



The Conservation Status of Sharks, Rays and Chimaeras in the Mediterranean Sea



THE IUCN RED LIST OF THREATENED SPECIES™



Chondrichthyan Crisis in the Mediterranean Sea

An analysis of threat levels across all sharks, rays and chimaeras has revealed the Mediterranean Sea as a key hotspot of extinction risk¹. Seventy seven species are recorded from the Mediterranean Sea, however of these, four species are considered to be either vagrant or probably vagrant, or Lessepsian immigrants from the Red Sea; they are the Spinner Shark (*Carcharhinus brevipinna*), the Reticulate Whipray (*Himantura uarnak*), the Great Hammerhead (*Sphyrna mokarran*) and the Scalloped Hammerhead (*Sphyrna lewini*). These four species have been excluded as Not Applicable for the Mediterranean region. Three species are endemic to the Mediterranean Sea and found nowhere else – Maltese Skate (*Leucoraja melitensis*; CR), Rough Skate (*Raja radula*; EN), and the Speckled Skate (*Raja polystigma*; LC). More than half of the species assessed, 39 of 73 species, are regionally threatened; 31 are most imperilled in the Critically Endangered (20 species) and Endangered (11) categories (Figure 1). On a global scale, of the 20 species of sharks, rays and chimaeras that have been assessed as Critically Endangered, seven have some part of their distribution in the Mediterranean Sea. Of the other 13 regionally CR species, the Mediterranean Sea part of their population is more threatened than the remainder of their global range.

The level of threat may be worse because uncertainty in species status remains moderately high in the Mediterranean Sea; of the 73 assessed species 13 remain Data Deficient. Status uncertainty tends to be greatest along North African coasts, emphasizing the need for further research in this part of the Mediterranean region where species richness was also greatest (Figure 2). Although there are synoptic research surveys throughout the northern coastal waters of the Mediterranean Sea, there are no population time-series available from North African waters. By assuming varying fractions of the Data Deficient species are threatened, the overall level of threat ranges from 53% (if none of the DD species are threatened) to 71% if all DD species are threatened. Up to two-thirds of Chondrichthyans may be threatened, the mid-point estimate suggests 65% of extant species for which sufficient data are available are threatened.



Squatina squatina
© Marc Dando / Shark Trust

Furthermore, there is no sign of improvement in the status of Mediterranean Chondrichthyans more than a decade since they were first assessed. We can track changes in status of Chondrichthyans by comparing these findings to the first Mediterranean Sea Red List assessment in 2007² to this most recent assessment in 2016. There were no genuine improvements in status for the 73, whereas the status of 11 species worsened by at least one Red List Category.



There is **NO SIGN OF IMPROVEMENT** in the status of Mediterranean Chondrichthyans more than a decade since they were first assessed

At least half of the rays (50%, 16 of 32 species) in the Mediterranean Sea face an elevated risk of extinction, as well as 54% of sharks (22 of 41), whereas the only chimaera species (*Chimaera monstrosa*) is considered Least Concern in these waters. Of a total 27 chondrichthyan Families occurring in the Mediterranean Sea, 74% (20 Families, 39 species) have at least one species listed as threatened, 52% (14 Families, 24 species) of which have all species listed as threatened. Examples of Families with all species threatened are the thresher sharks (Family Alopiidae), the Angel Sharks (Squatinidae), and the Guitarfishes (Rhinobatidae). Of the remaining 45% of species in the region, 13 are Data Deficient (one of which is endemic to the Mediterranean Sea), nine Near Threatened, and 12 Least Concern. When the Mediterranean Sea Chondrichthyans were first assessed² 18 species were considered DD, only seven of which are still DD, representing significant knowledge improvement between assessments.

The principal driver of decline and local extinction is overfishing. Most species are taken as retained valuable bycatch in small-scale and large-scale trawl and net multispecies fisheries (Figure 3). Oceanic pelagic sharks are taken as retained secondary bycatch in longline fisheries targeting swordfishes and tunas. More recently, there is concern over the escalating targeting of pelagic sharks as tunas and swordfishes are increasingly regulated. The status of several pelagic sharks has worsened, including: Basking Shark, White Shark, Blue Shark, and Smooth Hammerhead Sharks. Bycatch volumes and species composition are poorly documented and data are rarely incorporated into national and international (FAO) statistics, therefore numbers of sharks caught as bycatch can only be crudely estimated³. Despite being banned in 2002, illegal driftnetting is intense and widespread throughout the Mediterranean Sea, e.g. fleets from Algeria, Italy, Morocco, Turkey, among others, continue to fish illegally with pelagic driftnets⁴, and thus is likely to be an important and largely hidden source of mortality for sharks.

Historically, the diversity of chondrichthyans was greatest in the western Mediterranean Sea, particularly in the coastal waters of Morocco, Algeria, and Tunisia, which harbour between 57 and 69 species (Figure 4). Diversity is slightly lower in the northwest Mediterranean countries of Spain (including the Balearic Islands), France, Italy, Albania, and Greece. Intermediate levels of diversity were found in the central Mediterranean countries of Libya, Malta, the Italian island of Sicily, and the coastal waters of the countries bordering the Adriatic and Aegean Seas.

FIGURE 1
Summary of the Red List status of Chondrichthyans in the Mediterranean Sea.

| IUCN Red List Category | Number of Species |
|----------------------------------|-------------------|
| Extinct (EX) | 0 |
| Regionally Extinct (RE) | 0 |
| Critically Endangered (CR) | 20 |
| Endangered (EN) | 11 |
| Vulnerable (VU) | 8 |
| Near Threatened (NT) | 9 |
| Least Concern (LC) | 12 |
| Data Deficient (DD) | 13 |
| Total number of species assessed | 73 |

* This table does not include the four vagrant or Lessepsian migrant species that have been considered Not Applicable (NA) for the Mediterranean region

FIGURE 2
Distribution of Data Deficient Chondrichthyans within the Mediterranean Sea.

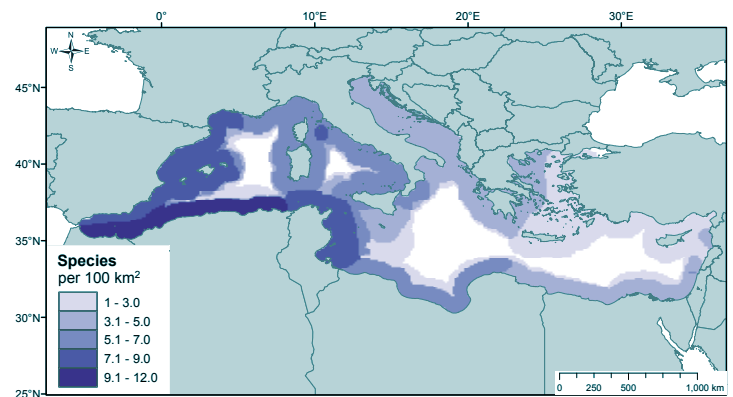


FIGURE 3
The primary threats driving Chondrichthyans to extinction in the Mediterranean Sea.

