



UNITED ARAB EMIRATES  
MINISTRY OF CLIMATE CHANGE  
& ENVIRONMENT

# UAE Shark Assessment Report

2018

[www.moccae.gov.ae](http://www.moccae.gov.ae)





# UAE Shark Assessment Report

2018



***Special thanks to the Environment Agency – Abu Dhabi for their substantial input in developing of the action plan and providing scientific studies contributing to the content.***



***We extend our thanks and appreciation to the following:***

***The preparation team of the National Plan of Action for the Conservation and Management of Sharks:***

*Ministry of Climate Change and Environment*

*Environment Agency Abu Dhabi*

*Dubai municipality*

*Environment and Protected Areas Authority in Sharjah*

*Municipality & Planning Department - Ajman*

***Also contributed to the review:***

*Ras Al Khaimah Environmental Protection and Development Authority*

*Municipality of Ras Al Khaimah*

*Sharjah Municipality*

*Municipality of Fujairah*

*Municipality of Dibba Al Fujairah*

*Municipality of Umm Al Quwain*

*Dubai Cooperative Society for Fishermen*

*Cooperative Union of Fishery Associations*

*Abu Dhabi National Oil Company (ADNOC)*

*Emirates Wildlife Society (EWS-WWF)*

*International Fund for Animal Welfare (IFAW)*



# Table of Contents

<b>Page</b>	<b>Content</b>
<b>1</b>	<b>Introduction</b>
<b>2</b>	<b>Fisheries characteristics</b>
3	- Fleet characteristics, evolution of the fleet and fishing effort, fishing gears
4	- Evolution of catch
<b>5</b>	<b>Overview of sharks in the region</b>
<b>8</b>	<b>Challenges facing sharks</b>
<b>9</b>	<b>Species composition and biological data on sharks in the UAE</b>
<b>15</b>	<b>Species composition and biological data on rays in the UAE</b>
<b>15</b>	<b>Markets</b>
15	- Product use
16	- Product value (prices refer to data collected up to 2012)
<b>17</b>	<b>Law and Enforcement</b>
17	- Laws and legislations regulating shark fishing in the UAE
17	- Ministerial resolutions
<b>19</b>	<b>Conclusion</b>
<b>20</b>	<b>References</b>





## 1-1 Introduction

The United Arab Emirates (UAE) is a coastal country located on the southern side of the Arabian Gulf with an Exclusive Economic Zone (EEZ) of 58,292 km<sup>2</sup>. It has a coastline of about 650 km facing the Arabian Gulf, and approximately 70 km facing the Sea of Oman (Figure 1). In spite of its presence in an arid climate belt, the UAE has rich and unique coastal and marine resources. Its waters are home to a diverse mixture of species, including many species of reef-associated fish, large pelagic' s, dugongs, several species of sea turtles and sea snakes, as well as a diversity of dolphins and whales. These species are supported by productive habitats such as salt marshes, mangrove forests, seagrass beds, coral reefs, and algal beds, most of which intergrade with each other in many locations. These biologically diverse marine ecosystems play an important ecological, recreational and cultural role in the UAE by providing food and shelter for numerous fish and marine species, protecting coastal areas from storm surges, preventing coastal erosion, as well as supporting commercial fishing and a diversity of recreational activities.

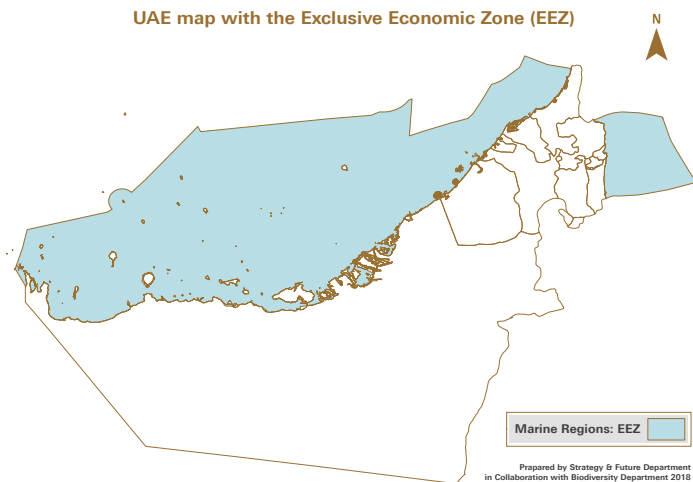


Figure 1: UAE map with the Exclusive Economic Zone (EEZ)

## 1-2 Fisheries characteristics

Fisheries have traditionally provided the main livelihood for many of the coastal population of the UAE, especially during the pre-oil discovery era. Although oil resources have become the most important in the country, fisheries have retained substantial social and economic value and provide an important contribution to food security as well as being a source of recreation. Yet, the fishing sector comprises less than 0.5% of the country's Gross Domestic Product (GDP) with sectors such as oil and gas, construction and tourism making a much larger contribution. Even so, the demand for fish continues to increase in the UAE and fishery statistics from the past decade show a continuing trend of increasing fishing effort and an increase in reef fish yield. However, fisheries-independent surveys of the UAE's demersal and small pelagic fish resources have shown major declines in fish abundance of both commercial and non-commercial species with key demersal species reduced to less than 10% of their virgin biomass. The reductions are likely due to the overexploitation of many species and it is suggested that many commercially important fish stocks have now collapsed.

