

**Multidisciplinary Workshop to address Ecosystem-Level Impacts
of Fisheries Bycatch on Marine Megafauna, Gland (Switzerland)
7–10 October 2013**

Conservation issues with sharks

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Highly vulnerable to over-fishing
(long-lived, mature late, few young, slow growth, aggregating habit, nursery grounds)

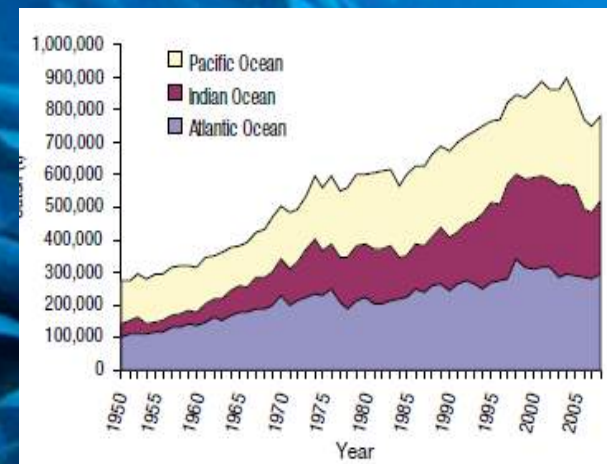
Past 20 years demand for shark products



Demand exceeds reproduction



More fisheries targeting sharks and utilising bycatch



Complex issues, numerous species, many fisheries

- ~6% of all chondrichthyans, (64 species) are pelagic (~50:50 oceanic : semi-pelagic)
- 21 species (16 sharks, 5 rays) are regularly caught in high-seas fisheries.
- Mostly epipelagic, wide-ranging in EEZs and on the high seas, and highly migratory
- Biological (K-bycatch) and behavioural vulnerability (but not all species)
- Total global catch underestimated, perhaps 3-4 times greater than reported to FAO.

Global Shark Red List Programme

Part of the

Global Marine Species Assessment

- First global systematic evaluation of the relative extinction risk of an entire lineage of exploited marine fishes (Class Chondrichthyes)
- Thirteen Red List workshops, intensive work by correspondence, 302 experts (64 countries);
- >1,088 species assessments currently published in the IUCN Red List of Threatened Species
www.iucnredlist.org;
- *Dulvy et al* in press, eLife.



Global Red List Results

17.4% of all species are Threatened
(24.3% if relative risk spread across Data Deficient species)

Deficient species)