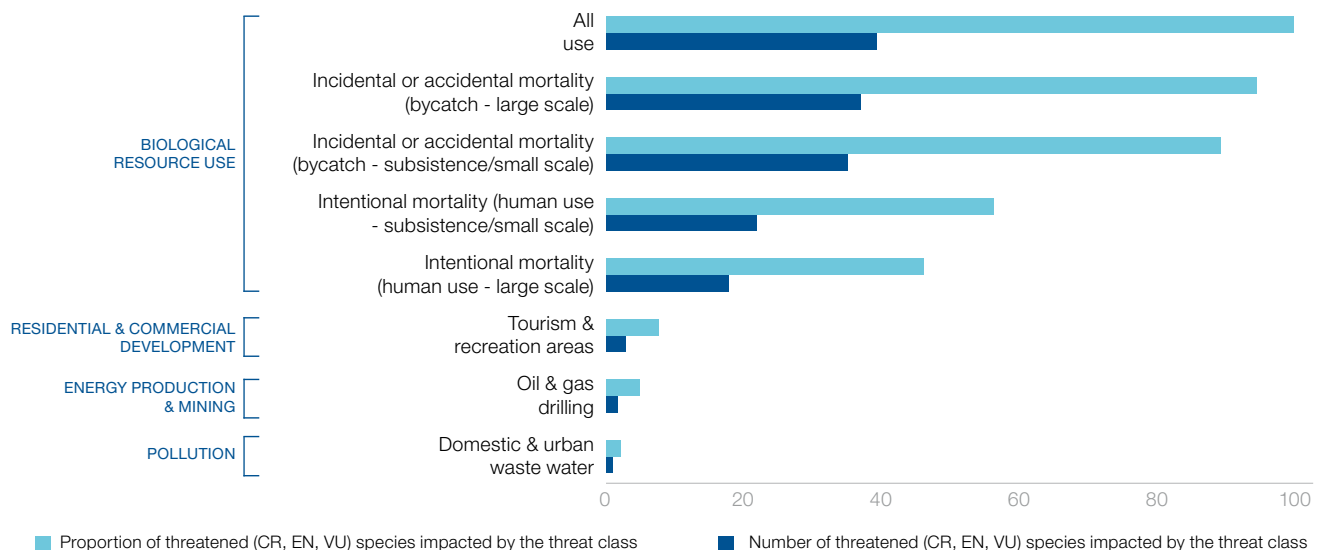


FIGURE 4
Historical species richness of Chondrichthyans within the Mediterranean Sea.

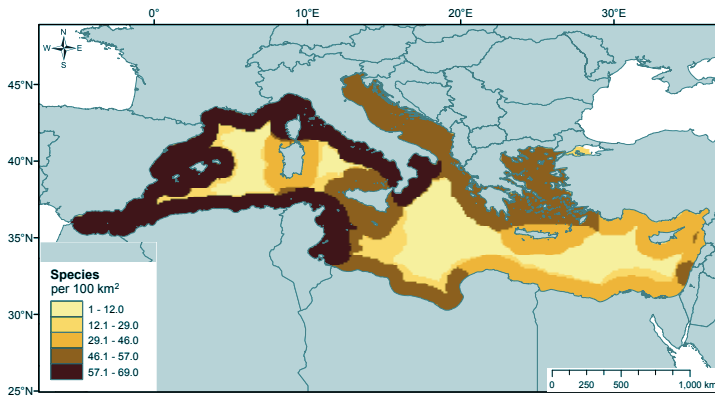


FIGURE 5
Distribution of threatened (CR, EN, and VU) Chondrichthyans within the Mediterranean Sea.

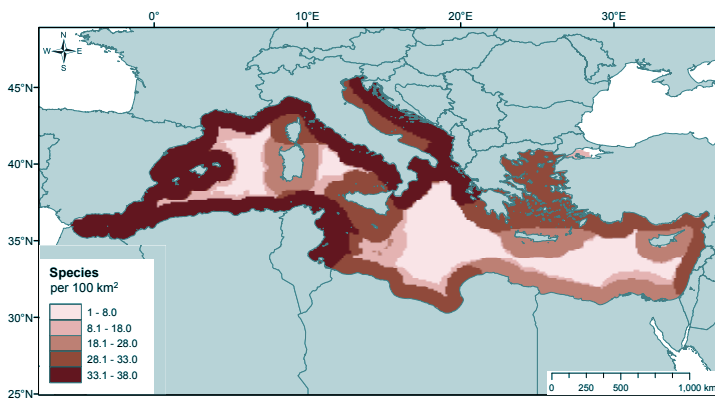
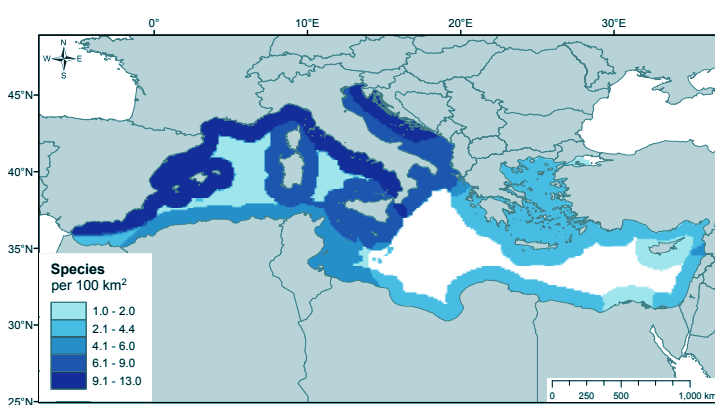


FIGURE 6
Extinct and Possibly Extinct species in the Mediterranean Sea, showing that local extinctions have been most prevalent in the NW Mediterranean Sea.



THE PRINCIPAL DRIVER OF DECLINE AND LOCAL EXTINCTION IS OVERFISHING.

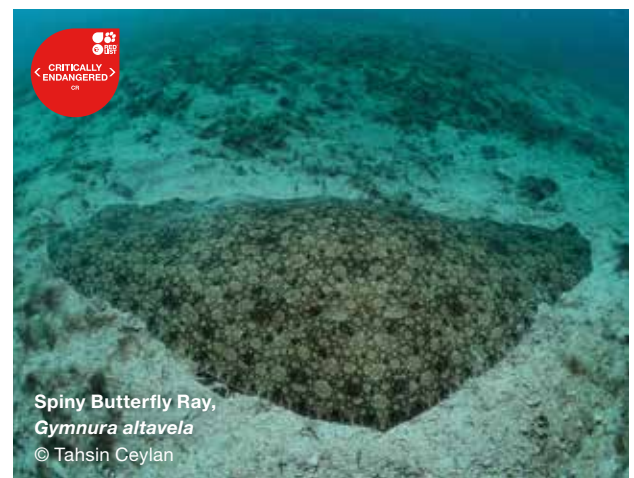
Most species are taken as retained valuable bycatch in small-scale and large-scale trawl and net multispecies fisheries

More recently, there has been a significant decline in species richness throughout the Mediterranean Sea due to increasing threats and local extinctions. Historically, the number of threatened species was very high with as many as 33 to 38 threatened species found in 100 km² cells in the coastal waters of the western and central Mediterranean Sea (Figure 5). Threat levels are also high throughout the eastern Mediterranean Sea, with as many as 8 to 18 threatened species per 100 km². No country has fewer than 29 threatened species within its Exclusive Economic Zone.



