The dramatic decline of West Africa Sawfish populations - *Pristis pristis* and *P. pectinata*
A case of depleted fish stocks

**Introduction**

Sawfishes belong to a family of rays (*Pristidae*) characterized by a long, narrow, flattened rostrum, or nose extension, lined with sharp transverse teeth, arranged in a way that resembles a saw (Figure 1). The Sawfish's most prominent feature is its rostrum, also referred to as snout or saw, which has 14 to 23 large rostral teeth protruding from it, and comprises almost a quarter of the total length of the sawfish ([https://aqua.org/explore/animals/largetooth-sawfish](https://aqua.org/explore/animals/largetooth-sawfish)).
They are massive, and mainly inhabit the shallow, coastal waters of tropical and sub-tropical regions. Two species of sawfishes, *Pristis pristis* (Figure 2a) and *P. pectinata* (Figure 2b), were formerly common along the east Atlantic, including much of the West African coast. The large tooth sawfish (*Pristis pristis*) is one of the two most common species occurring in the Atlantic Ocean. It is found in tropical and subtropical waters in both the western and eastern Atlantic, with northern and southern range extremes largely dictated by seasonal water temperature regimes (Fernandez-carvalho et al., 2013).

Figure 2a: Large tooth sawfish (*Pristis pristis*)

Figure 2b: Small sawfish (*P. pectinata*)

**Distribution and habitat**

The large tooth sawfish (*P. pristis*) and its close relative the small tooth sawfish (*P. pectinata*) are the only two sawfish species to be found in the western Atlantic Ocean. Both species formerly occurs over a large expanse of habitats, between the tropical and sub-tropical marine environments. They also occur in estuarine and contiguous freshwater habitats in the eastern Atlantic Ocean from the Caribbean to Central, South American and Africa (Figure 3).

Sawfishes are primarily marine, euryhaline, or brackish water species. The species prefer shallow, muddy, brackish water, spending most of their time on or near the seabed but occasionally come up the surface. Juveniles are common in very shallow waters, and adults can be found at depths of 40 m or more.

Figure 3: Worldwide distribution of *Pristis* spp. (Source: https://www.floridamuseum.ufl.edu/fish/discover/species-profiles)

**Economic and Socio-cultural importance**

Except for some ethnic groups the consumption of sawfish flesh has not been a common practice in West Africa and hitherto thus was no targeted fisheries for these species. However when landed, mainly from incidental catches, the flesh was salted and dried or smoked, to be exported to other African countries. Presently, with the growing population increase and fishing pressures on teleost fish species in West Africa, the shark meat can now be found in local restaurants. The migrant fishermen within the region intensified the trade in shark fins and by extension in sawfish fins along the West Africa coast. With the expanding market for “shark fin” in Asia, sawfishes became highly desired, as their large fins are highly traded, used mainly to
prepare soups and also for medical practices. The fins of sawfish are used to produce shark fin soup and sawfish fins are highly favored in Asian markets (NMFS 2009). Because of their large fins with high fin needle content, fins of species in the family Pristidae are highly valued for shark fin soup (CITES 2007).

There is socio-cultural importance attached to these species in West Africa (Figure 4a). In the past, the Republic of Guinea, the rostrums of sawfishes were displayed in the living places of houses to demonstrate to visitors the courage of their owners. The more saws were on display, the braver is their owner. In Gambia, rostrums are hung up on hut roofs to protect family compounds against catastrophe and notably against fire. They were also set in cattle pens, attached to a central stake, to protect the livestock. In Casamance (southern Senegal), sawfishes are totemic animals symbolizing strength for the Diola peoples. The rostrum has been used as a powerful weapon; it has the magical power to protect homes or cattle, and was also used for medical treatments. The Central Bank of the West African States (BCEAO) had chosen a stylized sawfish as the symbol of the common currency the CFA Franc, because its mythological value of prosperity and fecundity in West Africa (Figure 4b).

The West Africa Sawfish populations
The disappearance of Sawfishes in West Africa has been dramatic. As a result, their extent of distribution has narrowed to very limited and remote areas within the three last decades. Various theories have been postulated as to their dramatic decline. The most plausible reasons have been attributed to the unregulated fisheries, and the degradation and destruction of their habitats. Sawfishes are very vulnerable because of their large size and their littoral habitats; they also penetrate far upstream into rivers where they are easily caught. Once common in the rivers in Senegal and Gambia, they are no longer reported from these rivers, areas where human populations have greatly increased in the last decades. The decline of sawfish populations has also been observed in other regions of their worldwide distribution (Compagno and Cook, 1995; Zorzi, 1995; Adams and Wilson, 1996; Adams, 2005).

