PROTECTING THE GUARDIANS OF OUR SEAS

Recommendations for a national plan of action for Liberia's sharks and rays

It is vital Liberia commits to developing and implementing a national plan of action to conserve and manage sharks and rays in its waters. Undertaking this bold commitment to act now, will highlight not only strong national governance and support for coastal communities, but also confirm Liberia as an emerging leader for marine conservation in the region and in the eyes of the world.

GLOSSARY

Demersal fishery	A fishery that targets species in the demersal zone – the water column closest to (and significantly affected by) the seabed.
Pelagic fishery	A fishery that targets species in the open ocean, neither near shore nor near the seabed.
Artisanal fishing	Traditional or subsistence fishing.

CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
IEZ	Inshore exclusion zone
IPOA	International plan of action
IUU	Illegal, unreported and unregulated
NaFAA	National Fisheries and Aquaculture Authority
NPOA	National plan of action

Executive Summary

- Sharks and rays play crucial roles in the health of the coastal ecosystems that provide food and livelihoods to fishing communities around the world.[1/2] In Liberia, over 33,000 people are directly dependent on the traditional, small-scale artisanal fishing sector that is supported by shark and ray fisheries.[3]

- Because sharks and rays are slow to mature, reach breeding age late, and have low numbers of offspring, they are particularly vulnerable to over-fishing. This has led to dramatic declines in shark and ray populations around the world.[4/5] An estimated 25% of all shark and ray species are threatened with extinction according to the International Union for Conservation of Nature (IUCN), primarily because of over-fishing.[6] Declines in several species of sharks and rays have been witnessed in Liberia and the wider West Africa region, which has a long history of shark and ray fishing.[7/8]

- Environmental Justice Foundation's (EJF) monitoring of the shark and ray fishery at West Point, Monrovia, between 2013 and 2016, recorded 19 species, all of which are found on the IUCN Red List of Threatened Species. The harvest included endangered and critically endangered species such as the Giant Devil Ray and the Great Hammerhead Shark respectively.

- In Liberia, both traditional small-scale fishing and industrial trawlers represent a potential threat to sharks and rays, exacerbated by illegal practices by both fleets.

- Managing shark and ray populations sustainably requires data on populations; landings; fishing pressure; overall trends in populations and other critical factors such as illegal, unregulated and unreported (IUU) fishing. Currently, Liberia's shark and ray fisheries are largely unmonitored and more scientific data to guide conservation and fisheries management is urgently needed.

- Liberia has no domestic legislation to regulate shark and ray fisheries.

- There is a compelling rationale for Liberia to address the conservation and management of its shark and ray fisheries through a national plan of action (NPOA). A well-implemented, effective NPOA for sharks and rays would mark Liberia out as a progressive leader in the region.

The Government of Liberia should implement a national plan of action for the conservation and management of sharks and rays within a three-year timeframe, under which relevant government agencies should:

- Collect baseline data on shark and ray populations. This data collection should focus on 12 priority species that are of primary conservation concern (see Annex 2 for full list). It should also pay special attention to demersal shark catches, and pelagic shark catches from Buchanan and Marshall, where data is especially lacking.

- Develop a national database to store data from artisanal and industrial shark and ray catches, along with documented cases of illegal, unreported and unregulated fishing.

- Analyse the trade in shark and ray products with a particular focus on the international trade in shark fins.

- Consult and work with fishing communities to create well-designed, easily delivered measures to protect sharks and rays that also benefit local people.

- Foster strong collaboration between the state agencies relevant to shark and ray conservation in Liberia, including NaFAA, the Forest Development Authority, Environmental Protection Agency and the Department of Customs.

- Promote collaboration with neighbouring states to ensure that sustainable management of sharks is coherent and effective across the region.

- Undertake a holistic approach to fisheries management and ensure that IUU fishing is reduced through effective monitoring, control and surveillance and extensive community engagement to promote co-management, community support and participation.

- Ensure effective monitoring and enforcement of the NPOA is undertaken to ensure its successful implementation and impact, and revise actions accordingly.

- Ensure future fisheries partnership agreements with third-countries take into account the goals of the NPOA and support its implementation.