CRITICALLY ENDANGERED
Squatina oculata
© Marc Dando / Shark Trust

This substantial change in species richness patterns over the past half-century is due to the local extinction of thirteen species from significant parts of the range (Figure 6). Geographically, local extinctions have been most prevalent in the NW Mediterranean waters of Spain, France, and Italy, and in the waters of the countries bordering the Adriatic Sea and northwest African countries. ➤





CRITICALLY ENDANGERED
Spiny Butterfly Ray,
Gymnura altavela
© Tahsin Ceylan


> Despite our rapidly improved understanding of their widespread overexploitation in the Mediterranean basin^{5,6}, no effective chondrichthyan-focused management measures have been successfully implemented, nor enforced. Stock assessments are underway, however assessments are not management measures, but essential precursors to set catch limits for those more productive species that could be brought into sustainability. In 2010 and 2011 the General Fisheries Commission for the Mediterranean (GFCM), the regional fisheries management organisation for the Mediterranean Sea, adopted *ad hoc* measures to reduce the bycatch of pelagic sharks such as Thresher, Mako and Hammerhead sharks. In 2012, the GFCM banned finning practices in the Mediterranean and Black seas and also prohibited the capture and sale of the sharks and rays species listed in Annex II of the Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD) Protocol of the Barcelona Convention. In 2010-2013 the GFCM carried out a three-year research programme to improve the knowledge and assess the status of elasmobranchs in the region, and it continues to work in close collaboration with the regional experts to contrast sharks and rays populations' decline. However only a few of its Parties have taken concrete domestic action to implement these recommendations. Prohibitions on catch, such as required for the species listed on the Barcelona Convention, should be urgently implemented to avoid further declines and extinctions. The IUCN Shark Specialist Group and the Shark Trust are working together to ensure implementation of protections for all three species of Angel Shark.

AUTHORS

 **Nicholas K. Dulvy**, IUCN Shark Specialist Group, Simon Fraser University, Burnaby, Canada.

 **David J. Allen**, IUCN Global Species Programme, The David Attenborough Building, Cambridge, United Kingdom.

 **Gina M. Ralph**, IUCN Global Species Programme, Marine Biodiversity Unit, Old Dominion University, Norfolk, United States.

 **Rachel H.L. Walls**, IUCN Shark Specialist Group, Simon Fraser University, Burnaby, Canada.



Sandbar Shark,
Carcharhius plumbeus
© Tahsin Ceylan

REFERENCES

1. Dulvy, N.K. *et al.* 2014. Extinction risk and conservation of the world's sharks and rays. *eLife* 3: e00590.
2. Cavanagh, R.D. and Gibson, C. 2007. *Overview of the Conservation Status of Cartilaginous Fishes (Chondrichthyans) in the Mediterranean Sea*. IUCN Species Survival Commission Shark Specialist Group, Gland, Switzerland and Malaga, Spain.
3. Camhi, M.D., Fowler, S.L., Musick, J.A., Bräutigam, A. and Fordham, S.V. 1998. *Sharks and their relatives: ecology and conservation*. IUCN/SSC Shark Specialist Group, Gland, Switzerland and Cambridge, UK.
4. Notarbartolo-Di-Sciara, G. 2014. Sperm whales, *Physeter macrocephalus*, in the Mediterranean Sea: a summary of status, threats, and conservation recommendations. *Aquatic Conservation: Marine and Freshwater Ecosystems* 24: 4-10.
5. Vasilakopoulos, P., Maravelias, C.D. and Tserpes, G. 2014. The Alarming Decline of Mediterranean Fish Stocks. *Current Biology* 24(14): 1643-1648.
6. Osio, G.C., Orio, A. and Millar, C.P. 2015. Assessing the vulnerability of Mediterranean demersal stocks and predicting exploitation status of un-assessed stocks. *Fisheries Research* 171: 110-121.

CITATION: Dulvy, N.K., Allen, D.J., Ralph, G.M. and Walls, R.H.L. (2016). *The conservation status of Sharks, Rays and Chimaeras in the Mediterranean Sea* [Brochure]. IUCN, Malaga, Spain.

The Conservation Status of Sharks, Rays and Chimaeras in the Mediterranean Sea

This 2016 regional assessment of the Mediterranean Sea included 73 species of sharks, rays and chimaeras. Four species (*Carcharhinus brevipinna*, *Himantura uarnak*, *Sphyrna mokarran* and *Sphyrna lewini*) are not eligible for assessment in the Mediterranean region as they are considered to be either vagrants or Lessepsian immigrants (from the Red Sea). Three species (*Leucoraja melitensis*, *Raja polystigma* and *Raja radula*) are considered endemic to the Mediterranean Sea; the species name of these endemic rays is highlighted in red in the table below.

| CHIMAERAS | | | | |
|-----------------------|--|--|--|---------------------------------|
| ORDER: CHIMAERIFORMES | | | | |
| FAMILY | SCIENTIFIC NAME AUTHORITY | MEDITERRANEAN RED LIST CATEGORY & CRITERIA | COMMON NAMES EN: ENGLISH ES: ESPAÑOL FR: FRANÇAIS | INTERNATIONAL LEGAL INSTRUMENTS |
| Chimaeridae | <i>Chimaera monstrosa</i> Linnaeus, 1758 | ● Near Threatened | EN Rabbit Fish, Rat Fish ES Quimera FR Chimère commune | |