The fishery in the UAE is characterized by highly diverse catches, comparable with multi-species tropical fisheries. While there has been a steady improvement in fishing technology, fisheries in the UAE have remained artisanal utilizing traditional vessels and a wide range of gears and techniques. However, some reports suggest that the fishery is currently operating on a scale that is commercial in nature.

## 1-2-1. Fleet characteristics, evolution of the fleet and fishing effort, fishing gears

Fishing is only permitted for two types of vessels, namely the traditional dhows, or 'lansh', and the fiberglass dories, or 'tarad'. Dhows are usually up to 15 m in length, with inboard engines, and primarily operate wire dome fish traps and hand lines. These boats tend to cover long distances and can stay at sea for several days and up to several weeks. Fiberglass dories are usually 8 to 10 m in length and powered by one or two outboard engines. Tarads usually operate on a daily basis. They generally utilize a variety of gear including traps, hand lines, and various types of nets. It is important to note, however, that Ministerial Resolution No. (500) of 2014 on Regulating the Fishing and Trading of Sharks has specified that only fishermen whose boats are registered under the "Lansh" category in the ministry are allowed to fish for sharks.



The fiberglass dories, or 'tarad'



The traditional dhows, or 'lansh'

The number of fishing vessels registered in the UAE reached 5,985 vessels in 2015. Fisheries statistics collected by the MOCCA and EAD indicate that the number of tarads is steadily increasing while the number of dhows is slowly decreasing. This is likely due to the higher cost of operating dhows with fishermen choosing to move to smaller, more efficient vessels. Fisheries are undertaken by both national fishermen and expatriate laborers mainly from the subcontinent. Statistics indicate that there were 5,115 licensed fishermen in 2015. A wide range of passive and active commercial fishing

gear are used across the country with the most common ones being dome-shaped wire traps ('gargour'), hook and line ('hadaq'), gill and drift nets ('ghazal' and 'leikh'), and beach seines ('dhagwa'). The utilization of gear, their configuration, and local names vary across the country and differ depending on the fishermen, fishing location, season, and targeted species. Demersal species are more common than pelagic ones in landings and target species are usually representative of the Serranidae (groupers), Lethrinidae (emperors), Haemulidae (grunts), Siganidae (rabbitfish), Sparidae (sea breams), Carangidae (jacks), and Scombridae (kingfish). National Bureau of Statistics data indicate that between 2006 and 2013, fish landings in the UAE totaled between 100,403 mt and 73,203 mt respectively.

## 1-2-2 Evolution of catch

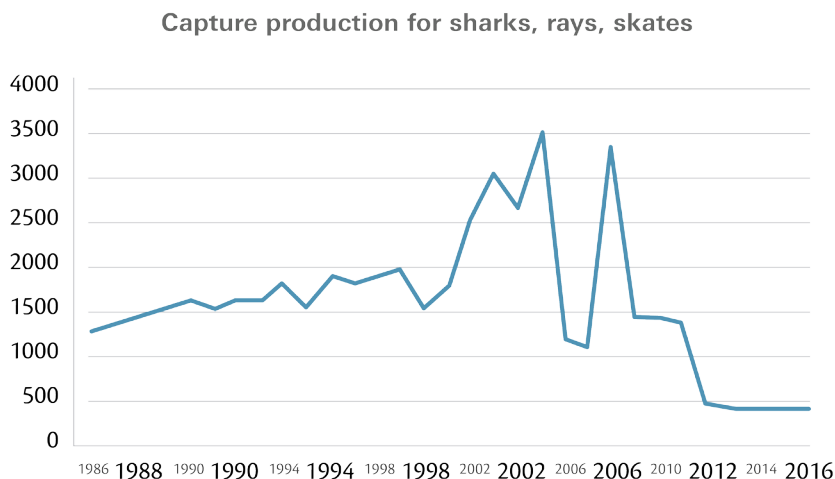
Archeological evidence from the UAE indicates that the exploitation of shark resources can be traced back to more than 7,000 years. It is believed that sharks were traditionally caught using longlines, a method popular with pearl divers who wanted to remove large animals from the vicinity of their dive site. All rays and up to 70% of sharks captured were perceived as unmarketable and typically discarded. However, retained catches had several local uses with the meat of small bodied sharks cooked using traditional recipes or salted and dried to be used during seasons where the weather did not allow to go out fishing. Also, the liver was processed into oil and used to waterproof wooden vessels in order to reduce timber deterioration. All other remains were utilized as fertilizers in date plantations. Finally, in the early 80s, the fins of sharks were retained and traded internationally.