CR 2.4%

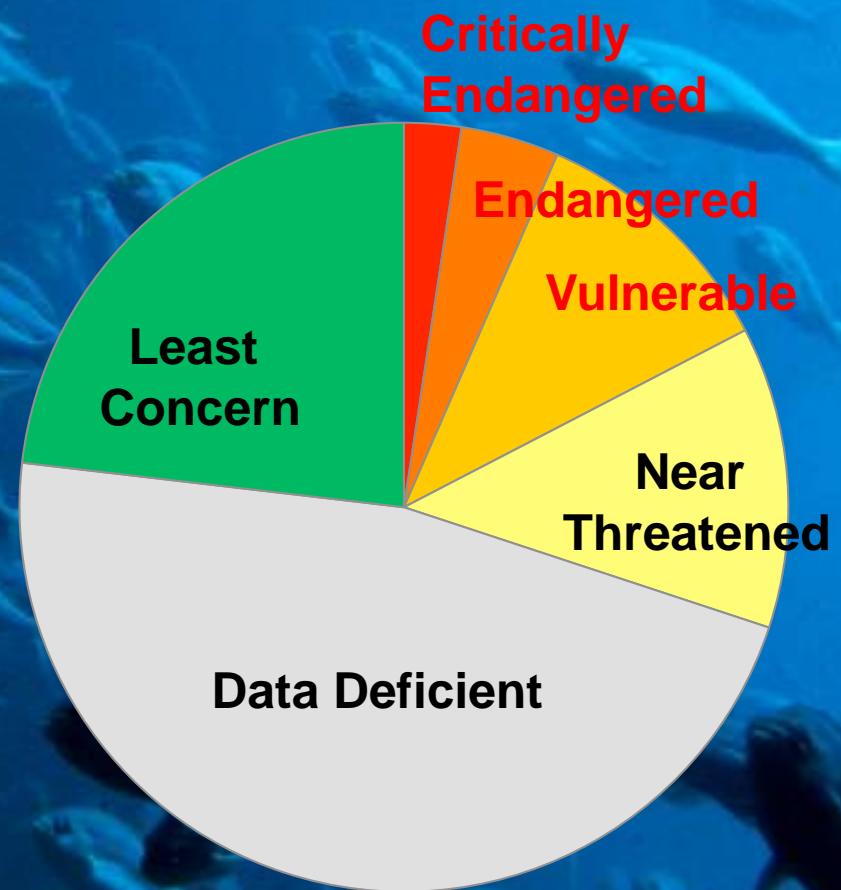
EN 4.1%

VU 10.9%

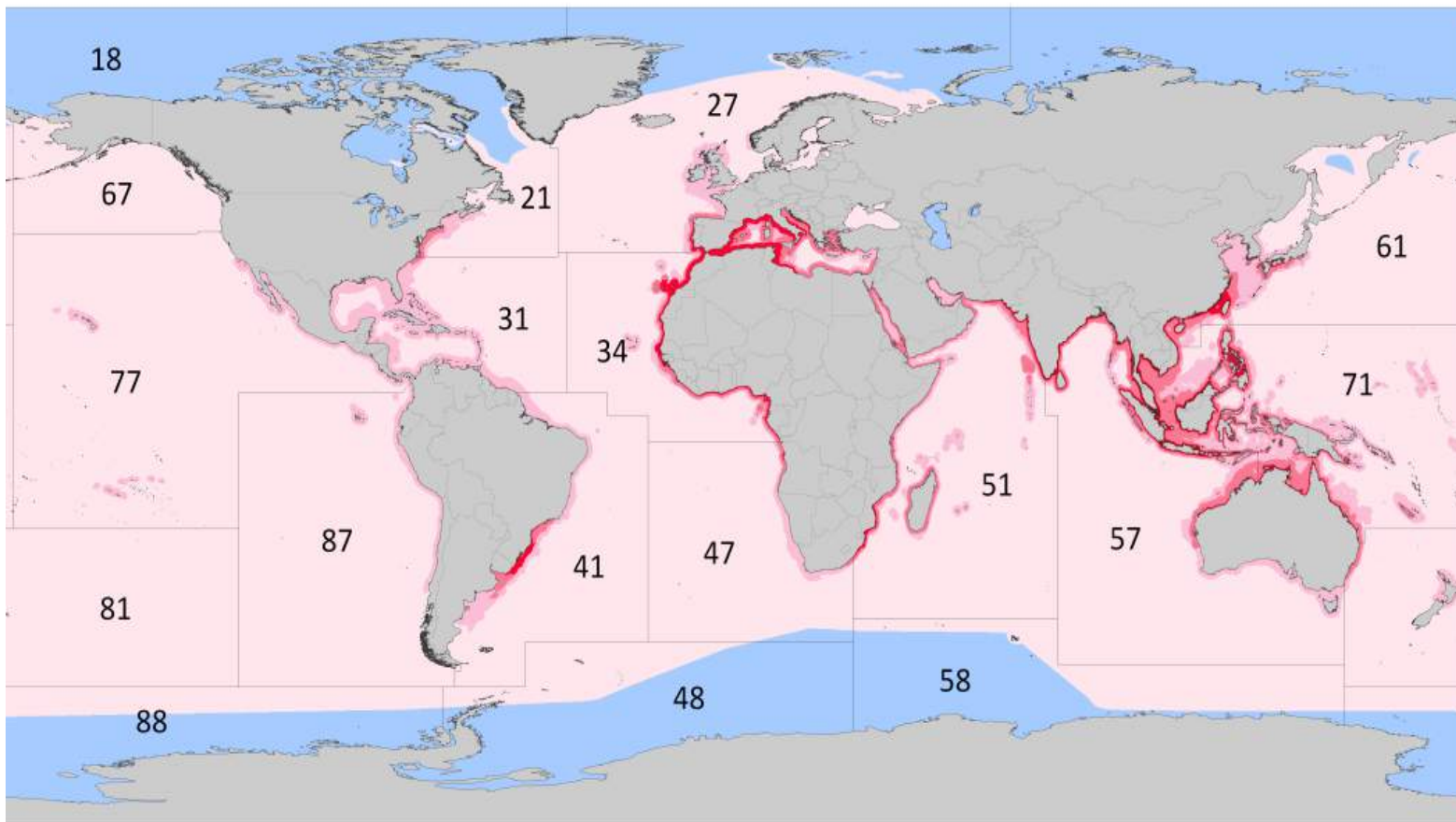
NT 12.7%

LC 23.3%

DD 46.8%



Distribution of Threatened species



Total no. of elasmobranch sp (per 10km grid)

34 - 41

26 - 33

18 - 25

10 - 17

1 - 9

Most threatened species?