| RAYS | | | | |
|-------------------|--|--|--|---|
| ORDER: RAJIFORMES | | | | |
| FAMILY | SCIENTIFIC NAME AUTHORITY | MEDITERRANEAN RED LIST CATEGORY & CRITERIA | COMMON NAMES EN: ENGLISH ES: ESPAÑOL FR: FRANÇAIS | INTERNATIONAL LEGAL INSTRUMENTS |
| Dasyatidae | <i>Dasyatis centroura</i> (Mitchill, 1815) | ● Vulnerable A2d | EN Roughtail Stingray ES Raya Látigo Islaña FR Pastenague Épineuse | |
| | <i>Dasyatis marmorata</i> (Steindachner, 1892) | ● Data Deficient | EN Marbled Stingray ES Raya Látigo Jaspeada FR Pastenague Marbrée | |
| | <i>Dasyatis pastinaca</i> (Linnaeus, 1758) | ● Vulnerable A2d | EN Common Stingray ES Raya Látigo Común, Chucho FR Raie Pastenague | |
| | <i>Himantura uarnak</i> (Gmelin, 1789) | ● Not Applicable | EN Reticulate Whipray, Honeycomb Stingray ES Chupare Oval FR Pastenague Indienne | |
| | <i>Pteroplatytrygon violacea</i> (Bonaparte, 1832) | ● Least Concern | EN Pelagic Stingray ES Raya Látigo Violeta, Raya Negra FR Pastenague Violette | |
| Gymnuridae | <i>Gymnura altavela</i> (Linnaeus, 1758) | ● Critically Endangered A2bd | EN Spiny Butterfly Ray ES Raya Mariposa, Mantellina FR Raie-papillon Épineuse | BCN Conv.: Annex II |
| Mobulidae | <i>Mobula mobular</i> (Bonnaterre, 1788) | ● Endangered A2d | EN Giant Devil Ray ES Manta, Manta Mobula FR Diable de Mer Méditerranéen, Mante | CMS: Appendix I & II / CITES: Appendix II / BCN Conv.: Annex II |
| Myliobatidae | <i>Myliobatis aquila</i> (Linnaeus, 1758) | ● Vulnerable A2b | EN Common Eagle Ray ES Águila Marina FR Hirondele, Aigle Commun | |
| | <i>Pteromylaeus bovinus</i> (Geoffroy Saint-Hilaire, 1817) | ● Critically Endangered A2c | EN Bullray ES Pez Obispo FR Aigle Vachette | |
| Pristidae | <i>Pristis pectinata</i> Latham, 1794 | ● Critically Endangered A2b; D | EN Smalltooth Sawfish ES Pez Sierra FR Poisson-scie Tident | CMS: Appendix I & II / CITES: Appendix I / BCN Conv.: Annex II |
| | <i>Pristis pristis</i> (Linnaeus, 1758) | ● Critically Endangered A2b; D | EN Largetooth Sawfish, Common Sawfish ES Pez Sierra, Pez Sierra Común FR Poisson-scie Commun | CMS: Appendix I & II / CITES: Appendix I / BCN Conv.: Annex II |
| Rajidae | <i>Dipturus batis</i> (Linnaeus, 1758) | ● Critically Endangered A2b | EN Common Skate ES Noriega, Raya Noruega FR Pocheteau Gris | BCN Conv.: Annex II |
| | <i>Dipturus oxyrinchus</i> (Linnaeus, 1758) | ● Near Threatened | EN Longnosed Skate ES Picón, Raya Picuda FR Pocheteau Noir | |
| | <i>Leucoraja circularis</i> (Couch, 1838) | ● Critically Endangered A2bcd | EN Sandy Skate ES Raya Falsa Vela FR Raie Circulaire | BCN Conv.: Annex II |
| | <i>Leucoraja fullonica</i> (Linnaeus, 1758) | ● Critically Endangered A2bd | EN Shagreen Skate ES Raya Cardadora FR Raie Chardon | |
| | <i>Leucoraja melitensis</i> (Clark, 1926) | ● Critically Endangered A2bcd+3bcd | EN Maltese Skate, Maltese Ray ES Raya de Malta FR Raie de Malte, Raie Maltaise | BCN Conv.: Annex II |
| | <i>Leucoraja naevus</i> (Müller & Henle, 1841) | ● Near Threatened | EN Cuckoo Skate ES Raya Santiaguesa FR Raie Fleurie | |
| | <i>Malacoraja clavata</i> (Linnaeus, 1758) | ● Near Threatened | EN Thornback Skate ES Raya de Clavos, Raya FR Raie Bouclée | |
| | <i>Raja asterias</i> Delaroche, 1809 | ● Near Threatened | EN Starry Skate ES Raya Estrellada, Raya FR Raie Étoilée | |
| | <i>Raja brachyura</i> Lafont, 1871 | ● Near Threatened | EN Blonde Skate, Blonde Ray ES Raya Boca de Rosa FR Raie Blanche, Raie Lisse | |
| | <i>Raja miraletus</i> Linnaeus, 1758 | ● Least Concern | EN Brown Skate ES Raya de Espejos FR Raie Miroir | |
| | <i>Raja montagui</i> Fowler, 1910 | ● Least Concern | EN Spotted Skate, Spotted Ray ES Raya Pintada FR Raie Douce | |
| | <i>Raja polystigma</i> Regan, 1923 | ● Least Concern | EN Speckled Skate, Speckled Ray ES Raya Manchada FR Raie Tachetée | |
| | <i>Raja radula</i> Delaroche, 1809 | ● Endangered A4b | EN Rough Skate ES Raya Áspera FR Raie Rape | |
| | <i>Raja undulata</i> Lacepède, 1802 | ● Near Threatened | EN Undulate Skate, Undulate Ray ES Raya Mosaico FR Raie Brunette | |
| Rhinobatidae | <i>Rostroraja alba</i> (Lacepède, 1803) | ● Endangered A2bd | EN White Skate ES Raya Bramante FR Raie Blanche | BCN Conv.: Annex II |
| Rhinobatidae | <i>Glaucostegus cemiculus</i> (Geoffroy Saint-Hilaire, 1817) | ● Endangered A3bd | EN Blackchin Guitarfish ES Guitarra de Morro Negro FR Guitare de Mer Fousseuse | BCN Conv.: Annex II |
| | <i>Rhinobatos rhinobatos</i> (Linnaeus, 1758) | ● Endangered A2b | EN Common Guitarfish ES Pez Guitarra, Guitarra FR Guitare de Mer Commune | BCN Conv.: Annex II |
| Rhinopteridae | <i>Rhinoptera marginata</i> (Geoffroy Saint-Hilaire, 1817) | ● Data Deficient | EN Lusitanian Cownose Ray ES Gavián Lusitánico, Arzobispo FR Mourine Lusitanienne | |
| Torpedinidae | <i>Tetronarce nobiliana</i> (Bonaparte, 1835) | ● Least Concern | EN Great Torpedo Ray, Electric Ray ES Tremielga Negra, Torpedo del Atlántico FR Torpille Noire | |
| | <i>Torpedo marmorata</i> Risso, 1810 | ● Least Concern | EN Spotted Torpedo ES Tembladera FR Torpille Marbrée | |
| | <i>Torpedo torpedo</i> (Linnaeus, 1758) | ● Least Concern | EN Common Torpedo Ray ES Tembladera, Tremielga, Tremolina Común FR Torpille Ocellée | |