## 2- Overview of sharks in the region

Until recently, records of sharks and rays in the Arabian Gulf region were limited to opportunistic observations at landing sites, fisheries research cruises, sightings of large and morphologically distinct species, or extrapolations of species occurrences in the Arabian Sea and Indian Ocean. From 2009 to 2012, a series of short term projects were undertaken in Kuwait, Bahrain, Qatar and the Abu Dhabi Emirate of the UAE and provided updated checklists of elasmobranch species occurring in the Arabian Gulf. However, the short term characteristics of these projects (two weeks each) did not allow for geographical and temporal trends that could be occurring within this body of water to be recorded. However, further data was collected through a two year research project in the UAE between 2010 and 2012, and with these little survey efforts, a range of new species records have been confirmed including the presence of the graceful shark (*Carcharhinus amblyrhynchoides*), slit eye shark (*Loxodon macrorhinus*), sand tiger shark (*Carcharias taurus*), silky shark (*Carcharhinus falciformis*), sandbar shark (*Carcharhinus plumbeus*), tawny nurse shark (*Nebrius ferrugineus*), and smoothtooth blacktip shark (*Carcharhinus leiodon*), while new species were described such as the Arabian banded whiplay (*Maculabatis randalli*) and Human's shark (*Carcharhinus humani*). Similarly, studies in Oman have provided some information on the species found along the Fujairah coast of the UAE through landing site and market surveys as well as taxonomic assessments using genetics and have indicated the potential for the presence of several undescribed species, namely guitarfishes.

Reports from the last decade have suggested that shark fisheries in the region as a whole have increased in their size and geographical extent. However, even though much of the catch data from shark fisheries in the region and the UAE are limited and fragmented in nature, they show relatively low catch quantities. In fact, capture production statistics have been reported to the Food and

Agriculture Organization of the United Nations (FAO) since 1986 and have remained relatively stable between 1986 and 1999 with an average between 1,300 and 1,950 mt per year. These numbers increased from 2002 onwards and reached a maximum of 3,520 mt in 2005 but have decreased again since. These landing statistics have until now been aggregated and therefore, it has not been possible to distinguish between quantities captured in the Arabian Gulf and the Sea of Oman, or between sharks and rays.



Data of Capture production statistics for sharks, rays, skates, etc. from 1986 to 2016,  
Source: FAO - Fisheries and Aquaculture Information and Statistics Branch

Yet, specific to the UAE, a dedicated research program on elasmobranchs did not exist until 2010 and therefore there was a lack of information on species diversity, distribution, biological data, species composition and quantities of catches, and the amount of fishing effort directed towards the shark fishery. This lack of information has been a barrier to the creation of viable management

plans for the conservation of these species. The following sections provide an overview of some of the issues and studies that have been undertaken since.

In 2017, EAD in cooperation with IUCN Species Survival Commission Shark Specialist Group had published a report which provided an overview of the conservation status of chondrichthyan (sharks, rays, and chimaeras) in the Arabian Seas Region (ASR) and described the results of a regional Red List workshop held in Abu Dhabi, United Arab Emirates early 2017. It identified those species that are threatened with extinction at the regional level, so that appropriate conservation action can be taken to improve their status. A regional overview of chondrichthyan fisheries, management and conservation is also presented.

Furthermore, the report indicated that 50.9 % (78 species) of the 153 chondrichthyans assessed are considered threatened within the ASR (9.2 % CR - Critically Endangered, 22.2 % EN - Endangered, 19.6 % VU - Vulnerable). Of these, three species were also flagged as CR – Possibly Extinct as they had not been recorded in the region for at least three decades despite increasing research and survey efforts. A further 17.6 % (27 species) are considered NT - Near Threatened and 12.4 % LC - Least Concern (19 species). However, for 29 species (19 %), there was insufficient scientific information available to evaluate their risk of extinction and these are therefore classified as DD - Data Deficient.

### 3- Challenges facing sharks

In this document, the term 'sharks' is applied broadly to include all species of true sharks, as well as related species of rays, skates and chimaeras, unless otherwise noted. A number of significant issues pertaining to the conservation and management of sharks emerge from the assessment of shark catches reported in this document, these issues can be summarized as the following:

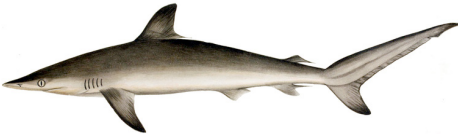
- The accurate identification of shark species by all resource users;
- Secure, accessible and validated data sets that record all catch data and are consistent over time with compatible resolution between emirates over the full range of each species from all resource users;
- Need for shark research and coordination of projects between various national entities;
- Our understanding of the markets for and trade in shark products;
- Lack of risk assessment framework for all shark species to identify the nature and extent of all impacts on those species;
- Strategies for the recovery of species and populations;
- Our understanding of the impacts of recreational fishing;
- Adequacy of current management measures and innovative approaches to dealing with identified shark management issues;
- The identification of critical habitats and reduction of the impact of environmental degradation on sharks;
- Shark handling practices for the conservation and management of sharks;
- Understanding of the effects of shark fishing on ecosystem structure and function;
- Communication and information sharing between government agencies and stakeholders.





## 4- Species composition and biological data on sharks in the UAE

A fishery dependent market and landing site survey was undertaken between 2010 and 2012 in Abu Dhabi, Dubai, Sharjah and Ras Al Khaimah. The aim was to examine patterns of species composition, distribution, and relative abundance of sharks across sites; investigate temporal and spatial variability in landings composition; and validate the field identification of each species through genetic analysis of a representative sample of individual species using the Cytochrome c oxidase subunit 1 gene (COI).