Threats to sawfish populations
Sawfishes have been decimated particularly on the West coast of Africa due to combination of factors including high fishing pressure, incidental catches, and trade in body parts such as saws, fins, and teeth. As the years progress, with huge demand for their fins in Asia and population pressures in West Africa (following declining teleost fish populations), fishermen started targeting sawfishes for fins and their meat.

Sawfishes need ample, healthy coastal, estuarine, and freshwater habitats, particularly mangroves. The species have been disappearing rapidly since 1980. Their distinctive toothed rostrum help sawfish feed, but have been central to their downfall as they are easily entangled in all kinds of fishing nets (Figure 5a and b).
Sawfishes are presently listed as Critically Endangered by IUCN (2007). Their populations have faced depletion due to mainly degradation of their habitat. However, sawfishes form part of the socio-rich cultural traditions among the peoples of West Africa.

Thus for the few places where the species are still known to probably exits, e.g. the archipelagos of Guinea Bissau, it is critically important to implement actions that would determine the status of abundance and occurrence of the species and undertake biological studies for generation of necessary data towards the establishment of management and restoration plans.

**Exploitation and conservation**

Sawfishes currently are among the most threatened elasmobranchs in the world. Only two species inhabit Atlantic waters: the large tooth sawfish (*Pristis pristis*) and the small tooth sawfish (*Pristis pectinata*), both having suffered dramatic declines in their ranges, even in locations they were formally abundant (West Africa, USA, Northern South America). Fisheries, human population increase along rivers and habitat degradation have been described as the causes of the drastic disappearance of sawfishes in the region within the last three decades (Ballouard et al., 2006; Robillard and Séret, 2006). Recent reviews state that one of the last remaining areas of high abundance of small tooth sawfish is in the Bissagos Archipelago in Guinea Bissau (Fernandez-carvalho et al., 2013).

In West Africa, shark fishing increased significantly in the past several decades and ‘the intensive exploitation of sharks over the past thirty years has completely decimated the most vulnerable populations…’ (Diop and Dossa 2011) and most of the species are listed as critically endangered (Morey, G et al., 2007). The disappearance of sawfish in the region was thought to have begun in the 1970s when new fishers entered the region and new fishing gear was developed (Diop and Dossa 2011). Threats continue in the region and given that many areas still have artisanal gillnet fisheries with little or no regulation, it is likely the shark population will continue to decline.

While international trade in sawfishes is banned under the species’ listing on Appendix I of the Convention on International Trade of Endangered Species (CITES), illegal international trade may still exist due to the high value of their products.

**Recommendations**

The policy framework and reform strategy for fisheries and aquaculture in Africa underscores the conservation and sustainable use of fish resources as a major policy objective. The implementations of the strategic actions within the policy arena should contribute immensely to the conservation and recovery of these near extinct species.

The sawfish populations in West Africa are now near distinctions and like other subpopulations of these populations elsewhere in tropical and subtropical environments, the remaining decimated populations need to be protection and implementation of stock recovery management programmes. The existing ban in trade of these species critically endangered species by CITES need to be enforced wherever they may be occurring now on the continent.

The need to enforce IUCN regulations for stock building a suite of recommendations is made towards the conservations and recovery of these decimated populations within our continent:

1. Awareness raising, and regulations put in place to protect all sawfishes and promote population recovery
2. Use public outreach and education to reconstruct the former and current distribution and abundance of sawfishes
3. Although protected, the lack of enforcement or specific fisheries regulations, and ongoing gillnet and trawl fisheries, means that the threats are ongoing. Thus bycatch regulations need to be enforced for stock recovery and avoiding further depletion. The need to rigorously reinforce enforce IUCN regulations for stock building should be giving priority in national fisheries management policy
4. The national fisheries regulations should incorporate regulations pertaining to management of sawfish populations. Consistent with the FAO International plan of action for conservation of sharks and, member states should develop national plans of actions for protection and recovery of these species.

5. Conduct surveys to establish current distribution, occurrence and population structure

6. Conduct study on the reproductive biology and population ecology of these species for implementation rationale management measures in areas they still existing, the Guinea Bissau

Bibliography


10. Mika, D. and Dossa, J. 2011. 30 Years of Shark Fishing in West Africa: development of fisheries, catch trends, and their conservation status in Sub-Regional Fishing Commission member countries.

11. NOAA’s National Marine Fisheries Service’s (NMFS), 2009.