SHARKS

ORDER: CARCHARHINIFORMES

| FAMILY | SCIENTIFIC NAME AUTHORITY | MEDITERRANEAN RED LIST CATEGORY & CRITERIA | COMMON NAMES EN: ENGLISH ES: ESPAÑOL FR: FRANÇAIS | INTERNATIONAL LEGAL INSTRUMENTS |
|----------------|---|---|---|--|
| Carcharhinidae | <i>Carcharhinus altimus</i> (Springer, 1950) | ● Data Deficient | EN Bignose Shark ES Tiburón Baboso FR Requin Babosse | |
| | <i>Carcharhinus brachyurus</i> (Günther, 1870) | ● Data Deficient | EN Copper Shark ES Tiburón Cobrizo FR Requin Cuivre | |
| | <i>Carcharhinus brevipinna</i> (Müller & Henle, 1839) | ● Not Applicable | EN Spinner Shark ES Tiburón Aleta Negra FR Requin Tisserand | |
| | <i>Carcharhinus limbatus</i> (Müller & Henle, 1839) | ● Data Deficient | EN Blacktip Shark ES Tiburón de Puntas Negras, Tiburón, Macuira FR Requin Bordé | |
| | <i>Carcharhinus obscurus</i> (Lesueur, 1818) | ● Data Deficient | EN Dusky Shark ES Tiburón Arenero FR Requin de Sable | |
| | <i>Carcharhinus plumbeus</i> (Nardo, 1827) | ● Endangered A4d | EN Sandbar Shark ES Tiburón Trozo FR Requin Gris | BCN Conv.: Annex III |
| Scyliorhinidae | <i>Prionace glauca</i> (Linnaeus, 1758) | ● Critically Endangered A2bd | EN Blue Shark ES Tiburón Azul, Tintorera FR Peau Bleue | BCN Conv.: Annex III |
| | <i>Galeus atlanticus</i> (Vaillant, 1888) | ● Near Threatened | EN Atlantic Sawtail Catshark ES Olayo Atlántico, Pintarroja Atlántica FR Chien Atlantique | |
| | <i>Galeus melastomus</i> Rafinesque, 1810 | ● Least Concern | EN Blackmouth Catshark ES Pintarroja Bocanegra FR Chien Espagnol | |
| | <i>Scyliorhinus canicula</i> (Linnaeus, 1758) | ● Least Concern | EN Small Spotted Catshark ES Pintarroja FR Petite Roussette | |
| Sphyrnidae | <i>Scyliorhinus stellaris</i> (Linnaeus, 1758) | ● Near Threatened | EN Nursehound ES Alitán FR Grande Roussette | |
| | <i>Sphyrna lewini</i> (Griffith & Smith, 1834) | ● Not Applicable | EN Scalloped Hammerhead ES Cornuda, Tiburón Martillo FR Requin-marteau Halicorne | CITES: Appendix II / BCN Conv.: Annex II |
| | <i>Sphyrna mokarran</i> (Rüppell, 1837) | ● Not Applicable | EN Great Hammerhead ES Cornuda Gigante, Tiburón Martillo FR Grand Requin-marteau | CITES: Appendix II / BCN Conv.: Annex II |
| Triakidae | <i>Sphyrna zygaena</i> (Linnaeus, 1758) | ● Critically Endangered A2bd | EN Smooth Hammerhead ES Cornuda, Tiburón Martillo FR Requin-marteau Commun | CITES: Appendix II / BCN Conv.: Annex II |
| | <i>Galeorhinus galeus</i> (Linnaeus, 1758) | ● Vulnerable A2bd | EN Tope ES Cazón FR Requin-hà | BCN Conv.: Annex II |
| | <i>Mustelus asterias</i> Cloquet, 1819 | ● Vulnerable A2bd | EN Starry Smoothhound ES Musola Dentada FR Émissole tachetée | BCN Conv.: Annex III |
| | <i>Mustelus mustelus</i> (Linnaeus, 1758) | ● Vulnerable A2bd | EN Common Smoothhound ES Musola FR Émissole lisse | BCN Conv.: Annex III |
| Hexanchidae | <i>Mustelus punctulatus</i> Risso, 1827 | ● Vulnerable A4d | EN Blackspotted Smoothhound ES Musola, Musola Pimienta FR Émissole lisse | BCN Conv.: Annex III |
| | <i>Heptanchias perlo</i> (Bonnaterre, 1788) | ● Data Deficient | EN Sharpnose Sevengill Shark ES Cañabota Bocadulce, Bocadulce FR Requin Perlon | BCN Conv.: Annex III |
| | <i>Hexanchus griseus</i> (Bonnaterre, 1788) | ● Least Concern | EN Bluntnose Sixgill Shark ES Cañabota Gris FR Requin Grisét | |
| | <i>Hexanchus nakamurai</i> Teng, 1962 | ● Data Deficient | EN Bigeyed Sixgill Shark ES Cañabota Ojigrande FR Requin Vache | |

ORDER: LAMNIFORMES

| | | | | |
|--------------|--|---------------------------------|---|---|
| Alopiidae | <i>Alopias superciliosus</i> Lowe, 1841 | ● Endangered A2bd | EN Bigeye Thresher Shark ES Zorro Ojón FR Renard à Gros Yeux | CMS: Appendix II / CITES: Appendix II |
| | <i>Alopias vulpinus</i> (Bonnaterre, 1788) | ● Endangered A2bd | EN Common Thresher Shark ES Zorro FR Renard | CMS: Appendix II / CITES: Appendix II / BCN Conv.: Annex III |
| Cetorhinidae | <i>Cetorhinus maximus</i> (Gunnerus, 1765) | ● Endangered A2bd | EN Basking Shark ES Tiburón Peregrino FR Requin Pèlerin | CMS: Appendix I & II / CITES: Appendix II / BCN Conv.: Annex II |
| Lamnidae | <i>Carcharodon carcharias</i> (Linnaeus, 1758) | ● Critically Endangered A2d | EN Great White Shark ES Tiburón Blanco FR Grand Requin Blanc | CMS: Appendix I & II / CITES: Appendix II / BCN Conv.: Annex II |
| | <i>Isurus oxyrinchus</i> Rafinesque, 1810 | ● Critically Endangered A2bd | EN Shortfin Mako ES Tiburón Mako, Marrajo FR Requin Mako, Requin-taupe Bleu | CMS: Appendix II / BCN Conv.: Annex II |
| | <i>Isurus paucus</i> Guitart, 1966 | ● Data Deficient | EN Longfin Mako ES Marrajo Carite, Marrajo Negro FR Petit Requin Taupe, Petit Taupe | |
| | <i>Lamna nasus</i> (Bonnaterre, 1788) | ● Critically Endangered A2bd | EN Porbeagle ES Marrajo Sardinero, Cailón FR Requin-taupe Commun | CMS: Appendix II / CITES: Appendix II / BCN Conv.: Annex II |
| Odontaspidae | <i>Carcharias taurus</i> Rafinesque, 1810 | ● Critically Endangered C2a(ii) | EN Sand Tiger Shark ES Tiburón Toro, Toro Bacota FR Requin Taureau | BCN Conv.: Annex II |
| | <i>Odontaspis ferox</i> (Risso, 1810) | ● Critically Endangered A2bcd | EN Smalltooth Sand Tiger ES Solrayo, Monstruo de Malpelo, Tiburón Liso FR Requin Féroce | BCN Conv.: Annex II |