A total of 12,478 individual sharks originating from UAE Arabian Gulf waters were recorded in this study with 30 species confirmed and validated morphologically and through genetic barcoding. The family Carcharhinidae was the most abundant (95.5% of all landed species) and most diverse with 18 species, followed by Hemigaleidae with three species, and Sphyrnidae and Hemiscylliidae with two species each. Shark landings were dominated by small size species with six species found to be most abundant. The remaining 24 species recorded comprised between 0.01 % and 1.4 % of the total shark landings.

Spottail shark <i>Carcharhinus sorrah</i>			
Total Number		3973	
Percentage of total		%31.85	
Sex ratios ( ♀:♂ )		1.26:1	
Size range (means ± SD mm)	♀	437 – 1960 (1081.9 ± 283.2)	
	♂	439 – 1513 (952.3 ± 283.2)	
			
Source: By Müller & Henle (Systematische Beschreibung der Plagiostomen pl. 16) [Public domain], via Wikimedia Commons			


Milk shark <i>Rhizoprionodon acutus</i>			
Total Number		3737	
Percentage of total		%29.95	
Sex ratios ( ♀:♂ )		1.03:1	
Size range (means ± SD mm)	♀	375 – 888 (660 ± 85.2)	
	♂	372 – 981 (690 ± 105.2)	
			
Source: By Hamid Badar Osmany [CC BY 3.0 ( <a href="https://creativecommons.org/licenses/by/3.0/">https://creativecommons.org/licenses/by/3.0/</a> )], via Wikimedia Commons			

Blacktip Shark <i>Carcharhinus limbatus</i>			
Total Number		1786	
Percentage of total		%14.31	
Sex ratios ( ♀:♂ )		1.01:1	
Size range (means ± SD mm)	♀	416 – 2870 (1422.2 ± 551.5)	
	♂	460 – 2620 (1442 ± 560)	
			
Source: Australian National Fish Collection, CSIRO. License: CC by Attribution-NonCommercial			

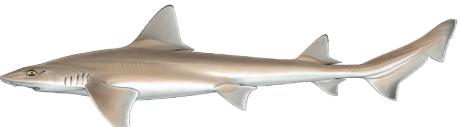
### Slit eye shark *Loxodon macrorhinus*

Total Number		1120	 <p>Source: By CSIRO National Fish Collection [CC BY 3.0 (<a href="https://creativecommons.org/licenses/by/3.0/">https://creativecommons.org/licenses/by/3.0/</a>)], via Wikimedia Commons</p>
Percentage of total		%8.98	
Sex ratios (♀:♂)		1:1.29	
Size range (means ± SD mm)	♀	496 – 901 (685.4 ± 68.7)	
	♂	472-882 (674.8 ± 80)	

### Whitecheek shark *Carcharhinus dussumieri*

Total Number		561	 <p>Source: By CSIRO National Fish Collection (<a href="http://fishesofaustralia.net.au/Home/species/2886">http://fishesofaustralia.net.au/Home/species/2886</a>) [CC BY 4.0 (<a href="https://creativecommons.org/licenses/by/4.0/">https://creativecommons.org/licenses/by/4.0/</a>)], via Wikimedia Commons</p>
Percentage of total		%4.50	
Sex ratios (♀:♂)		1:1.67	
Size range (means ± SD mm)	♀	362 – 921 (737.4 ± 80.1)	
	♂	369 – 989 (750.7 ± 117.4)	

### Smoothhound shark *Mustelus mosis*

Total Number		204	 <p>Source: <a href="https://www.sharktrust.org/shared/downloads/factsheets/common_smoothhound_st_factsheet.pdf">https://www.sharktrust.org/shared/downloads/factsheets/common_smoothhound_st_factsheet.pdf</a></p>
Percentage of total		%1.63	
Sex ratios (♀:♂)		1:3.43	
Size range (means ± SD mm)	♀	582 – 913 (737.5 ± 38.6)	
	♂	569 – 1073 (791.7 ± 101)	

While there were some seasonal variations in the number of species caught, the overall dominant species did not change throughout the sampling period or between samples locations. However, there was a shift in seasonal dominance between the spottail shark, *Carcharhinus sorrah*, and the milk shark, *Rhizoprionodon acutus*, where *C. sorrah* was more common during spring and summer, while *R. acutus* was more abundant in autumn and winter landings. All other species were caught in lower numbers during the summer, which was also the season yielding the lowest number of landed species overall. While some species of large-bodied sharks were found in landings, they were largely either immature specimens, such as the black tip shark, *C. limbatus*, or species that did not contribute substantially to landings, such as the spinner shark, *C. brevipinna*, and the great hammerhead, *Sphyrna mokarran*. While little information is available on whether larger sharks were more common at one time, fishermen have stated that the size of sharks in the Arabian Gulf has greatly diminished. As such, it is possible that many larger species have been overfished to some extent, and that the fishery is now reliant on smaller sharks that dominate landings. It is important to note that individual species may have different levels of susceptibility or resilience to exploitation. Small-bodied carcharhinids such as *R. acutus* tend to grow fast, mature early, have short life spans, and display aseasonal reproductive cycles. On the other hand, larger sharks such as *C. brevipinna* mature much later and exhibit slower growth rates, while typically displaying seasonal breeding cycles and producing annual, biennial, or triennial litters. Thus the overall life history traits of small shark species generally lead to higher biological productivity, making them less susceptible to fishing pressure, which may explain their dominance at various markets. The total length at which 50% of males attain maturity was determined for five species and indicated that males of smaller shark species (<1000 mm) were largely mature. For many species, including *L.*

*macrorhinus*, and smoothhound *Mustelus mosis*, overall sex ratios were male dominated indicating sexual segregation is likely to be taking place for those species. Furthermore, sex ratios for several species, such as *R. acutus*, showed differences across seasons. Overall, there was a high proportion of juveniles in the landings. Biological parameters of a number of species, differed from those previously recorded in the region, demonstrating a need for further local data collection.

