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SHARK FISHERIES

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Introduction

❖ "Sharks" is the common noun given to the Selachimorpha subdivision
❖ There are approximately 500 shark species
❖ Most studied sharks have slow growth, late maturity and low fecundity, which make them vulnerable to uncontrolled fishing activity

Exploitation reasons

Fins

Fig. 5 Shark fins

Meat

Fig. 6 Shark meat

Skin

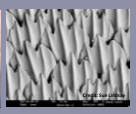

Fig. 7 *Carcharinus obscurus* denticles

Liver

Fig. 8 Shark liver oil capsules

Cartilage

Fig. 9 Shark cartilage capsules

Other uses

Jaws and other curios

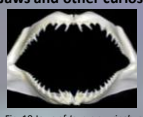

Fig. 10 Jaws of *Isurus oxyrinchus*

Aquarium exhibition

Fig. 11 *Rhincodon typus* in Okinawa Churaumi Aquarium

Fishmeal

Fig. 12 Fishmeal

Medical research

Fig. 13 Medical research

Fishing methods

Gillnet and driftnet

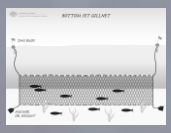

Fig. 1 Set gillnet

Longline

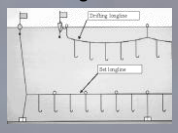

Fig. 2 Longline

Purse seine

Fig. 3 Purse seine

Trawling

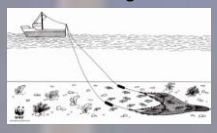

Fig. 4 Demersal trawling

Total captures from 1950 to 2011

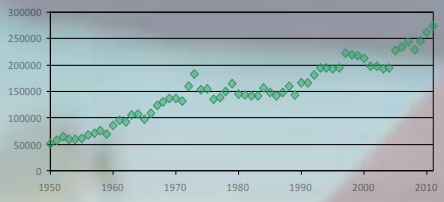

Fig. 14 Total shark catches (in tonnes)

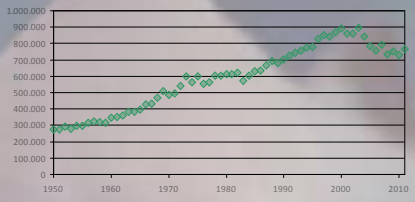

Fig. 15 Total chondrichthyan (sharks, rays and chimaeras) catches (in tonnes)

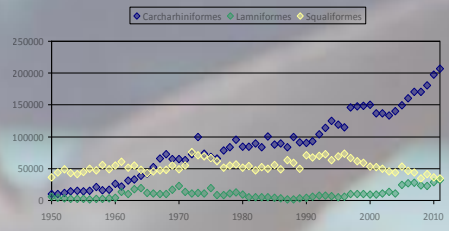

Fig. 16 Catches of the three most exploited shark orders (in tonnes)

Conservation and management measures

International legal regime applicable to sharks
- Binding fisheries instruments
- Binding non-fisheries instruments
- Non-binding fisheries instruments

IPOA* Sharks
- ❖ Aims: ensure the conservation and management of sharks and their long-term sustainable use and facilitate the implementation of NPOAs
- ❖ It applies to all species of sharks, skates, rays and chimaeras, and to all types of catches and waters
- ❖ Its implementation is voluntary

NPOA* Sharks
- ❖ 48 of 143 reporting shark catches countries (and 18 of the 26 top-shark fishing countries) have adopted an NPOA Sharks
- ❖ Not all countries explain how the plan is integrated or linked to their already existing legal and fisheries management systems

Shark fin measures

❖ It is not allowed to dump shark carcasses into the sea
❖ Fins cannot exceed 5 % of sharks' weight on board until the first point of landing
❖ Sharks must be landed with their fins attached

Effectiveness of MCS* schemes changes greatly from country to country

15 of the 26 top shark-finning countries, areas, territories and entities have adopted shark fin measures

Other shark measures

❖ Protected species
❖ TACs*
❖ Licenses and permits
❖ Reporting and research requirements
❖ MCS measures
❖ Promotion of public awareness for shark conservation issues