ORDER: SQUALIFORMES

| | | | | |
|----------------|--|------------------------------|---|---|
| Centrophoridae | <i>Centrophorus granulosus</i> (Bloch & Schneider, 1801) | ● Critically Endangered A4b | EN Gulper Shark ES Quelvacho, Gelve FR Squale-chagrin Commun, Squale-chagrin Aiguille | BCN Conv.: Annex III |
| Dalatiidae | <i>Dalatias licha</i> (Bonnaterre, 1788) | ● Vulnerable A3d+4d | EN Kitefin Shark ES Carrocho, Lija FR Squale Liche | |
| Echinorhinidae | <i>Echinorhinus brucus</i> (Bonnaterre, 1788) | ● Endangered A2bcd | EN Bramble Shark ES Pez Clavo FR Squale Bouclé | |
| Etmopteridae | <i>Etmopterus spinax</i> (Linnaeus, 1758) | ● Least Concern | EN Velvet Belly Lanternshark ES Negrito, Tiburón Linterna Velludo FR Sagre Commun | |
| Oxynotidae | <i>Oxynotus centrina</i> (Linnaeus, 1758) | ● Critically Endangered A2bd | EN Angular Rough Shark ES Cerdo Marino FR Centrine Commune | BCN Conv.: Annex II |
| Somniosidae | <i>Centroscyrmus coelelepis</i> Barbosa du Bocage & de Brito Capello, 1864 | ● Least Concern | EN Portuguese Dogfish ES Pailona FR Pailona Commun | |
| | <i>Somniosus rostratus</i> (Risso, 1827) | ● Data Deficient | EN Little Sleeper Shark ES Tollo Boreal, Tiburón Dormilón FR Laimargue de la Méditerranée | |
| Squalidae | <i>Squalus acanthias</i> Linnaeus, 1758 | ● Endangered A2bd | EN Spiny Dogfish, Picked Dogfish ES Mielga, Galludo FR Aiguillat Commun | CMS: Appendix II / BCN Conv.: Annex III |
| | <i>Squalus blainville</i> (Risso, 1827) | ● Data Deficient | EN Longnose Spurdog ES Galludo FR Aiguillat Coq | |
| | <i>Squalus megalops</i> (Macleay, 1881) | ● Data Deficient | EN Shortnose Spurdog ES Galludo Ñato FR Aiguillat Nez Court | |

ORDER: SQUATINIFORMES

| | | | | |
|--------------|---|-----------------------------------|--|---------------------|
| Squatinaidae | <i>Squatina aculeata</i> Cuvier, 1829 | ● Critically Endangered A2bcd | EN Sawback Angelshark ES Angelote Espinoso, Angelote Espinado FR Ange de Mer Épineux | BCN Conv.: Annex II |
| | <i>Squatina oculata</i> Bonaparte, 1840 | ● Critically Endangered A2bcd+3cd | EN Smoothback Angel Shark ES Pez Ángel FR Ange de Mer Ocellé | BCN Conv.: Annex II |
| | <i>Squatina squatina</i> (Linnaeus, 1758) | ● Critically Endangered A2bcd+3d | EN Angelshark ES Pez Ángel FR Ange de Mer Commun | BCN Conv.: Annex II |

A number of species are protected under Appendix I (Endangered migratory species) and/or II (Migratory species conserved through Agreements) of the Convention on Migratory Species (CMS), Appendix I (Species threatened with extinction) of CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora), or under Annex II (List of Endangered or Threatened Species) or III (List of Species Whose Exploitation is Regulated) of the SPA/BD Protocol (Specially Protected Areas and Biological Diversity in the Mediterranean) of the Barcelona Convention (BCN Conv.).

2/4

SKATES

Rough Skate, *Raja radula* (EN)

© Roberto Pillon

Endangered Endemic Skates of the Mediterranean Sea

ROUGH SKATE

Raja radula



MALTESE SKATE

Leucoraja melitensis



SKATES in the family Rajidae, particularly the larger bodied species, have suffered severe declines, with evidence of local extinction of two of the very largest species found in the Mediterranean Sea – the White Skate (*Rostroraja alba*) and the Common Skate (*Dipturus* spp.). Here we draw attention to the plight of the Rough Skate (*Raja radula*), one of the three skates found nowhere else in the world; the Endangered

Rough Skate, like the Critically Endangered Maltese Skate (*Leucoraja melitensis*) and the Least Concern Speckled Skate (*Raja polystigma*) are endemic and currently confirmed only in the Mediterranean Sea.

The Rough Skate is found in coastal waters to 350 m in depth, more commonly at less than 40 m in depth, especially in the western Mediterranean Sea around the Balearic Islands. Like all other skates this species

EX

RE

CR

EN

VU

NT

LC

DD

lays pairs of 5 cm-long eggs, or ‘mermaids purses’, mainly in spring and summer. The eggs hatch after around four months of development. The maximum size reached is approximately 70 cm in length. Little is known of the age of maturation, however it is inferred that the generation span is around nine years.

The Rough Skate is not exploited or traded commercially but is commonly taken as bycatch of demersal trawl, gillnet, trammel net, bottom longline, and purse seine fisheries, although no species-specific catch data are available. For example, in the Balearic Islands this skate is more common in shallow waters where it is taken in: trammel net fisheries targeting Cuttlefish (*Sepia officinalis*) and bony fish; gillnet fisheries targeting the European Spiny Lobster (*Palinurus elephas*) and the Red Mullet (*Mullus surmuletus*); and bottom longline fisheries targeting groupers (*Epinephelus spp.*) and sea breams (Sparidae). Species-specific data are not usually available because landings of skates are grouped as “rays” or “skates”.

According to information provided by the International Bottom Trawl Survey in the Mediterranean (MEDITS), the Rough Skate was captured in only 21 of 6,336 tows in the northern Mediterranean Sea between 1994 and 1999. There is evidence that the Rough Skate was formerly more abundant

in this region. Further east, in the Aegean Sea, this skate is uncommon and, where present, it appears to have undergone steep declines in the past two decades.

Given that the Rough Skate appears to be endemic to the Mediterranean Sea where it has recently declined in some regions, and ongoing relatively intense fishing pressure overlaps with parts of its range, the Rough Skate was assessed as Endangered based on an estimated decline of >50% over a three-generation period (27 years).

Currently no species-specific management or conservation measures are in place for the Rough Skate. It is recommended that catch and trends of this species be monitored and science-based catch limits are set and enforced to halt the decline.

