

In most cases the word “shark” brings to our mind pictures of a giant shark with strong jaws and sharp teeth, a threat for human life. The catch and killing of a shark is considered by many as an achievement, which is recorded with photos or videos and can be presented as front page news in the media. To a large extent, responsible for the thrill of killing or seeing a dead shark, and for the common perception that sharks are dangerous, are popular fictional films about shark attacks, as well as the publicity given to such attacks.



Blue shark – *Prionace glauca* (threatened species in the Mediterranean)

However, do sharks really pose a threat to humans?

In reality, only few sharks are dangerous for humans. Even sharks of huge dimensions can be harmless, like the largest fish in the world, the whale shark (*Rhincodon typus*). The whale shark can reach 20 m in length and feeds on microscopic organisms (plankton). Studies of shark behavior suggest that many of the attacks on humans are defensive attacks, as swimmers are considered a threat.

Out of more than 350 shark species in the world, only 4 have been involved in a significant number of shark attacks; from these only one, the great white shark (*Carcharodon carcharias*) is present in the Mediterranean.



Great White Shark – *Carcharodon carcharias* (threatened species)

In 2011 the confirmed unprovoked shark attacks worldwide were 75 (resulting in 12 fatalities), none of which took place in the Mediterranean. For the period 2001-2010, the yearly average fatalities resulting from unprovoked shark attacks were only 4.3. It should be noted that the fatality rate in areas with high proportion of attacks, like in Florida of the U.S.A., has been decreasing due to the improvements in beach safety and medical treatment, as well as public awareness for avoiding the risk of shark encounter.

What may not be widely known is that **several shark species face serious threats for their survival**. Every year 100 million sharks are killed worldwide by humans. Tens of millions are fished for their fins, as the shark fin soup is very popular, especially in the Asian market. The practice of shark finning, which involves the removal of fins and the discard of the remaining bodies back to sea, has led many sharks to the brink of extinction.

In the Mediterranean Sea sharks are more seriously threatened and their reduction is faster than elsewhere worldwide. Specifically, according to the IUCN (International Union for Conservation of Nature) Red List of Threatened Species, for 38 shark species present in the Mediterranean 53% (20 species) are considered threatened, with 18% being critically endangered and 11% endangered. In addition, for a high percentage of sharks (26%) the available data are deficient and do not allow the evaluation of their conservation status.

It should also be mentioned that sharks belong with rays in the same group, the chondrichthyans. Rays face the same threats as sharks. In the Mediterranean there are about 35 species, of which 31% (10 species) are threatened. For 25% of the species data is deficient, therefore not allowing the evaluation of their conservation status.



Shortfin mako – *Isurus oxyrinchus* (threatened species in the Mediterranean)

The major threats for the Mediterranean sharks and rays as identified by IUCN (with percentage of the species affected) are:

- Bycatch (100%)
- Life history characteristics, making them vulnerable to fishing pressure (87%)
- Pollution, Habitat loss/degradation (32%)
- Human disturbance (32%)
- Recreational fishery (20%)
- Target fishery (8%)



Spiny dogfish – *Squalus acanthias* (threatened species)

Most sharks and rays mature in old ages, produce relatively few young, grow slowly and have longevity. For example, spiny dogfish (*Squalus acanthias*), an endangered species in the Mediterranean that is commonly exploited, rarely grows larger than 1.2 m but lives around 70-80 years; females mature at around 35 years of age and can theoretically produce 70-80 young through their life.

Due to their life history characteristics, sharks and rays have low ability for population increase. This makes them vulnerable to fishing or other human activities that affect them, as they become easily overexploited and their capacity for recovery is limited. The irony is that these characteristics enabled sharks to rule the oceans for more than 400 million years (100 million years before the first dinosaurs appeared on earth).

One may wonder why should we care if sharks are threatened? How could the extinction of some shark species affect us?

Sharks have an important role in all trophic levels of the marine environment. Some shark species are scavengers, “cleaning” the seas. Other species are top predators, contributing to the conservation of biodiversity and to the “health” of marine ecosystems, as they control the populations of their preys and remove the sick and weak animals, contributing to the survival of the fittest.

The reduction of shark populations may disturb the marine ecosystem to a great extent. There are examples where the abundance of sharks was reduced to such low levels that the sharks were unable to perform their ecological role as top predators. As a result, their prey species became so abundant that they lead to the dramatic decrease of their own prey species and even the collapse of their traditional fishery. Therefore, the consequences were not only ecological but also economic.

Even the health of coral reefs may depend on the abundance of sharks. In Jamaica, for example, the loss of top predator sharks generated a chain reaction through the whole trophic chain, resulting in the degradation of coral reefs.

Which is actually the threat, the presence of sharks or the danger of their extinction?

International provisions concerning the conservation and management of sharks

International Organizations have developed Action Plans for the Conservation and Management of Sharks, recognizing the important role of sharks and the serious threats they face. The FAO *International Plan of Action for the Conservation and Management of Sharks* (FAO IPOA-Sharks) was developed in 1999 and serves as a reference point (where “sharks” covers all species of the class chondrichthyans). Specifically for the Mediterranean, in 2003 the *Action Plan for the Conservation of Cartilaginous Fishes (Chondrichthyans) in the Mediterranean Sea* was adopted by the Contracting Parties of the Barcelona Convention.

Several International Conventions provide for the protection and/or the regulated and sustainable fishing of certain chondrichthyan species. The SPA/BD (Special Protected Areas and Biological Diversity) Protocol of the Barcelona Convention includes in its Annexes all 30 endangered Mediterranean shark and ray species (22 are included in Annex II – List of endangered and threatened species and 8 in Annex III – List of species whose exploitation is regulated).

Management of Sharks in the European Union

In the European Union (EU) the management of sharks falls within the Common Fisheries Policy (CFP). Important regulations within the CFP that refer to shark and rays (chondrichthyans) are:

- **The Community Data Collection Framework – DCF.** From 2009 data collection is required for an extensive list of chondrichthyan species in the framework of National Data Collection Programmes.
- **Regulation (EC) 1185/2003**, which prohibits the removal of shark fins on board, as well their landing and sale.
- **Annual Regulations on setting fishing opportunities (TACs & Quotas)**, which include prohibitions on fishing and/or land of certain chondrichthyan species.

In 2009 the *European Community Action Plan for the Conservation and Management of Sharks* was adopted, which was developed in accordance with the FAO-IPOA Sharks and covers all chondrichthyans within EU waters. Some of the measures are to be implemented by the Member States or need to be adopted by Regional Fisheries Management Organisations.



Basking shark – *Cetorhinus maximus*. The second largest shark in the world feeds on plankton (threatened species).

National measures for the management of sharks

Cyprus has the obligation to respect the international and EU commitments, for providing essential protection and ensuring the sustainable management of sharks and chondrichthyans in general.

The national measures taken include:

- Improvement of statistical and biological data collection on chondrichthyan catches
- Training in species identification
- Development of expertise
- Monitoring of all types of fisheries that catch chondrichthyans
- Reduction of fishing mortality of chondrichthyans, with the implementation of additional measures to the ones included in the CFP.
- Awareness of fishermen and public on the threats of chondrichthyans

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Sharks: Threat or Threatened?



Photo: Greg Grimes/Flickr



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Photo: Terry Goss

2012



P.I.O. 260/2012–1.000
Published by the Press and Information Office

Printed: Konos Ltd



Printed on recycled paper