Loss of sharks is a loss for people

Sharks, rays, skates and chimaeras – hereafter referred to as 'sharks and rays' – make up one of the oldest groups of animals on the planet, the Chondrichthyes, which have existed for at least 400 million years.[9]

These species play a crucial role in marine ecosystems.[10] For instance, there is evidence that sharks play an important part in the health of coral reefs, which in turn support the fisheries that provide livelihoods to coastal communities around the world.[11] Removing sharks may also degrade seagrass beds – which provide nurseries for young fish – because they prevent herbivores like sea turtles from over-grazing.[12] As apex predators, sharks also prey on other marine animals further down the food web, helping to maintain species diversity and acting as an indicator for ecosystem health.[13] Shark losses have been directly linked to catastrophic effects in marine ecosystems, such as the collapse of an entire scallop fishery in the USA.[14]

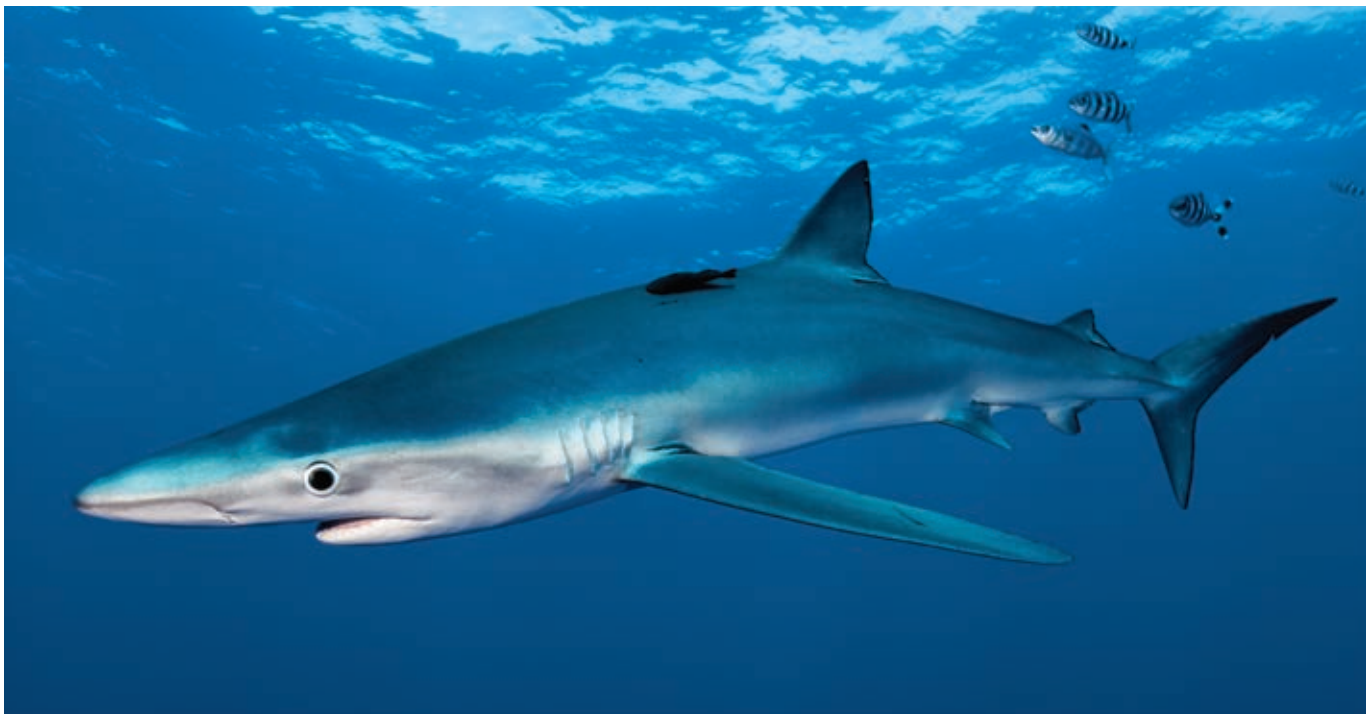
Sharks are apex predators and help keep ocean systems balanced. © Charo Gertrudix / www.uf-photo.com

Such degradation of habitats vital to coastal fish populations, along with the loss of sharks as a source of food, can have devastating effects on some of the world's poorest people. Worldwide, 90% of the 120 million people employed in fisheries come from the small-scale fishery sector, and almost all of these people (97%) live in developing countries.[15/16] These small-scale fisheries play vital roles in the local and national economies of the developing world, and are important for food security, with 90 - 95% of these landings locally consumed.[17/18]

It is clear that sharks are an extremely valuable part of fisheries in the developing world, and that urgent measures are needed to better ensure their conservation and management.