A recent research carried by scientists from EAD between October 2015 and June 2016 have concluded that sawfish nowadays are primarily caught as bycatch in gill nets. The research indicated that the green sawfish *Pristis zijsron* is more common in United Arab Emirates waters than the narrow sawfish *Anoxypristis cuspidata*, which is likely to be present off the Ras Al Khaimah coast. While the results of this study provide evidence of a large decline in sawfish, it also highlights the importance of conservation and recovery efforts to avoid local extinction and recover their populations.

## 5- Species composition and biological data on rays in the UAE

Data on rays was collected opportunistically during market and landing site surveys for sharks. Sixteen species were landed from 1,306 specimens recorded across the country. Four species represented 90.5% of ray landings and included

- the Oman cownose ray, *Rhinoptera jayakari* (59.4%)
- the banded eagle ray, *Aetomylaeus nichofii* (11.7%)
- the giant guitarfish complex, *Rhynchobatus cf. djiddensis* (10.5%)
- the brown eagle ray, *Aetomylaeus milvus* (8.9%).

It is important to note that while guitarfishes were always retained due to the high value of their fins, other ray species were often discarded by fishermen because they are considered unmarketable. The high numbers of cownose and eagle rays recorded here were mostly because fishermen had accidentally set a net on large aggregations of rays and had therefore retained the catches. This suggests that these batoid records might not be a true reflection of the relative abundance of species of rays within the waters of the UAE. In fact, results from the 'YOUR eyes on elasmos' project run by the Gulf Elasmobranch Project (GEP) indicate that many species frequently recorded by divers throughout the waters of the UAE, do not appear at landing sites. This could be due to fishermen not utilizing the types of habitats where these animals are sighted. However, as mentioned by fishermen during interviews, it is more likely that these species are discarded due to their low value. This highlights the need for additional research on rays in the UAE in order to determine species diversity, abundance and distribution. Furthermore, a recent taxonomic assessment investigating species diversity of sharks and rays from Oman and the UAE has indicated that many species of rays and guitarfish in the region show evidence of cryptic speciation or at least population divisions within species, while others might still be undescribed species. Gaining a better understanding of

the status of rays in the UAE is crucial and a priority in order to determine the best actions for their conservation and long-term sustainability.

Type	Arabian Gulf species	Sea of Oman species	Total number of species
<b>Sharks</b>	32	42	43
<b>Rays</b>	25	28	29

Table: Total number of shark species confirmed from the UAE through landing site surveys and data from the “YOUR eyes on elasmos” project with a break down into numbers of shark and ray species from the Arabian Gulf and Sea of Oman

## 6- Markets

A review of trade records and informal interviews with local traders shows that the UAE is a hub in the broader north Indian Ocean region for the trade. Results based on morphological identification of sharks (n=12,069) and DNA barcoding of tissue samples (n=655) indicated the trade was made up of at least 37 species. The most abundant families represented were hammerheads (Sphyrnidae: 9.3%), mako sharks (Lamnidae: 9%) and thresher sharks (Alopiidae: 5.9%).

### 6-1 Product use

The trade in shark products consisted mainly of fins and meat which are exported to Asia. Skins are sometimes retained and dried for sale to Asia as well. Jaws and teeth are sometimes sold to tourists while the market for cartilage is largely non-existent. Liver oil is occasionally traded locally for dhow proofing and shark carcasses are discarded after fins and meat were removed.

## 6-2 Product value (prices refer to data collected up to 2012)

Small bodied sharks (<1000 mm total length (LT)) retailed locally between AED 10 and 20 per kg (USD 2.5 to 6 per kg). Large bodied sharks (>1000 mm LT) in Dubai were valued between AED 8,000 (USD 2,200) and AED 20,000 (USD 5,500) for 20 sharks depending on species and sizes. Fresh meat was auctioned at AED 6 per kg (about USD 1.7 per kg) but could resell at prices up to AED 40 per kg (USD 11 per kg) after drying and packing.



## 7- Law and Enforcement

### 7-1 Laws and legislations regulating shark fishing in the UAE

Federal Laws	
Federal Law No. (23) of 1999 on the Exploitation, Protection and Development of Living Aquatic Resources and its amendments as specified by Federal Law No. (7) of 2016	This law was issued on 17 October 1999 and is detailed in 64 Articles divided into ten chapters. It mainly aims to protect and develop living aquatic resources in the UAE by regulating fishing via the issuance of licenses from the competent authorities. The law includes the requirements that must be observed to protect and develop fisheries in the UAE. It also includes measures related to the trading, processing and marketing of fish and aquatic organisms. The provisions of Federal Law No. (23) of 1999 on the Exploitation, Protection and Development of Living Aquatic Resources in the UAE banned the fishing of whales, dugongs, and other sea mammals of all species and sizes, as well as fishing of any live aquatic organisms with the purpose of extracting their eggs, skins, or fins or for any other purposes, besides the banning of throwing remnants, and residues of whales and fish into the water.
Federal Law No. (11) of 2002 Concerning Regulating and Controlling the International Trade in Endangered Species of Wild Fauna and Flora	This law is issued in October 2002 and is detailed in 40 Articles which establish principles and controls related to the international trade of endangered species of wild fauna and flora included in the international trade agreement concerning such species and regulations and procedures to be followed during trade transactions. The law includes three Appendices which are the same Appendices attached to CITES.