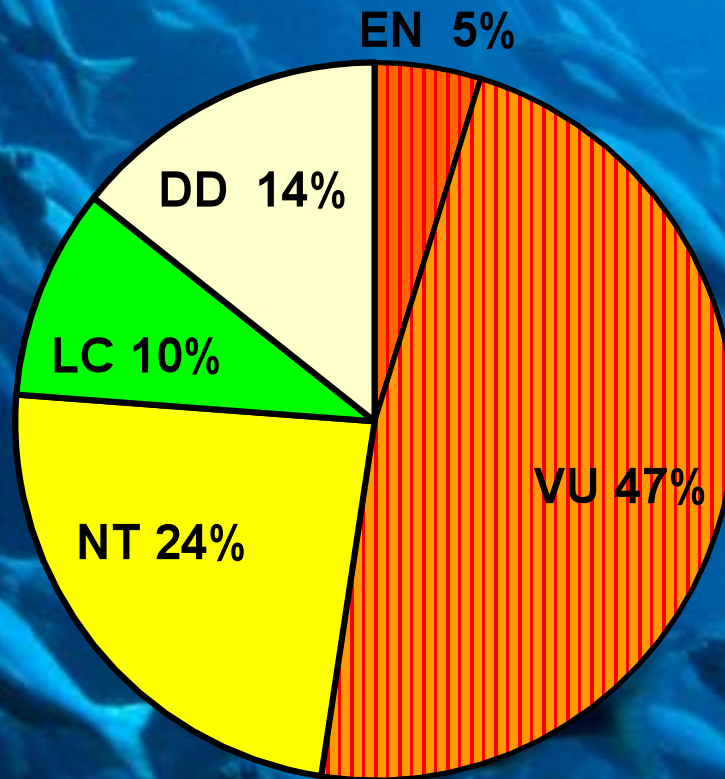
- Threat to sharks matched only by amphibians and reef-forming corals; substantially greater than for all other vertebrates (incl marine fishes) assessed
- Large-bodied coastal species (sawfishes, angel sharks, largest skates, porbeagle)
- Deepwater benthic species targeted or taken as bycatch throughout their range
- **Large oceanic pelagic sharks**

Pelagic sharks

Red List Results (2007)

58% of species are Threatened

CR	0%
EN	5%
VU	47%
NT	24%
LC	10%
DD	14%



...by unregulated target & bycatch fisheries



Sharks differ from other marine megafauna

(turtles, seabirds, marine mammals)

- Far more likely to be a *wanted* bycatch (secondary catch);
- Increasingly targeted (as markets / availability / other species' quotas change);
- Therefore, less interest in reducing / mitigating / avoiding capture; and
- Lower public interest in and support for addressing “bycatch” issues (for less cuddly species), hence lower political will.

Forget “shark bycatch”

- **Not useful for this complicated situation;**
- **Mortality is caused by target fisheries, utilised ‘bycatch’, discarded ‘bycatch’, accidental capture of prohibited species...**
- **The definitions are a distraction: the issue is unsustainable mortality caused by any and all fisheries operations, in or out of the water, whether targeted or not.**
- **Total mortality must be sustainable, and enable recovery of depleted stocks and threatened species.**

Challenges to assessing mortality

- **Species-specific landings data are poor in many fisheries, atrocious for discards;**
- **Estimates of shark “bycatch” range from 30% to 50% of global reported catches:**
 - Spanish surface longline swordfish fishery: 70% of landings = sharks
 - US Atlantic pelagic longline fishery: 25% of catch = sharks
 - Tuna purse seines? (dependent upon type of sets and, if used, type of FAD)
 - Trawls and bottom longlines?, Gill net fisheries?
- **Discard mortality estimates range from 0 to 100% in different fisheries**

Policy framework

- **National fisheries and wildlife legislation**
- **UN FAO IPOA–Sharks**
- **Regional Fisheries Management Organizations**
- **Convention on International Trade in Endangered Species (CITES)**
- **Convention on the Conservation of Migratory Species and CMS Shark MOU**
- **Regional Seas/Biodiversity Conventions (e.g. Barcelona Convention/GFCM)**

Implementing policy for sharks

Early 1990s : Australia & US shark management plans

1994 : CITES Resolution on Sharks

1995 : UN Fish Stocks Agreement

1999 : International Plan of Action for Sharks

2002–2007 : CITES listings, non-commercial spp

1999–2008 : CMS listings

2004–2013 : RFMO finning bans, limits

2010 : CMS Migratory Shark MoU

2012 : CMS Migratory Shark Conservation Plans

2013 : CITES listed commercially valuable species

Species regulations

Species	CITES	CMS	ICCAT	IATTC	IOTC	WCPFC	GFCM / BarCon Annex II
Oceanic whitetip shark	App II	-	Ban on retention, transshipment, landing, storage & sale	Ban on retention, transshipment, landing, storage & sale	Ban on retention, transshipment, landing & storage	Ban on retention, transshipment, landing & storage; designated as "key species"	-
Hammerheads (3 big species)	App II	-	Prohibition with exceptions for developing countries	Proposed by EU, rejected	Proposed by EU, rejected	Designated as "key species"	Ban on retention, transshipment, landing, storage, sale
Porbeagle	App II	App II + MoU	Reduce fishing mortality, no implementation	-	-	Designated as "key species"	Ban on retention, transshipment, landing, storage, sale

Species regulations

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Mantas (2 species)	App II (giant & reef)	App I & II (giant manta)	-	Bycatch reduction techniques being studied	-	-	-
Whale shark	App II	App II + MoU	-	Measures to reduce/avoid mortality in FAD tuna fisheries	Ban on setting purse seines on them + safe release measures	Ban on setting purse seines on them + safe release measures; "key species"	-
Basking shark	App II	App I & II + MoU	-	-	-	-	Ban on retention, transshipment, landing, storage,