The type of measures applied changes considerably among countries

20 of the 26 top shark-fishing countries, areas and territories have adopted specific shark conservation measures other than fin regulations

Most exploited sharks in 2011

In 2011 we can find data from catches of 55 species, 7 genera and 6 families. 11 species, 3 genera and 1 family are greater than 1000 tonnes

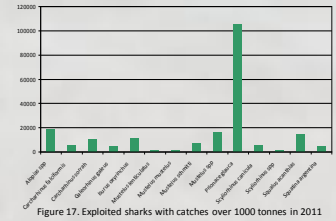

Figure 17. Exploited sharks with catches over 1000 tonnes in 2011

Fig. 25 *Prionace glauca*

IUCN* Red List status: near threatened

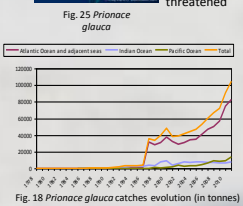

Fig. 18 *Prionace glauca* catches evolution (in tonnes)

Protected species by CITES*

(to ensure that international trade does not threaten wild species survival)

In appendix II

Cetorhinus maximus

Fig. 19

Carcharodon carcharias

Fig. 20

Rhincodon typus

Fig. 21

New additions to appendix II (from 14 September 2014)

Carcharhinus longimanus

Fig. 22

Sphyrna lewini, *Sphyrna zygaena*, *Sphyrna mokarran*

Fig. 23 *Sphyrna mokarran*

Transferred from appendix III

Lamna nasus

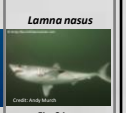

Fig. 24

Appendix II: species that are not necessarily threatened with extinction but may become so unless trade is closely controlled

Appendix III: species included at the request of a country that already regulates trade in the species and that needs the cooperation of other countries to prevent unsustainable or illegal exploitation

Conclusions

❖ Shark catches increase every year
❖ An intense type of fishing activity proves to be specially damaging for sharks due to their biological features
❖ It is difficult to control effectively the compliance of management measures, and moreover they change from country to country
❖ Shark fisheries have an announced future: a depletion in shark populations, which take time to recover – if they do. Given this situation, it would most likely entail negative effects on ecosystems

*Abbreviations

CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora

CMS: the 1979 Convention on Migratory Species

IPOA Sharks: International Plan of Action for the Conservation and Management of Sharks

IUCN: International Union for Conservation of Nature

MCS (Monitoring, Control and Surveillance)

NPOA Sharks: National plans of action for the conservation and management of sharks

TAC: Total Allowable Catch

References

Figure 1: <http://www.afma.gov.au/resource-centre/teachers-and-students/aboutfishing-methods-and-devices/gillnets/>
Figure 2: <http://www.fao.org/fishery/geartype/232/en>
Figure 3, 4: <Fishing methods http://www.wwfsassi.co.za/?m=4&s=4>
Figure 5: <http://www.underwatertimes.com/news.php?article_id=01478592106>
Figure 6: <http://blogs.miaminewtimes.com/shortorder/2013/02/publix_sells_shark_meat_-_eat.php>
Figure 7: <http://australianmuseum.net.au/image/Dusky-Shark-denticles-Carcharhinus-obscurus/>
Figure 8: <http://www.mothernature.com.au/shark-liver.html>
Figure 9: <http://www.greenhealth.co.nz/sharkcartilage.html>
Figure 10: <http://www.sealifegifts.net/Mako-Shark-Jaw-1947.html>
Figure 11: <http://www.flickr.com/photos/anzyaprico/268462172/>
Figure 12: <http://www.paradisefishmeal.org/fishmeal.htm>
Figure 13: <http://www.feinberg.northwestern.edu/research/services/give.html>
Figures 14, 15, 16, 17, 18: Data extracted from FAO – Fisheries and Aquaculture Information and Statistics Service <http://www.fao.org/fishery/statistics/en>
Figure 19, 23, 24: <www.fishbase.org>
Figure 20: <http://shark-references.com/post/552>
Figure 21, 22, 25: <www.arkive.org>
Background: *Carcharhinus plumbeus* at the Newport Aquarium, Kentucky, USA. Credit: Jeff Kubina