## 7-2 Ministerial resolutions

Being the Federal concerned authority responsible for the environment, MOCCAIE issues regulatory resolutions in matters that fall within its competency. With increased concerns on threats to sharks and their declining numbers, in 2008, MOCCAIE regulated the exploitation and protection of sharks by issuing the following ministerial resolutions:

Ministerial Resolutions	
Ministerial Resolution No. (542) of 2008 on the Procedures for Regulating Shark Fishing	This resolution regulates the procedures of shark fishing, specifies the size of fishing gear, and a four months fishing ban on sharks and provides full protection to the sawfish ( <i>Pristis zijsron</i> ) and the whale shark ( <i>Rhincodon typus</i> ).
Ministerial Resolution No. (216) of 2011 on the Procedures for Regulating Shark Fishing	The Ministry issued this resolution to update its resolution No. (542) issued in 2008. The new resolution designated areas for shark fishing (a distance of not less than five (5) nautical miles from the country's coasts, and not less than three (3) nautical miles from islands) as these areas could be areas used by some shark species during their breeding season. This resolution also banned the finning of sharks at sea and obliged them to bring the whole sharks to ports.

Ministerial Resolution No. (500) of 2014 on Regulating the Fishing and Trading of Sharks

This resolution established measures and controls on the trading of sharks and their fins. Due to the increase in the trade in shark fins, the Ministry decided to develop regulations and set restrictions and rules on the trading of sharks and their fins. It increased the fishing ban period during their reproductive season to five months (from the beginning of February up to the end of June). It prohibited the fishing of sharks listed in CITES Appendices; (See Annex no. (2)). Companies were banned from exporting sharks fished in the UAE territorial waters whether fresh, frozen, dried, salted, smoked, canned, or in any other form throughout the year. Under this resolution, shark fins shall not be re-exported in any form. All import and re-export of any shark products requires a special permit issued by the Ministry coupled with the documents proving the authenticity of issuance of such permit.

In addition, the Federal Transport Authority - Land and Maritime (FTA), has issued decree No. (90) of 2016 concerning the registration, licensing, and usage of marine recreational vessels. The decree stipulates that it is prohibited to catch sharks or any banned species throughout the year.

## 8- Conclusion

This report is the first national assessment of shark research and protective measures in the UAE and highlights that there is insufficient knowledge on the biology, ecology and fishing of sharks and rays. Continuous coordinated research will enhance our knowledge on sharks and rays for effective and efficient management. The National Plan of Action For the Conservation and Management of Sharks will be the building stone to effectively conserve and manage our shark populations in the UAE.

## 9- References

Barker MJ, Schluessel V. 2005. Managing global shark fisheries: suggestions for prioritizing management strategies. *Aquatic Conservation: Marine and Freshwater Ecosystems* 15: 325–347

Basson PW, Burchard IE, Hardy JT, Price ARG. 1977. Biotopes of the Western Arabian Gulf. Aramco Department of Loss Prevention and Environmental Affairs: Dhahran, Saudi Arabia

Beech M. 2004. In the land of the ichthyophagi: modeling fish exploitation in the Arabian Gulf and Gulf of Oman from the 5th millennium BC to the Late Islamic period. Abu Dhabi Islands Archaeological Survey: Abu Dhabi, UAE

Bishop JM. 2003. History and current checklist of Kuwait's ichthyofauna. *Journal of Arid Environments* 54: 237–256

Bonfil R. 1994. Overview of World Elasmobranch Fisheries. *FAO Fisheries Technical Paper* No. 341. FAO, Rome. 119 pp.

Blegvad H. 1944. Fishes of the Iranian Gulf. *Danish Scientific Investigations in Iran. Part III.* Einar Munksgaard: Copenhagen

Brown JNB. 1990. Sawfish. *Tribulus: Emirates Natural History Group Bulletin* 40: 27

Carpenter KE, Krupp F, Jones DA, Zajonz U. 1997. The living marine resources of Kuwait, Eastern Saudi Arabia, Bahrain, Qatar, and the United Arab Emirates. FAO: Rome

Carlson JK, Osborne J, Schmidt TW. 2007. Monitoring the recovery of smalltooth sawfish, *Pristis pectinata*, using standardized relative indices of abundance. *Biological Conservation* 136: 195–202

Christensen V, Guenette S, Heymans JJ, Walters CJ, Watson R, Zeller D, Pauly D. 2003. Hundred-year decline of North Atlantic predatory fishes. *Fish and Fisheries* 4: 1-24

CITES. 1994. Resolution of the Conference of the Parties 9.17. Status of International Trade in Shark Species. <http://www.traffic.org/factfile/sharkscites.html>

