



Mitigating fisheries impacts on vulnerable species

SWIOFC Nairobi Convention Partnership Meeting on the Fisheries Environment Nexus
26-28 September 2022, Mombasa, Kenya
Rhett Bennett | Wildlife Conservation Society



Fishing impacts

- direct mortality
- mortality of specific age classes
- mortality of vulnerable life stages
- interruption of ecological processes
- indirect impacts (removal of prey, habitat impacts)



WCS Mozambique



WCS Tanzania



Mike Markovina



WCS Mozambique

Vulnerable species










- Species with biological characteristics that are not resilient to fisheries
- Slow growth
- Late maturity
- Low reproductive rates



BONY FISH

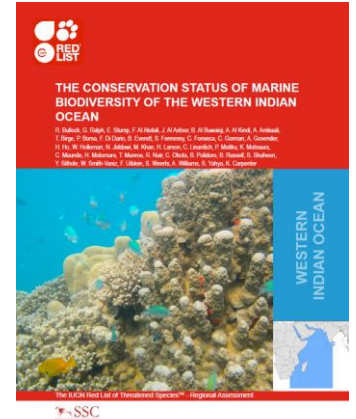
SHARKS & RAYS

MAMMALS

	LONGEVITY/LIFESPAN (years)	MATURITY (years)	OFFSPRING	REPRODUCTIVE FREQUENCY	GESTATION LENGTH
TUNA 	8	2-3	10 million	multiple events per year	1 day
SWORDFISH 	13	3	4.3 million	multiple events per year	2.5 days
MAHI MAHI 	5	5-12 months	80k-1 million	2-3 per year	2.5 days
MANTA RAY 	50	5-10	1	3-6 years	12-13 months
DUSKY SHARK 	40-50	17-24	3-16	3 years	22-24 months
SILKY SHARK 	22	6-12	2-16	1-2 years	12 months
ELEPHANT 	60	10-12	1	4-9 years	18-22 months
ORCA 	50	14-15	1	4-6 times in life	15-18 months
BENGAL TIGER 	25	3-5	1-7	3-4 years	3-4 months

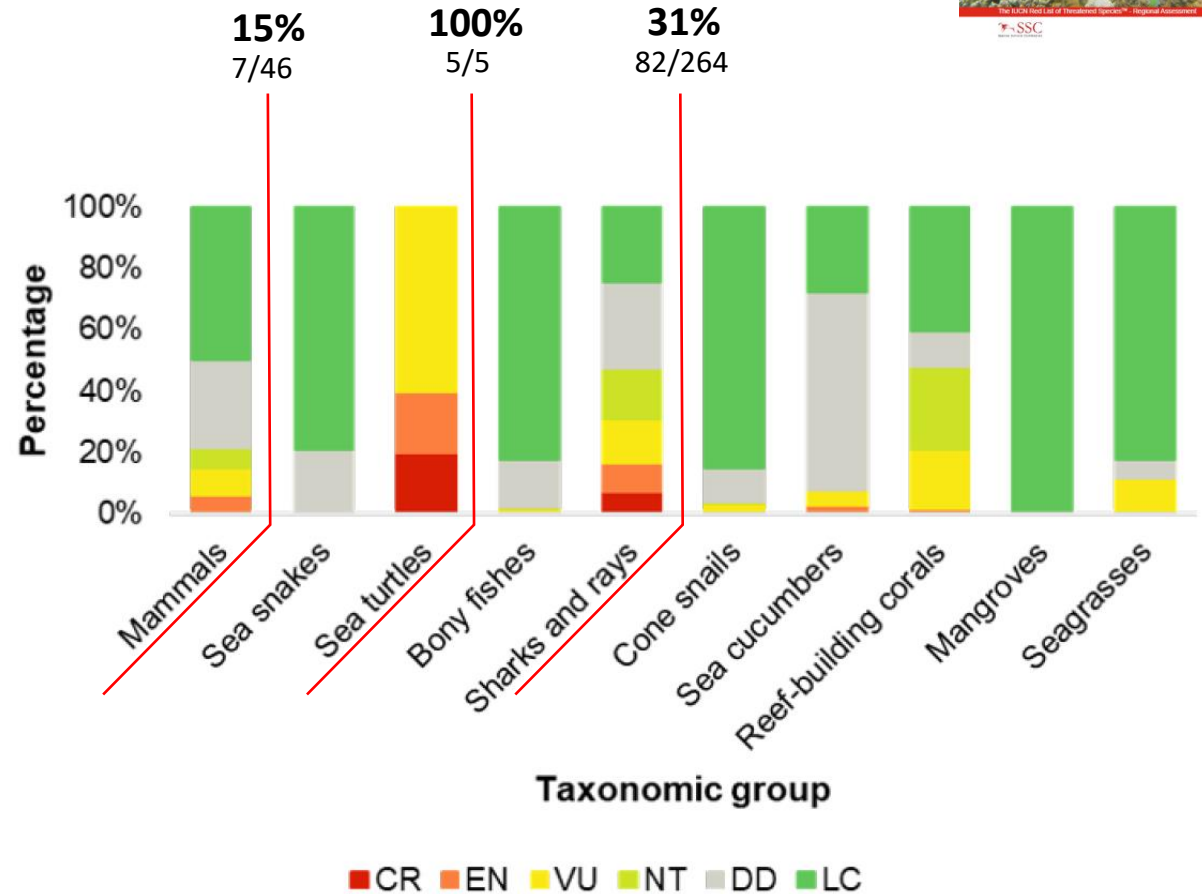
IUCN conservation status of WIO marine species

Bullock et al (2021). *The conservation status of marine biodiversity of the Western Indian Ocean*. Gland, Switzerland: IUCN. vii + 32 pp.