Dulvy, N. and Walls, R. 2015. *Leucoraja melitensis*. The IUCN Red List of Threatened Species 2015: e.T61405A48954483. <http://dx.doi.org/10.2305/IUCN.UK.2015-1.RLTS.T61405A48954483.en>

Mancusi, C., Morey, G. and Serena, F. 2016. *Raja radula*. The IUCN Red List of Threatened Species 2016: e.T161339A16527984. <http://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T161339A16527984.en>

Raja radula © Roberto Pillon



3/4 ANGEL SHARKS



The Angelshark, *Squatina squatina* (CR)
© Tom Young

The near extinction of the Angel Sharks from the Mediterranean Sea

ANGELSHARK
Squatina squatina



SAWBACK
ANGELSHARK
Squatina aculeata



SMOOTHBACK
ANGELSHARK
Squatina oculata



ANGEL SHARKS* (Squatinae) are among the most threatened families of the chondrichthyans, along with sawfishes (Pristidae) and Guitarfishes (Rhinoatidae). There are three Angel Shark species present in the Mediterranean Sea: the Angelshark*, the Sawback Angelshark, and the Smoothback Angelshark. These Angel Sharks have broadly similar distributions, ecology and life histories. All three species are Critically Endangered (Ferretti *et al.* 2016 a,b, Soldo and Bariche 2016) and their populations are decreasing. Most is known of the distribution, ecology and declines of the Angelshark (*Squatina squatina*) with little detail known of the other two species. All three species are thought to be nearly extinct throughout much of their range in the Mediterranean Sea. Angel Sharks prefer sandy and muddy habitats and can be found close inshore at depths ranging from less than 5 m down to at least 150 m in depth. Angel Sharks are

bottom-dwelling sit-and-wait predators and hence are susceptible to capture because they are found in habitats favoured by trawlers and netters. Like rays, skates and guitarfishes, these flat sharks are highly catchable because their large size at birth means they are retained by even large mesh nets. Angel Sharks were taken as a retained bycatch of trawl, net and longline fisheries, but were also formerly targeted with nets called *squanere* (Angel Shark nets) in parts of the Mediterranean Sea. Fishing effort of these gears has increased over the last half century leading to the decline and local extinction of many larger-bodied species of skates and rays. The Angelshark *Squatina squatina* was formerly common and widespread in coastal and continental shelf seas; originally ranging from Scandinavia to northwest Africa (Mauritania and the Canary Islands), including the Mediterranean and Black Seas. The Angelshark reaches at least

EX
RE
CR
EN
VU
NT
LC
DD

* The name 'Angel Shark' refers to all species within the family Squatinidae, whilst 'Angelshark' refers to the species *Squatina squatina*.



The near extinction of the Angel Sharks from the Mediterranean Sea

183 cm in length, possibly up to 244 cm in the Mediterranean Sea. Angel Sharks give birth to live young, with litter sizes of the Angelshark ranging from 7 to 25 pups after a 10-month long gestation period. Little is known of the lifespan or maturation of the three Angel Sharks in the Mediterranean Sea, but the generation span was inferred to be 11 years for *S. squatina*, 12 years for *S. oculata*, and 15 years for *S. aculeata*.

The Angelshark was reportedly common, or at least frequently or regularly recorded in many areas during the 19th and early 20th centuries and its decline and disappearance is well documented. However, in the past few decades not one single individual has been captured in NE Atlantic and Mediterranean scientific surveys. Beyond the remaining stronghold of the Canary Islands, only occasional catches are reported from commercial and recreational fishers in the NE Atlantic.

Since 2012 these three Angel Sharks have been listed in Annex II of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean Sea (SPA/BD Protocol) of the Barcelona Convention. Subsequently, the General Fisheries Commission for the Mediterranean has developed a specific recommendation (GFCM/36/2012/3) on fisheries management measures for the elasmobranchs species listed in the aforementioned Annex and it states that these species cannot be retained on board, landed, or sold and must be released unharmed and alive.

It remains unclear whether this protection is well enforced as there are reported landings of Angel Sharks in the Mediterranean in recent years. There is a clear need to ensure that protection is enforced and that recovery planning is initiated.

** The Angel Shark Project is a collaboration between, Universidad de Las Palmas de Gran Canaria, the Zoological Society of London, and the Zoologisches Forschungsmuseum Alexander Koenig.

The Angel Shark Project**, the IUCN Shark Specialist Group, and the Shark Trust are working with a number of stakeholders to develop an Angelshark Action Plan for the Canary Islands (focused specifically on *S. squatina*), alongside a wider Eastern Atlantic and Mediterranean Angel Shark Conservation Strategy.