Compagno LJV. 1990. Shark exploitation and conservation. In *Elasmobranchs as living resources: advances in the biology, ecology, systematics, and the status of fisheries*. (H.L. Pratt, Jr., S.H. Gruber, and T. Taniuchi, eds.) pg. 391-414. U.S. Department of Commerce, NOAA Technical Report NMFS 90

Cortes E. 1999. Standardized diet compositions and trophic levels of sharks. *ICES Journal of Marine Science* 56:707-717

Dulvy NK, Baum JA, Clarke S, Compagno LJV, Cortés E, Domingo A, Fordham S, Fowler S, Francis MP, Gibson C, et al. 2008. You can swim but you can't hide: the global status and conservation of oceanic pelagic sharks and rays. *Aquatic Conservation: Marine and Freshwater Ecosystems* 18: 459–482

Dulvy NK, Fowler SL, Musick JA, Cavanagh RD, Kyne PM, Harrison LR, Carlson JK, Davidson LNK, Fordham SV, Francis MP, et al. 2014. Extinction risk and conservation of the world's sharks and rays. *eLife* 3: e00590

FAO. 1998. International Plan of Action for the conservation and management of sharks. Document FI:CSS/98/3, October 1998. Food and Agriculture Organization, Rome

Faria VV. 2007. Taxonomic review, phylogeny, and global population structure of the sawfishes (Chondrichthyes, Pristiformes). PhD thesis, Iowa State University, USA.

Faria VV, McDavitt MT, Charvet P, Wiley TR, Simpfendorfer CA, Naylor GJP. 2013. Species delineation and global population structure of Critically Endangered sawfishes (Pristidae). *Zoological Journal of the Linnean Society* 167: 136–164

- Fernandez-Carvalho J, Imhoff JL, Faria VV, Carlson JK, Burgess GH. 2013. Status and the potential for extinction of the largetooth sawfish *Pristis pristis* in the Atlantic Ocean. Aquatic Conservation: Marine and Freshwater Ecosystems. Published online. DOI: 10.1002/aqc.2394
- Fowler S, Mogensen CB and Blasdale T. 2004. Plan of Action for the Conservation and Management of Sharks in UK Waters. JNCC Report No. 360
- Grandcourt E. 2012. Reef fish and fisheries in the Gulf. In Coral Reefs of the Gulf: Adaptation to Climatic Extremes, Riegl BM, Purkis SJ (eds). Springer: Netherlands; 127–161
- Gubanov EP, Schleib NA. 1980. Sharks of the Arabian Gulf. Fisheries Division, Ministry of Public Works: Kuwait
- Henderson AC, McIlwain JL, Al-Oufi HS, Al-Sheili S. 2007. The Sultanate of Oman shark fishery: species composition, seasonality and diversity. Fisheries Research 86: 159–168
- Henderson AC, Al-Oufi H, McIlwain JL. 2008. Survey, status and utilisation of the elasmobranch fisheries resources of the Sultanate of Oman. Muscat, Agriculture and Fisheries Development: Muscat, Oman
- Henderson AC, Reeve AJ, Jabado RW, Naylor GJP. 2015. Taxonomic assessment of sharks, rays and guitarfishes (Chondrichthyes: Elasmobranchii) from south-eastern Arabia, using the NADH dehydrogenase subunit 2 (NADH2) gene. Zoological Journal of the Linnean Society, 176(2): 399-442
- IUCN. 2016. IUCN Red List of Threatened Species. <http://www.iucnredlist.org>
- Jabado RW, Ebert D. 2015. Sharks of the Arabian Seas: an identification guide. International Fund for Animal Welfare (IFAW), Dubai, UAE. 240 pp. ISBN: 978-9948-18-254-2

Jabado RW, Al Ghais SM, Hamza W, Henderson AC, Ahmad MA. 2013. First record of the sand tiger shark, *Carcharias taurus*, from United Arab Emirates waters. Marine Biodiversity Records, 6: e27

Jabado RW, Al Ghais SM, Hamza W, Henderson AC. 2014. The shark fishery in the United Arab Emirates: an interview based approach to assess the status of sharks. Aquatic Conservation: Marine and Freshwater Ecosystems. DOI 10.1002/aqc.2477

Jabado RW, Al Ghais SM, Hamza W, Henderson AC, Shivji MS. 2015. Shark diversity in the Arabian/Persian Gulf higher than previously thought: insights based on species composition of shark landings in the United Arab Emirates. Marine Biodiversity 45 (4):719-731

Jabado RW, Al Ghais SM, Hamza W, Henderson AC, Spaet JLY, Shivji MS, Hanner R. 2015. The trade in sharks and their products in the United Arab Emirates. Biological Conservation, 181C: 190-198

Jabado RW, Al Ghais SM, Hamza W, Henderson AC, Al Mesafrri AA. 2015. The diet of two commercially important species in United Arab Emirates waters: the milk shark, *Rhizoprionodon acutus* (Rüppell, 1837) and slit-eye shark, *Loxodon macrorhinus* (Müller & Henle, 1839). Journal of Applied Ichthyology, 31 (5): 870-875

Jabado RW, Al Ghais SM, Hamza W, Robinson DP, Henderson AC. 2016. Biological data on shark species landed within the United Arab Emirates artisanal fishery, African Journal of Marine Science, 38 (2): 217-232