Threatened categories

Critically Endangered (CR)	A species which is considered to be facing an <i>extremely high</i> risk of extinction in the wild
Endangered (EN)	A species which is considered to be facing a <i>very high</i> risk of extinction in the wild
Vulnerable (VU)	A species which is considered to be facing a <i>high</i> risk of extinction in the wild
Near Threatened (NT)	A species which currently does not qualify for, but is likely to qualify in the near future for a threatened category
Least Concern (LC)	A species which does not qualify for the categories of CE, EN, VU or NT
Data Deficient (DD)	A species for which insufficient information is available to assess its risk of extinction based on its distribution and / or population status
Not Evaluated (NE)	A species which has not yet been assessed against the IUCN Red List Assessment criteria



Fishing practices in the WIO that threaten vulnerable species

- Gillnets in all sectors catch marine mammals, sharks, rays and turtles
- Including threatened species
- Including non-target species (marine mammals and turtles)
- Including secondary targets
- Greatest shark/ray catch in the WIO
- Biggest cause of marine mammal declines globally



Fishing practices in the WIO that threaten vulnerable species

- Coastal fisheries catch large quantities of sharks and rays
- (gillnets, longlines, handlines, beach seines, spear, others)
- Many species; some can be considered targets
- Including threatened species
- Including juveniles
- Including pregnant females
- Largely legal but unsustainable



Fishing practices in the WIO that threaten vulnerable species

- Targeting of shark fins: Targeted fishing of sharks and shark-like rays for their fins
- Trawl fisheries targeting shrimps and prawns catch rays, small sharks and turtles
- Demersal longlines catch many species of sharks/rays (e.g. Gata fishery Mozambique)
- Pelagic (tuna) longlines catch many sharks, seabirds and have been recorded catching dolphins
- Longlines with wire hook traces – significantly higher shark catch than nylon traces
- Purse seine fisheries capture silky and oceanic whitetip sharks (manta rays, whale sharks)
- Seychelles – directed scalloped hammerhead fishery (CR)
- Minimal fisheries for marine mammals – rather used opportunistically (bait for sharks)
- Some capture of turtles
- Foreign flagged vessels – impacts not quantifiable
- IUU fishing – not quantifiable, estimated at 3-4 times reported

Measures and techniques to mitigate fisheries impacts on vulnerable species

- CBD: Convention on Biological Diversity
- CMS: Convention on the Conservation of Migratory Species of Wild Animals (and MOUs)
- CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora
- FAO: Food and Agriculture Organization
- IOTC: Indian Ocean Tuna Commission
- UNFSA: United Nations Fish Stocks Agreement
- UNGA: United Nations General Assembly Resolution on Sustainable Fisheries
- SIOFA: Southern Indian Ocean Fisheries Agreement
- SWIOFC: South West Indian Ocean Fisheries Commission
- SADC: Southern African Development Community Protocol on Fisheries
- PSMA: Port State Measures Agreement
- NC: Nairobi Convention (Regional Seas Programs)
- IWC: International Whaling Commission
- UNCLOS: United Nations Convention on the Law of the Sea
- Ramsar Convention
- IOC: Indian Ocean Commission
- IUCN: International Union for the Conservation of Nature



Convention on
Biological Diversity



INDIAN OCEAN
COMMISSION



SWIOFC



INTERNATIONAL
WHALING COMMISSION



Measures and techniques to mitigate fisheries impacts on vulnerable species – application in the WIO

- CMS Appendix I: full and immediate protection of species (5 turtle, 7 mammal, 13 shark and ray species – poor compliance)
- CMS Appendix II: calls for regional management plans for these species – few in place in the WIO
- NC Annex II: calls for strictest protection – few marine species listed (only 3 marine mammals, 3 turtles; no sharks/rays)
- IOTC resolutions: retention bans for 12 shark and ray species (permit conditions for most)
- IOTC ban on drift gillnets in tuna fisheries – not all states compliant and not relevant to non-tuna fisheries
- CITES appendix II: calls for proof that trade is not detrimental – not one available assessments for a WIO shark/ray species (trading, poor reporting); but ZA bans commercial capture of all CITES Appendix II shark and ray species
- CITES Status of legal review indicates half the NC states do not have adequate legal framework to implement CITES
- FAO IPOA (sharks, seabirds, turtles) – 5/10 NC countries have NPOA-Sharks, nothing for seabirds/turtles other than ZA

Future priorities and types of fisheries-environment inter-sectoral/agency collaboration needed to mitigate fisheries impacts on vulnerable species

- NC decision to include sharks in work program, and engage with CMS, CITES, RFMOs
- CMS Appendix II calls for regional management plans
- IOTC engagement with CMS – in the process
- IOTC engagement with IWC – developing
- States and RFBs to better implement existing regulations / recommendations of MEAs
- Small-scale and industrial fisheries to be engaged with IOTC, CMS, CITES, SIOFA, SWIOFC and others
- Many sets of ideals, need for single consolidated set
- Multinational/stakeholder plans (POAs) at regional level (IPOA-Sharks, turtles, seabirds)
- IOTC WPEB support for RPOA-Sharks
- Need detailed species-level ecological risk assessment
- Collaborative call for reduction in destructive practices – gillnet ban, avoiding threatened species



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Contact: rbennett@wcs.org
www.wcs.org