns carried out around Lampedusa Island in July and September of 2021 and 2022, both within and outside the MPA borders (C. Cattano et al. unpubl. data 2023). This species occurs only in the Mediterranean Sea Large Marine Ecosystem. Up to two individuals (maximum number; MaxN) have been detected in a single BRUV frame with a 9% frequency of occurrence in BRUVS deployed around Lampedusa (C. Cattano et al. unpubl. data 2023). Data from questionnaires administered in 2022 to 15 local fishers show that they regularly catch the species in the area (C. Cattano et al. unpubl. data 2023). BRUVS deployed in June 2023 confirm the presence of the species in the same area (C. Cattano unpubl. data 2023).

In July and September 2021 and 2022, Critically Endangered Common Eagle Ray (Jabado et al. 2021a) and the Vulnerable Common Stingray (Jabado et al. 2021b) were recorded on BRUVS. They swam together in Levante Shoal and in sandy bottoms around Lampedusa, respectively. Common Eagle Ray has been recorded in 25% of BRUV deployments carried out in 2021 and 2022 between 36 and 60 m depth (up to four individuals recorded together). The frequency of occurrence for Common Stingray was 58% (up to four individuals recorded together; Cattano et al. unpubl. data 2023). Several individuals (MaxN = 4) were recorded for two consecutive years (2021 and 2022) through BRUV deployed in July and September on sandy bottoms in specific areas around Lampedusa Island. BRUV deployed in June 2023 confirmed the presence of Common Stingray in the same area (C. Cattano unpubl. data 2023). Further investigation is required to determine the size, regularity, and purpose of these aggregations.



REFERENCES

- Cattano C, Calò A, Aglieri G, Cattano P, Di Lorenzo M, Grancagnolo D, Lanzarone D, Principato E, Spatafora D, Turco G, et al. 2023. Literature, social media and questionnaire surveys identify relevant conservation areas for *Carcharhinus* species in the Mediterranean Sea. *Biological Conservation* 277: 109824. <https://doi.org/10.1016/j.biocon.2022.109824>
- Cattano C, Turco G, Di Lorenzo M, Gristina M, Visconti G, Milazzo M. 2021. Sandbar shark aggregation in the central Mediterranean Sea and potential effects of tourism. *Aquatic Conservation: Marine and Freshwater Ecosystems* 31(6): 1420-1428. <https://doi.org/10.1002/aqc.3517>
- Cerna F, Licandeo R. 2009. Age and growth of the shortfin mako (*Isurus oxyrinchus*) in the south-eastern Pacific off Chile. *Marine and Freshwater Research* 60(5): 394-403. <https://doi.org/10.1071/MFO8125>
- Innangi S, Tonielli R, Romagnoli C, Budillon F, Di Martino G, Innangi M, Laterza R, Le Bas T, Lo Iacono C. 2019. Seabed mapping in the Pelagie Islands marine protected area (Sicily Channel, Southern Mediterranean) using Remote Sensing Object Based Image Analysis (RSOBIA). *Marine Geophysical Research* 40: 333-355. <https://doi.org/10.1007/s11001-018-9371-6>
- Jabado RW, Chartrain E, Cliff G, Da Silva C, Derrick D, Dia M, Diop M, Doherty P, Leurs GHL, Metcalfe K, et al. 2021a. *Myliobatis aquila*. *The IUCN Red List of Threatened Species* 2021: e.T161569A124508353. <https://dx.doi.org/10.2305/IUCN.UK.2021-1.RLTS.T161569A124508353.en>
- Jabado RW, Chartrain E, De Bruyne G, Derrick D, Dia M, Diop M, Doherty P, Leurs GHL, Metcalfe K, Pacoureaux N, et al. 2021b. *Dasyatis pastinaca*. *The IUCN Red List of Threatened Species* 2021: e.T161453A124488102. <https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T161453A124488102.en>
- Mancusi C, Morey G, Serena F. 2016. *Raja radula*. *The IUCN Red List of Threatened Species* 2016: e.T161339A16527984. <https://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T161339A16527984.en>
- Merlo R. 1964. L'Italia degli squali è a Lampione. *Mondo Sommerso, La Rivista del Mare* 6(8): 53-63.
- Mollet HF, Cliff G, Pratt Jr. HL, Stevens JD. 2000. Reproductive biology of the female shortfin mako, *Isurus oxyrinchus* Rafinesque, 1810, with comments on the embryonic development of lamnoids. *Fishery Bulletin* 98(2): 299-318.
- Natanson LJ, Winton M, Bowlby H, Joyce W, Deacy B, Coelho R, Rosa D. 2020. Updated reproductive parameters for the shortfin mako (*Isurus oxyrinchus*) in the North Atlantic Ocean with inferences of distribution by sex and reproductive stage. *Fishery Bulletin* 118(1): 21-36. <https://doi.org/10.7755/FB.118.1.3>
- Rigby CL, Barreto R, Carlson J, Fernando D, Fordham S, Francis MP, Jabado RW, Liu KM, Marshall A, Pacoureaux N, et al. 2019. *Isurus oxyrinchus*. *The IUCN Red List of Threatened Species* 2019: e.T39341A2903170. <https://dx.doi.org/10.2305/IUCN.UK.2019-1.RLTS.T39341A2903170.en>
- Rigby CL, Derrick D, Dicken M, Harry AV, Pacoureaux N, Simpfendorfer C. 2021. *Carcharhinus plumbeus*. *The IUCN Red List of Threatened Species* 2021: e.T3853A2874370. <https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T3853A2874370.en>
- Tonielli R, Innangi S, Budillon F, Di Martino G, Felsani M, Giardina F, Innangi M, Filiciotto F. 2016. Distribution of *Posidonia oceanica* (L.) Delile meadows around Lampedusa Island (Strait of Sicily, Italy). *Journal of Maps* 12(sup1): 249-260. <https://doi.org/10.1080/17445647.2016.1195298>
- Walls RHL, Soldo A. 2016. *Isurus oxyrinchus* (Mediterranean assessment). *The IUCN Red List of Threatened Species* 2016: e.T39341A16527941.