Kuronuma K, Abe Y. 1986. Fishes of the Arabian Gulf. Kuwait Institute of Scientific Research: Safat, Kuwait

Leeney RH, Poncelet P. 2013. Using fishers' ecological knowledge to assess the status and cultural importance of sawfishes in Guinea- Bissau. Aquatic Conservation: Marine and Freshwater Ecosystems. Published online. DOI:10.1002/aqc.2419

McDavitt MT. 1996. The cultural and economic significance of sawfishes (family Pristidae). Shark News: Newsletter of the IUCN Shark Specialist Group 8: 10

Ministry of Environment & Water. 2008. Ministerial Decree No (542) of 2008 concerning organizing measures for capturing sharks. Ministry of Environment and Water: United Arab Emirates

Ministry of Environment & Water. 2014. Decree 500 of 2014 on regulating the hunting of sharks in the United Arab Emirates. [www.moew.gov.ae](http://www.moew.gov.ae)

Moore ABM, White WT, Pierce R. 2010. Additions to the shark fauna of the Persian (Arabian) Gulf (Carcharhiniformes: Hemigaleidae and Carcharhinidae). Zoology in the Middle East 50: 83–88

Moore ABM, McCarthy ID, Carvalho GR, Peirce R. 2012. Species, sex, size and male maturity composition of previously unreported elasmobranch landings in Kuwait, Qatar and Abu Dhabi Emirate. Journal of Fish Biology 80: 1619–1642

Moore ABM, Ward RD, Peirce R. 2012. Sharks of the Persian (Arabian) Gulf: a first annotated checklist (Chondrichthyes: Elasmobranchii). Zootaxa 3167: 1–16

Moore ABM, Almojil D, Harris M, Jabado RW, White WT. 2013. New biological data on the rare, threatened shark *Carcharhinus leiodon* (Carcharhinidae) from the Persian Gulf and Arabian Sea. Marine and Freshwater Research, 64:1-6

Musick JA, Burgess G, Vailliet G, Camhi M, Fordham S. 2000. Management of Sharks and Their Relatives (Elasmobranchii). Fisheries 25(3): 9-13

Notarbartolo Di Sciara G, Adnet S, Fernando D, Jabado RW. 2016. Mobulid rays (Chondrichthyes: Mobulidae) of the Arabian Seas, with a redescription of *Mobula kuhlii* (Valenciennes in Müller & Henle, 1841). Aquatic Conservation: Marine and Freshwater Ecosystems, doi: 10.1002/aqc.2635



Robinson DP, Jaidah MY, Jabado RW, Lee-Brooks K, Nour El-Din NM, Al Malki AA, Elmeer K, McCormick P, Henderson AC, Ormond RFG, 2013. Whale Sharks, *Rhincodon typus*, aggregate around offshore platforms in Qatari waters of the Arabian Gulf to feed on fish spawn. PLOS One, 8 (3): e58255

Rose DA. 1996. An overview of world trade in sharks and other cartilaginous fishes. TRAFFIC International. 106 pp.

Shallard and Associates. 2003. Fish resource assessment survey project of Abu Dhabi and UAE waters. ERWDA: Abu Dhabi, UAE

Simpfendorfer CA, Yeiser BG, Wiley TR, Poulakis GR, Stevens PW, Heupel MR. 2011. Environmental influences on the spatial ecology of juvenile smalltooth sawfish (*Pristis pectinata*): results from acoustic monitoring. PLoS ONE 6(2): e16918

Sivasubramaniam K. 1981. A report on the demersal resources of the Gulf and Gulf of Oman. FAO: Rome

Spaet JLY, Jabado RW, Henderson AC, Moore ABM, Berumen ML. 2015. Population genetics of four heavily exploited shark species around the Arabian Peninsula, Ecology and Evolution. DOI 10.1002/ece3.1515

Stevens JD, Bonfil R, Dulvy NK, Walker PA. 2000. The effects of fishing on sharks, ray and chimaeras (chondrichthyans), and the implications for marine ecosystems. ICES Journal of Marine Science 57: 476–494

Walker TI. 1998. Can shark resources be harvested sustainably? A question revisited with a review of shark fisheries. Marine and Freshwater Research, 49:553-57

White AW, Barwani MA. 1971. Common Sea Fishes of the Arabian Gulf and Gulf of Oman. Trucial States Council: Dubai

US NPOA. 2001. United States National Plan of Action for the conservation and management of sharks. Department of Commerce, National Oceanic and Atmospheric Organization, National Marine

Fisheries Service. Accessed at: <http://www.nmfs.noaa.gov/sfa/Final%20NPOA.February.2001.htm>

Worm B, Davis B, Kettemer L, Ward-Paige CA, Chapman D, Heithaus MR, Kessel ST, Gruber SH. 2013. Global catches, exploitation rates, and rebuilding options for sharks. *Marine Policy* 40: 194–204

Jabado RW, Al Baharna RA, Al Ali SR, Al Suwaidi KO, Al Blooshi AY, Al Dhaheri SS (2017) Is this the last stand of the Critically Endangered green sawfish *Pristis zijsron* in the Arabian Gulf?. *Endang Species Res* 32:265-275. <https://doi.org/10.3354/esr00805>





@MOCCAUEAE

[www.moccae.gov.ae](http://www.moccae.gov.ae)