

# Elasmobranchs

## Ecological Knowledge and Importance

- Elasmobranchs refer to cartilaginous fishes that comprise the sharks, rays, skates, and chimaeras (Class Chondrichthyes).
- Elasmobranchs are mid-level or top predators, and play a key role in trophic food webs. Their depletion can have cascading consequences and destabilize entire marine ecosystems.
- Elasmobranchs mature slowly and have few offspring, which makes them particularly sensitive to overexploitation and slow to recover.

## Threats

- The principal threat to elasmobranchs is overfishing. They are primarily caught by bottom trawls, longlines and gillnet fishing gears.
- Elasmobranchs are subject to both targeted and unintentional capture. It is often difficult to assign catches to target or incidental capture because of poor reporting and differing definitions.
- Elasmobranchs are frequently retained for food and animal feed. Other uses include their liver oil (for medicine and fuel), skins (for clothing and accessories), gills (as a tonic) and fins (for soup).<sup>1</sup>

## Status and Trends

- Elasmobranchs are at a critical point in their 420-million-year history, with 37.5% of these species threatened with extinction.<sup>2</sup> A recent study found that populations of key oceanic shark species had declined by 71% on average since 1970.<sup>3</sup>
- Catches and landings are poorly monitored. Less than 30% of the global catch is reported at a species level, and actual landings may be 2-4 times higher than reported.<sup>4</sup>
- The global reported catch of sharks and rays peaked in 2003, and declined by 20% in the subsequent decade. However, this reduction is likely due more to population decline than improved management.<sup>5</sup>
- Sustainably managed shark populations may account for as little as 4% of global landings.<sup>6</sup>



Figure 1: Blue shark (*Prionace glauca*) being hauled by a longline vessel in the middle of the Atlantic Ocean. Credit Greenpeace (2019)

## Management Landscape

- The vast majority of the 1,199 known shark and ray species do not have any catch or mortality limits,<sup>7</sup> and scientific stock assessments are primarily found within national boundaries, though 30 stock assessments have been conducted for oceanic species and a total of ~60 when including species in the coastal ocean.
- The International Plan of Action for Conservation and Management of Shark (IPOA-Sharks) was developed by the FAO in 1998. To date 31 States have developed a National Plan of Action for sharks and there are 6 regional plans, although these plans are not legally binding and vary in quality.<sup>8</sup>
- All tuna-RFMOs have Conservation Management Measures (CMMs) requiring use of shark mitigation measures, and these are primarily focused on gear modifications or retention policies.
- Some RFMOs restrict the retention of certain elasmobranch species, and many have prohibited shark finning. Yet verifying compliance remains complicated as gears such as longlines have <5% observer coverage requirements.
- Inconsistent and poor reporting by shark fishing nations leads to high uncertainty about the magnitude of shark bycatch, landings and trade.
- Understanding the legality of shark and ray fisheries is challenging. Many obligations under international treaties, such as the Convention of Migratory Species, have yet to be fully implemented by member nations.

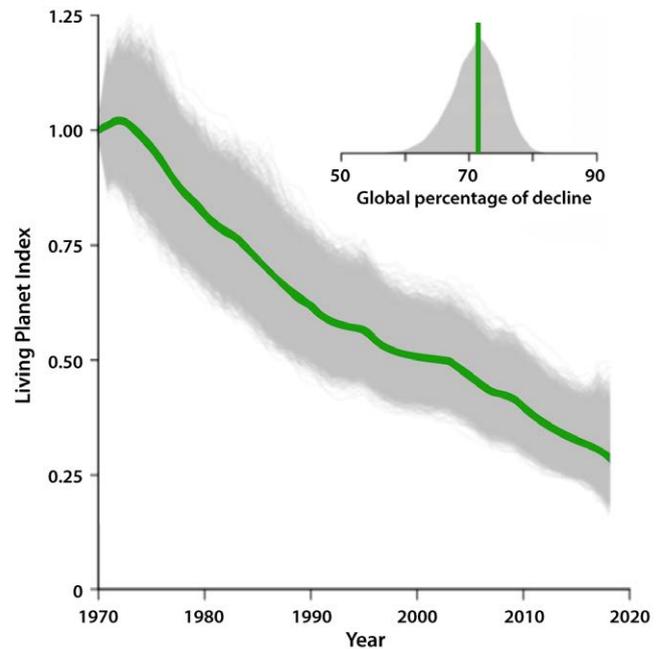


Figure 2: The global percentage of decline for oceanic sharks estimated from 1970-2018. The green line denotes the mean, the white lines the 95% credible intervals and the grey lines each iteration. Adapted from Pacoureau et al., (2021)<sup>3</sup>

## References

1. Dent and Clarke. "State of the global market for shark products." FAO Fisheries and Aquaculture (2015).
2. The IUCN has three classifications for threatened species: Critically Endangered (CR); Endangered (EN) and Vulnerable (VU), while many others remain Data Deficient (DD)
3. Pacoureau et al "Half a century of global decline in oceanic sharks and rays." *Nature* (2021).
4. Clarke et al. "Global estimates of shark catches using trade records from commercial markets." *Ecology Letters* (2006).
5. Davidson et al. "Why have global shark and ray landings declined: improved management or overfishing?" *Fish and Fisheries* (2016).
6. Simpfendorfer and Dulvy. "Bright spots of sustainable shark fishing." *Current Biology* (2017).
7. Dulvy et al "Overfishing drives over one third of all sharks and rays toward a global extinction crisis." *Current Biology* (2021).
8. Fischer et al. "Review of the Implementation of the International Plan of Action for the Conservation and Management of Sharks." FAO Fisheries and Aquaculture Circular (2012).

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