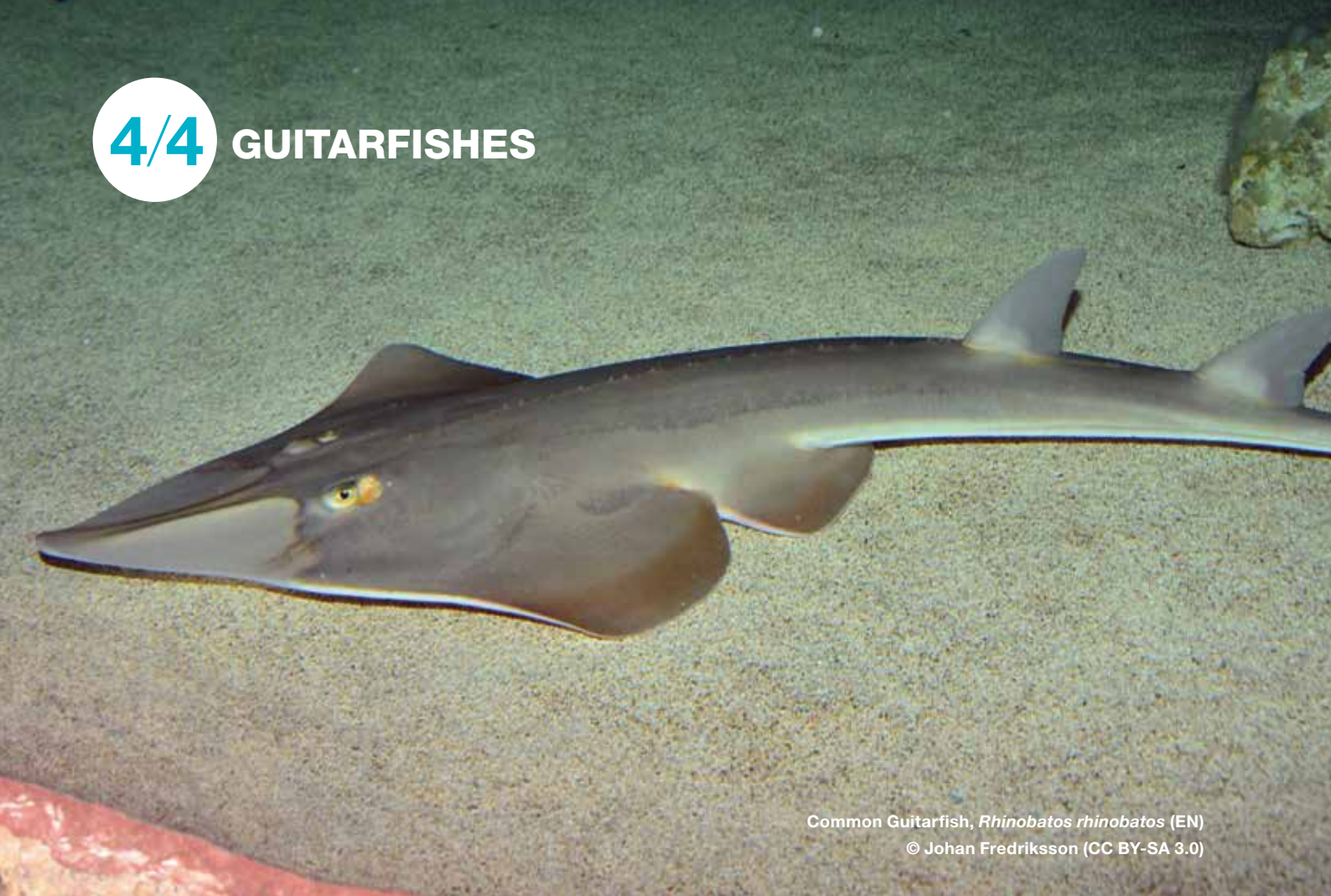


The Canary Islands Angelshark workshop
© Jorge Castellano

Ferretti, F., Morey, G., Serena, F., Mancusi, C., Coelho, R.P., Seisay, M., Litvinov, F. and Buscher, E. 2016a. *Squatina oculata*. The IUCN Red List of Threatened Species 2016: e.T61418A16570000. Downloaded on 15 August 2016.

Ferretti, F., Morey, G., Serena, F., Mancusi, C., Fowler, S.L., Dipper, F. and Ellis, J.R. 2016b. *Squatina squatina*. The IUCN Red List of Threatened Species 2016: e.T39332A16570809. Downloaded on 15 August 2016.

Soldo, A. and Bariche, M. 2016. *Squatina aculeata*. The IUCN Red List of Threatened Species 2016: e.T61417A16569265. Downloaded on 15 August 2016.



Common Guitarfish, *Rhinobatos rhinobatos* (EN)
© Johan Fredriksson (CC BY-SA 3.0)

Endangered Guitarfishes

COMMON GUITARFISH
Rhinobatos rhinobatos



BLACKCHIN GUITARFISH
Glaucostegus cemiculus



TWO SPECIES OF GUITARFISH are found in the Mediterranean Sea and both are listed as Endangered (Bradai and Soldo 2016, Soldo and Bradai 2016): the Blackchin Guitarfish (*Glaucostegus cemiculus*) and the Common Guitarfish (*Rhinobatos rhinobatos*). Guitarfishes (Family Rhinobatidae) are amongst the most threatened families of the cartilaginous fishes, along with sawfishes (Pristidae) and Angel Sharks (Squatinae). Both guitarfishes have broadly similar distributions, ecology and life histories and here we focus on one of the species, the Common Guitarfish.

The Common Guitarfish is a large-bodied, bottom-dwelling ray that lives close inshore

ranging from very shallow water below the intertidal zone down to 180 m at the edge of the continental shelf. It lives over sandy and muddy seabeds and feeds on bottom-dwelling fishes and invertebrates. The Common Guitarfish gives birth to live young in late summer and autumn. Each mother produces around five pups (of 30 cm long) each year after a 10 to 12 month long pregnancy. Common Guitarfish females mature relatively early at an age of four years old and reach a maximum age of 24 years and each generation span is approximately 13.5 years long. Males have a much shorter lifespan, reaching only a maximum of 15 years of age. Males also tend to be smaller, with a maximum length of about 1.2 m and 5.5 kg, compared to 1.5 m and 13 kg for females.

- EX
- RE
- CR
- EN
- VU
- NT
- LC
- DD

The Common Guitarfish was once widespread in the eastern Atlantic – ranging throughout Spanish and Portuguese waters – into the coastal waters of the entire Mediterranean Sea. Little is known about its current population size, but the *International Bottom Trawl Survey in the Mediterranean Sea* (MEDITS) that samples from Alboran Sea near the Gibraltar Straits to the Aegean Sea between Greece and Turkey failed to catch a single specimen between 1994-1999. The species is still present in parts of the southern Mediterranean Sea, with recent sightings in Tunisian waters.

The Common Guitarfish is fished throughout its range, mainly taken as retained bycatch in artisanal fisheries and as bycatch in industrial fisheries using trawls and gillnets. Its shallow depth distribution means it is within reach of most fishing gears throughout its range. It is likely to be retained for domestic consumption of its meat and to meet international trade demand for their fins. Guitarfishes, like sawfishes, have valuable fins.

Guitarfishes are protected in the waters of the Atlantic and Mediterranean Sea. In 2012, these species were added to Annex II of the SPA/BD Protocol of the Barcelona Convention. has developed a specific recommendation (GFCM/36/2012/3) on fisheries management measures for the elasmobranchs species listed in the aforementioned Annex and these species “cannot be retained on board, trans-shipped, landed, transferred, stored, sold or displayed or offered for sale”, and “must be released unharmed and alive, to the extent possible”. It remains unclear if this recommendation is being enforced for guitarfishes in the Mediterranean.

In 2011, the European Union (EU) prohibited any EU vessel to fish for, retain on board, tranship, land, store, sell, display or offer for sale any species of guitarfish in European Union Atlantic waters, however this protection did not extend to Mediterranean waters, and there is a clear need for this protection to be extended to Mediterranean waters.



Common Guitarfish, *Rhinobatos rhinobatos* (EN)
© Citron (CC-BY-SA-3.0)

Bradai, M.N. and Soldo, A. 2016. *Rhinobatos rhinobatos*. The IUCN Red List of Threatened Species 2016: e.T63131A16527789. Downloaded on 15 August 2016.

Soldo, A. and Bradai, M.N. 2016. *Glaucostegus cemiculus*. The IUCN Red List of Threatened Species 2016: e.T63132A81165103. Downloaded on 15 August 2016.

MEDITERRANEAN SHARKS AND RAYS FACE AN EXTINCTION CRISIS

At least 53% of the sharks, rays and chimaeras native to the Mediterranean Sea are at risk of extinction and require urgent action to conserve their populations and habitats.

This publication summarizes the outcomes of a significant collaboration between the IUCN Centre for Mediterranean Cooperation, the IUCN Global Species Programme and the IUCN Shark Specialist Group who, together with experts from across the Mediterranean region, have worked to bring together available information on the species of Chondrichthyans found in the Mediterranean Sea and produce assessments for the IUCN Red List of Threatened Species™.

This assessment was undertaken through the Mediterranean Red List Initiative, which is coordinated by the IUCN Centre for Mediterranean Cooperation.



INTERNATIONAL UNION FOR CONSERVATION OF NATURE

IUCN Centre for Mediterranean Cooperation
Marie Curie, 22. 29590 - Campanillas (Málaga) Spain
iucnmed@iucn.org | Tel +34 95 202 84 30 | Fax +34 95 202 81 45
www.iucn.org/mediterranean

Core support to the IUCN Centre for Mediterranean Cooperation is provided by:

