



Table: IUCN Red List Assessment Results

Extinction Risk & Conservation of the World's Sharks & Rays

Analysis from the IUCN Shark Specialist Group, January 2014

Species Group	No. of Species Assessed under Red List™ Criteria	No. of Species Classified as Threatened*	Critically Endangered	Endangered	Vulnerable	Near Threatened	Least Concern	Data Deficient
RAYS	539	107	14	28	65	62	114	256
SHARKS	465	74	11	15	48	67	115	209
CHIMAERAS	37	0	0	0	0	3	12	22
Total Assessed	1,041	181	25	43	113	132	241	487

* Threatened IUCN Red List™ Categories = *Critically Endangered™, Endangered & Vulnerable.*

By applying the findings for data sufficient species to those deemed *Data Deficient*, the experts estimate that:

- **One-quarter of all shark, ray, and chimaera species are actually Threatened (249 species, 24% of 1,041).**



Fast Facts

Extinction Risk & Conservation of the World's Sharks & Rays

Analysis from the IUCN Shark Specialist Group, January 2014

OVERVIEW: The IUCN Shark Specialist Group (SSG) has evaluated the status of more than 1000 species of shark, ray, and chimaera species. The SSG estimates that **ONE QUARTER** of these species (collectively known as 'cartilaginous fishes') are **threatened** under the IUCN Red List of Threatened Species™ criteria, mainly due to overfishing.

The threatened IUCN Red List categories are: Critically Endangered, Endangered & Vulnerable.

KEY FINDINGS:

- The SSG has classified **107 ray species** and **74 shark species** as threatened.
- The sharks & rays at highest risk for extinction are **large-bodied** species that live in **shallow** (heavily fished) coastal waters and/or **freshwater**.
- **Rays** make up 5 out of the 7 of the **most threatened families** of cartilaginous fishes.
- **Hotspots** for shark & ray depletion include the Indo-Pacific, the Red Sea & the Mediterranean.
- There are only 37 **chimaera** species (known as ghost sharks, ratfish, spook fish & elephant fish), none of which are categorized as Threatened.
- Chimaeras and other relatively **deepwater species**, such as lantern sharks, are the least threatened of the cartilaginous fishes, largely because they are less accessible to fishing gear, at least for now.
- Cartilaginous fishes are inherently **susceptible to overfishing** because they typically grow slowly and produce few young, yet most fisheries are **unregulated** & catches are grossly **under-reported**.

AMAZING FACTS:

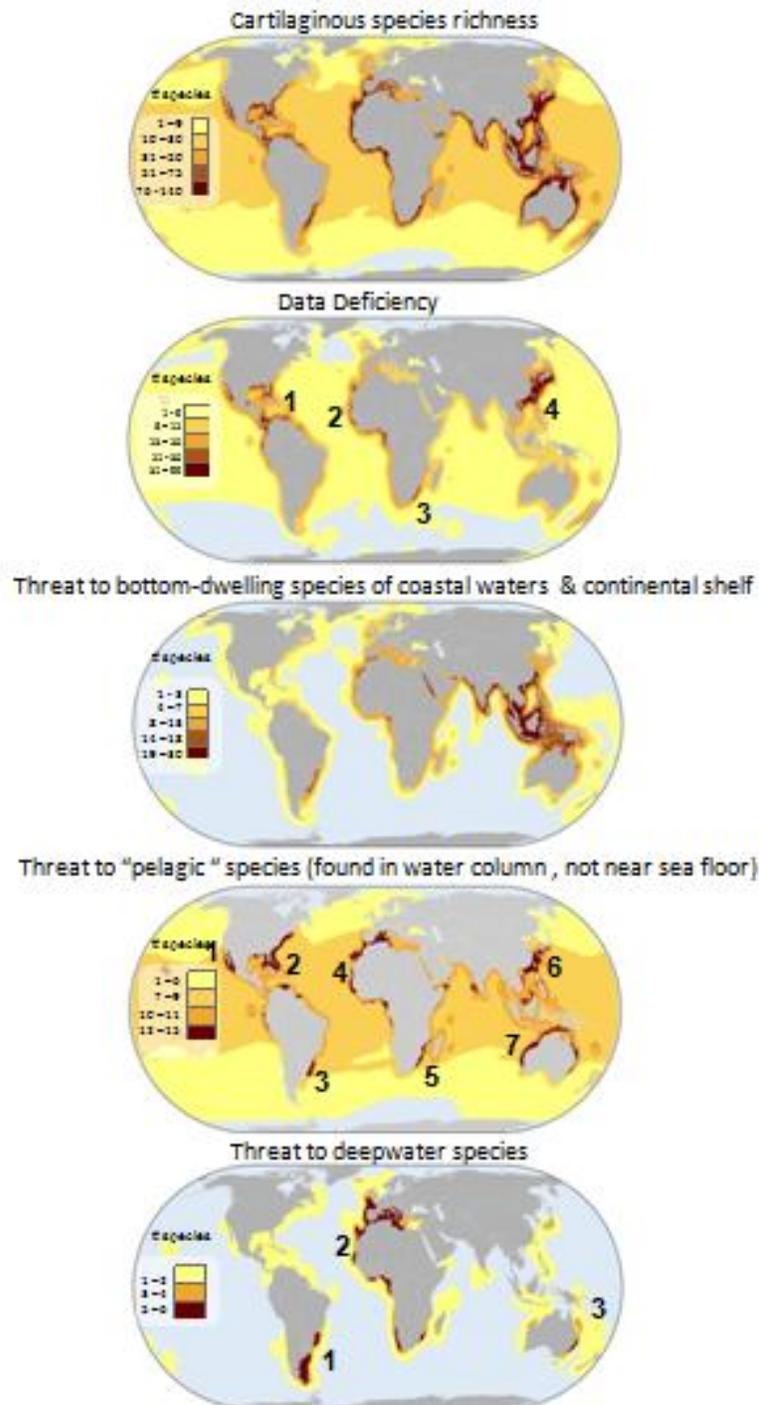
- At least 33 species of sharks & rays spend their entire lives in freshwater.
- Landings of sharks, rays, and chimaeras were worth US\$1 billion at their peak in 2003.
- Shark fins are among the world's most economically valuable seafood commodities.
- The most prized fins (for shark fin soup) come from shark-like rays (sawfish, wedgefish & guitarfish).
- Researchers discover a new species of shark or ray about every three weeks.
- "Common" skate, "common" guitarfish, and "common" thresher sharks are now listed as threatened.
- At least 28 populations of sharks & rays have already gone locally or regionally extinct.
- One quarter of threatened shark & ray species have ranges that include at least 18 countries.

Citation: Dulvy et al. (2014). "Extinction Risk and Conservation of the World's Sharks and Rays." eLife.

Extinction Risk & Conservation of the World's Sharks & Rays

Analysis from the IUCN Shark Specialist Group, January 2014

Global status of sharks, rays & chimaeras (cartilaginous fishes): species richness, data gaps & number of Threatened species by various habitats.





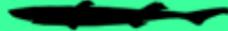
Extinction Risk & Conservation of the World's Sharks & Rays

Analysis from the IUCN Shark Specialist Group, January 2014

Most & Least Threatened Families of Sharks, Rays & Chimaeras (Cartilaginous Fishes)

Most Threatened families

1. Sawfishes (Pristidae) 
2. Angel sharks (Squatinae) 
3. Wedgefishes (Rhynchobatidae) 
4. Sleeper rays (Narkidae) 
5. Whiptail stingrays (Dasyatidae) 
6. Guitarfishes (Rhinobatidae) 
7. Thresher sharks (Alopiidae) 

8. Lanternsharks (Etmopteridae) 
9. Catsharks (Scyliorhinidae) 
10. Softnose skates (Arhynchobatidae) 
11. Softnose chimaeras (Chimaeridae) 
12. Kitefin sharks (Dalatiidae) 

Least Threatened families



Fast Facts

Extinction Risk & Conservation of the World's Sharks & Rays

Analysis from the IUCN Shark Specialist Group, January 2014

Experts from the IUCN Shark Specialist Group (SSG) have examined the status of 1041 species of shark, ray, and chimaera species. They note that these species, collectively known as 'cartilaginous fish':

- make up one of the earth's oldest and most ecologically diverse groups of animals on earth;
- are at substantially higher risk for extinction than most other groups of vertebrates; and
- have the lowest percentage of species considered safe, compared to all other vertebrates.

Global IUCN Red List of Threatened Species™ Statistics:

Based on species status assessments by 300+ experts using the IUCN Red List criteria, the SSG classified:

- 181 shark & ray species (17.4% of all species assessed) as **threatened with extinction** (that is, categorized as *Critically Endangered*, *Endangered* or *Vulnerable* on the IUCN Red List)
 - 25 species (2.4% of the total assessed) as *Critically Endangered*
 - 43 species (4.1% of the total assessed) as *Endangered*
 - 113 species (10.9% of the total assessed) as *Vulnerable*
- 132 species (12.7% of the total assessed) as *Near Threatened*
- Only 241 species (23.2% of the total assessed) as *Least Concern*
- Nearly half (46.8% or 487 species of the total assessed) as *Data Deficient*.

Of the species classified as **Threatened**, **107 are rays**, **74 are sharks**; (No chimaeras are Threatened).

By applying the findings for data sufficient species to those deemed *Data Deficient*, the experts estimate that:

- **One-quarter of all shark, ray, and chimaera species are actually threatened (249 species, 24%).**

Key Threats

The greatest threat to sharks, rays, and chimaeras is **overexploitation**, through targeted fisheries as well as incidental catches. Another major threat for many of these species is **habitat loss** and/or degradation.

Species of Particular Concern

- Large-bodied rays & sharks living in relatively shallow water that is accessible to fisheries, such as:
 - **Angel sharks** (flattened sharks with considerable commercial value found around the world)
 - **Common skate** (found in heavily fished NE Atlantic, one of at least 28 populations to go locally extinct)
- Rays & sharks that spend all or part of their lives in freshwater, where combined effects of overfishing and habitat loss are most severe and may be exacerbated by climate change, such as:
 - **River sharks** (found in SE Asia & Australia, 3 of 4 species in Genus *Glyphis* are *Critically Endangered*)
 - **Freshwater stingrays** (restricted to S. American rivers: persecuted & taken for ornamental fish trade)
- **Thresher sharks** (all 3 species of these long-tailed oceanic sharks are threatened – classified as *Vulnerable*).

Rays make up 5 out of the 7 of the most threatened Families of cartilaginous fishes (*based on assessed species*):

- **Sawfishes** (among the world's most threatened fish, owing largely to complications from long, toothed snouts)
- **Wedgefishes** (all 6 species of these mostly Indo-Pacific rays are threatened due to demand for meat & fins)
- **Guitarfishes** (15 of the 28 species are threatened, similar to wedgefishes, due to meat & fin demand, etc)
- **Sleeper rays** (electric rays of Indo-West Pacific marine habitats; many have extremely restricted ranges)
- **Whiptail stingrays** (found globally in temperate & tropical coastal waters; some species enter freshwater).

Hotspots of Shark & Ray Biodiversity Loss

- The Indo-Pacific Biodiversity Triangle, particularly the Gulf of Thailand (48 threatened species/0.36 million km²);
- The Red Sea (where 29 shark & ray species are threatened); and
- The Mediterranean Sea (a 'climate cul-de-sac' where roughly 40% of cartilaginous fish species are threatened).

Protections Lacking

- Cartilaginous fish are particularly vulnerable to overfishing because they typically grow slowly and produce few young.
- Many species are increasingly targeted due to new markets for meat & gills, and high demand for *shark fin soup*.
- Finning is banned in roughly 70 countries & by regional fishery bodies, but most enforcement standards are lenient.
- Regional fishery bodies & wildlife treaties offer international safeguards for a small fraction of shark & ray species.
- Most countries still do not accurately monitor and/or limit shark, ray, and/or chimaera catches.
- Rays are generally subject to as much (if not more) fishing than sharks under fewer, less stringent protections.
- Chimaeras have fewer limits than do sharks or rays, but there are fewer species which are not as heavily fished.

Recommendations

The IUCN SSG report calls on governments to, *inter alia*:

- promptly & accurately report species-specific cartilaginous fish catches to proper authorities
- implement all existing scientific advice regarding cartilaginous fish & their habitats
- develop/implement national & regional plans of action pursuant to the International Plan of Action for Sharks
- set cartilaginous fish catch limits based on scientific advice and the precautionary approach
- fully protect shark & ray species at high risk such as those deemed *Critically Endangered* & *Endangered*
- improve monitoring & enforcement in fisheries taking cartilaginous fishes (including by ending at-sea fin removal)
- regularly assess the health of cartilaginous fish populations & effects of new factors
- promote research toward minimizing incidental catch & discard mortality
- employ the tools associated with wildlife treaties to complement fisheries management, and
- facilitate cooperation among countries to conserve shared populations.

Citation: Dulvy et al. (2014). "Extinction Risk and Conservation of the World's Sharks and Rays." *eLife*.