The number of sharks and rays killed annually has been estimated at 100 million individuals, encompassing both artisanal and industrial fisheries, and targeted fishing along with accidental by-catch.[19/20]

This over-fishing, driven by demand for fins, meat, liver, leather and gills has led to severe declines in populations.[21] In fact, it is estimated that 25% of all sharks and rays are threatened with extinction, with the largest species under the greatest threat.[22/23] The international shark fin trade in particular has played a significant part in these global declines.[24]



Current data suggests the Blue Shark is the most heavily fished shark worldwide.[25] © Felipe Barrio / www.uf-photo.com

In West Africa, the widespread reduction in sharks and rays is evident. In the coastal waters from Mauritania to Sierra Leone, exploitation has driven several species extinct or left them significantly threatened.[26] Sawfish, for instance, have become locally extinct in Mauritania, Senegal, Gambia and Guinea, remaining only in very low numbers in Sierra Leone and the Bijagos Islands of Guinea Bissau.[27] The Great Hammerhead is critically endangered in the eastern Atlantic, with landings in West Africa estimated to have dropped by 80% between 1982-2007.[28]

Small-scale, artisanal fisheries have undoubtedly played a role in these declines, but understanding their true impact is hampered by a lack of accurate catch data and information on fishing effort.[29/30/31] The Eastern Central Atlantic Ocean has been listed as a conservation priority because so little is known about its shark and ray species.[32] To add to the uncertainty, the pressures exerted by small-scale fishing are also mobile, and migrant shark-fishing communities, mainly of Ghanaian origin, are moving further south towards Sierra Leone and Liberia in response to depletion of shark populations in waters around Mauritania, Senegal and Gambia.[33]

Governments in the region typically lack the funds or institutional capacity to regulate shark fisheries, in a time when illegal fishing and pressures on fish stocks have been increasing. West Africa suffers from some of the highest levels of illegal, unreported and unregulated (IUU) fishing in the world and this has accelerated biodiversity loss, damaged important habitats and deepened poverty. [34/35] It also has implications for shark fisheries in the region. The discovery of more than 70 bags of shark carcasses on a Chinese vessel in Sierra Leone in April 2017 highlights how IUU fishing can decimate shark stocks.[36]

One group that may be especially at risk of decline is devil rays. These species are particularly susceptible to over-exploitation as they produce only a single pup every two to three years, making them some of the least biologically productive rays.[37] Despite the vulnerability of these animals, very little is known about their populations.[38]

In general, all sharks and rays have low rates of reproduction and high catch susceptibility – in other words they are relatively easy to catch and once caught there is a significant chance they can die, even if thrown back. This means that most species require management action long before sufficient data is available to undertake a full stock assessment.[39]

The Chilean Devil Ray produces only one pup every two to three years.
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TABLE 1: Shark species of concern in West Africa[40/41]

Species Common name *Latin name*	**IUCN Status (Global)**	**IUCN Status (Eastern Atlantic)**	**Presence in Liberia**
Largetooth Sawfish *Pristis pristis*	**Critically endangered**	**Critically endangered**	**Possibly extinct**
Smalltooth Sawfish *Pristis pectinata*	**Critically endangered**	**Critically endangered**	**Possibly extinct**
Sawback Angelshark *Squatina aculeata*	**Critically endangered**	No assessment	Absent
Smoothback Angelshark *Squatina oculata*	**Critically endangered**	No assessment	Absent
African Wedgefish *Rhynchobatus luebberti*	Endangered	Endangered	Present
Great Hammerhead Shark *Sphyrna mokarran*	Endangered	**Critically endangered**	**Present**
Blackchin Guitarfish *Glaucostegus cemiculus*	Endangered	Endangered	Present
Common Guitarfish *Rhinobatos rhinobatos*	Endangered	Endangered	Present
Scalloped Hammerhead Shark *Sphyrna lewini*	Endangered	Vulnerable	Present
Spiny Butterfly Ray *Gymnura altavela*	Vulnerable	Vulnerable	Present
Spineback Guitarfish *Rhinobatos irvinei*	Vulnerable	Vulnerable	Present
Smooth Hammerhead Shark *Sphyrna zygaena*	Vulnerable	No assessment	Present

Sharks and rays in Liberia

Shark and ray fisheries are a vital source of food and income in Liberia. They support the nation's traditional, small-scale artisanal fishing sector that, overall, provides direct employment to over 33,000 people.[42] EJF's field-based research shows that sharks and rays are routinely caught, both deliberately and accidentally, by artisanal fishers along Liberia's 579 km of coastline. Over a five-year monitoring period, EJF recorded 21 shark and ray species at artisanal landing sites across Liberia. These species are also taken by legal industrial fisheries, however accurate data on catches is absent.[43]

National legislation

The responsibility for the sustainable management of sharks and rays in Liberia lies with the government's National Fisheries and Aquaculture Authority (NaFAA). Currently, there are no legislative measures, instruments or management plans specific to shark and ray fisheries management and protection. The inshore exclusion zone (IEZ) reserves six nautical miles from the coast *"for the use of subsistence, artisanal and semi-industrial fishing activities and artisanal fishing vessels"* (MOA, 2010).[44] This protects sharks and rays in the IEZ from industrial vessels, but not from artisanal fishing.

Shark and ray monitoring

In Liberia, a total of eight NaFAA enforcement officers have responsibility for monitoring 114 fishing landing sites (NaFAA, 2018),[45] and even this poor coverage does not record any data on sharks and rays. EJF routinely monitors three key sites at West Point, Harper and Robertsport, which lack any government monitoring due to resource constraints. The lack of catch data on artisanal shark and ray landings renders it almost impossible to determine the sustainability of these fisheries. Accidental shark and ray catch by legal industrial fisheries operating in Liberia's waters is also subject to poor monitoring, with NaFAA fishery observers unable to accurately identify shark and ray catches to a species level.[46]

The limited historical data that does exist shows that Liberia's total annual shark and ray capture from its artisanal and industrial fisheries rose from 54 tonnes in 1990 to 1,675 tonnes in 2000.[47]

Until recently Liberia was one of the world's top 20 sources of hammerhead sharks: a reported 1,557 tonnes were caught between 2002-2011.[48]

Threats to Liberian sharks and rays

Small-scale offshore fishing

Fishermen from the Ghanaian Fanti community – both resident in Liberia and temporary migrants from Ghana – dominate the artisanal 'pelagic' fishery, which is defined as being neither close to the sea bed nor near the shore. They use motorised, semi-industrial vessels of 12-15m length with drift nets and hooks to fish outside the IEZ, targeting deep-sea pelagic species such as tuna, swordfish, sailfish, blue marlin, sharks and rays. The sites targeting pelagic sharks and rays in Liberia are West Point (Monrovia), Buchanan, Marshall and Harper.

A Ghanaian motorised vessel used for targeting deep-sea pelagic species including sharks and rays (Harper, Liberia). © EJF

In the face of the critical lack of data, EJF conducted monitoring at West Point between 2013 and 2016 over 185 sampling days. This study – while it was not able to quantify fishing effort, such as total number of canoe-hours at sea – provided the first baseline data about these populations. It found:

- 1,892 sharks and rays were landed by a total of 20 semi-industrial vessels.
- 19 species made up the harvest, with all species found on the IUCN Red List of Threatened Species.
- The most-landed species were:
    - Blacktip Shark (*Carcharhinus limbatus)*
    - Chilean Devil Ray (*Mobula tarapacana)*
    - Giant Devil Ray (*Mobula mobular)*
    - Bentfin Devil Ray (*Mobula thurstoni)*
    - Blue Shark (*Prionace glauca)*
    - Longfin Mako Shark (*Isurus paucus)*
    - Shortfin Mako Shark (*Isurus oxyrinchus)*
    - Great Hammerhead Shark (*Sphyrna mokarran)*

Breakdown of West Point shark and ray fishery landings (2013-16)

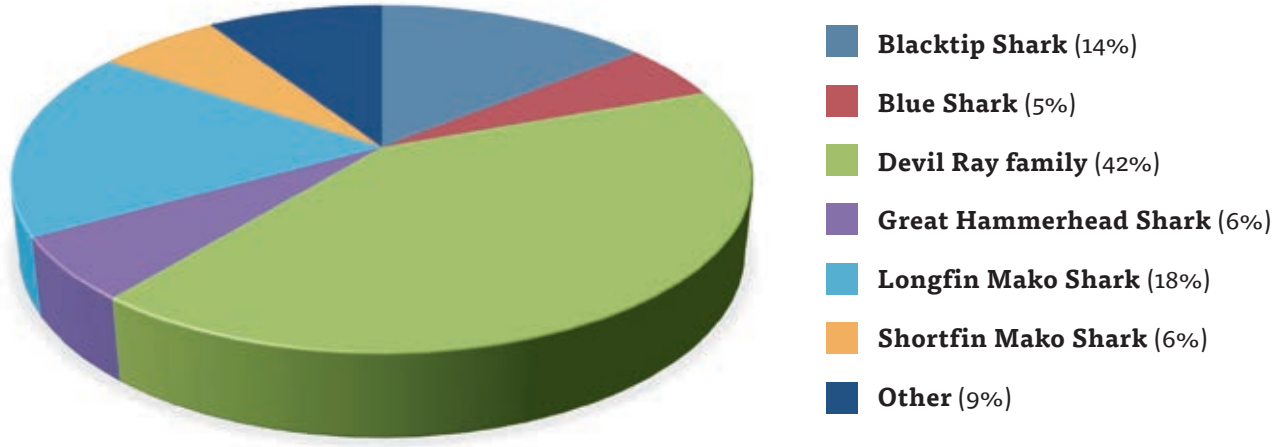

Fig 1. *Devil Ray family* includes Giant, Chilean and Bentfin Rays. *Other* relates to all remaining 130 landed individuals from 13 species.

A Chilean Devil Ray landed at Harper.© EJF

Sharks landed with other target pelagic species at West Point during study period. © EJF

A large haul of Bentfin Devil Rays landed at West Point during study period.© EJF

EJF began monitoring the shark and ray fishery of Harper in March 2018. Already, there is evidence that fishers in this area are also targeting threatened species including Blue, Silky and Shortfin Mako Sharks along with Chilean and Giant Devil Rays.

Sharks and rays landed at West Point during study period. © EJF

Interviews with 12 pelagic fishers in West Point and Harper in 2018 suggest shark and ray landings have declined considerably over the past two decades.

> ***"Yes, before we used to catch [sharks], we used to catch more than 70, 100, 150 but these days now, sometimes, you get 15, you get 12. These are the highest numbers we usually kill. It's very hard."***
>
> West Point fisher, March 2018

In Harper, all interviewed fishermen believed declines were at least in part due to over-capacity of the artisanal fleet. As this fisher mentioned: ***"[The Number of] canoes were not plenty [so we] could catch plenty. But now, [the number of] canoes plenty [so we] catch low."*** The fishers also commented on the impacts of the industrial trawlers.

Fishers also commented that hammerhead species were largely absent from today's catches compared to historical times, with noticeable drops in Shortfin Mako Sharks too. Blue Sharks, however, are landed more frequently now than they were historically, the fishers asserted.

Small-scale near-shore fishing

The artisanal 'demersal' fleet – which fishes for species near the sea bed – mainly consists of the indigenous Kru tribe, who predominantly use dugout canoes up to seven metres long, crewed by between one and three people, and propelled by sail or paddles.[49] They use long lines and hooks, and generally fish within the IEZ.

EJF shark and ray monitoring at Robertsport and Harper has documented the demersal fisheries accidentally capturing the vulnerable White-spotted Guitarfish (*Rhinobatos albomaculatus*), the endangered Blackchin Guitarfish (*Glaucostegus cemiculus*) and the Milk Shark (*Rhizoprionodon acutus*).[50/51/52] Both guitar rays are vulnerable to fishing pressure because of their low reproductive rate, with Blackchin Guitarfish producing only 4-6 pups per litter and White-spotted Guitarfish having just 2-3.[53/54] This is compounded by the fact that the artisanal demersal fishing fleet grew by 32% between 2011 and 2016, substantially increasing fishing pressure.[55] EJF investigations in Robertsport have also revealed landings of juvenile sharks, which could prevent populations from recovering from future declines.

The White-spotted Guitarfish (listed vulnerable by the IUCN)
© Derek Haslam / Flickr hsacdirk

A Guitarfish ray in a Kru dugout canoe landed in Robertsport.© EJF

Industrial fishing

Currently, 48 tuna vessels legally fish for tuna and tuna-like species in the offshore zone of Liberia's 200-mile exclusive economic zone.[56] This includes 34 EU fishing vessels that have been granted access under an EU Sustainable Fisheries Partnership Agreement.[57] It is highly likely that sharks and rays form a potentially significant component of the deliberate and accidental catch of these vessels. Devil rays and hammerhead sharks have been documented as by-catch of tuna purse seine fisheries operating off the African coast.[58] In similar pelagic fisheries around the world, Silky, Blue and Oceanic Whitetip Sharks have also been found to make up a significant part of by-catch.[59/60/61] In addition, assessments of shark and ray by-catch are likely to be underestimates, because of misreporting, but also because some animals are likely to be discarded after finning, despite EU regulations prohibiting the practice.[62/63]

The Oceanic Whitetip Shark is a common accidental catch of pelagic fisheries worldwide. © Felipe Barrio / www.uf-photo.com

Illegal, unreported and unregulated fishing

West Africa experiences some of the world's highest levels of IUU fishing, costing the region in excess of US$2.3 billion annually.[64] Sharks and rays are regularly targeted by vessels fishing illegally in the region, and catches include endangered species.[65/66/67] A very recent case in São Tomé and Principe involved authorities arresting a long-line vessel licensed to fish for tuna but whose fish storage areas were exclusively filled by sharks. The ship was flying a Senegalese flag, but linked to Spain.[68] Approximately two tonnes of mainly Blue Sharks (classed as near-threatened by the IUCN) were discovered, along with fins that had been illegally removed from the sharks.[69]

In Liberia, although assessing shark and ray catches from IUU fishing is difficult by its very nature, there is evidence that significant numbers of sharks and rays have been caught or processed illegally in the country's waters.[70] In April 2018, the Liberian Coast Guard boarded the Spanish-flagged vessel Cedes.[71] On inspection, they discovered 187 Blue Sharks with approximately 50% of the individuals having had their fins severed, a direct violation of the EU shark fin ban that requires all EU vessels to land sharks whole.[72/73] Interviews with local fishers also point to illegal fishing vessels causing shark and ray declines through catches.

IUU fishing of sharks and rays is enabled by Liberia's poor monitoring, control and surveillance of its waters. In addition, EJF's anecdotal evidence points to increases in the targeting of sharks (and other marine species) as a direct result of illegal and unsustainable industrial fishing that depletes the fish stocks traditionally relied on by artisanal fleets.

To tackle IUU fishing, a holistic approach to fisheries management is required in Liberia, whereby IUU fishing is reduced through effective monitoring, control and surveillance, and community engagement to report IUU infractions.

Shark fin and ray gill raker trade

Shark-finning, where fins are removed and the body is commonly discarded at sea, feeds a lucrative international trade, with the bulk of the fins destined for Asian countries, particularly China, to be consumed as a delicacy.[74] As shark fins generally have a much higher monetary value than shark meat, vessels often keep the fins and discard the carcass, creating more room on the vessel to store more profitable catches.[75] Shark finning is thought to be a major driver in global shark declines and has implications for ocean health and food security.[76]

In surveys conducted by EJF in Liberia, most fishers, when asked whether fins or meat drive the fishery, identified both products as an important part of their decision to target sharks and rays. This is substantiated by the fact that all sharks and rays recorded by EJF were landed as whole carcasses, with fins and gill rakers – part of a food-trapping mechanism and highly prized as a delicacy in East Asia – still attached. Fishers sell the meat to fishmongers who then either sell it in nearby markets or distribute it to larger towns in the area.

EJF observed that fins were taken from all Blue, Great Hammerhead, Scalloped Hammerhead, Smooth Hammerhead and Shortfin Mako Sharks landed at West Point, with 95% of landed Blacktip Sharks also finned. Initial monitoring since March 2018 by EJF of the shark and ray fishery in Harper also indicates very high levels of finning.

Shark fins being dried in West Point.© EJF

Fishers in West Point, Harper and Marshall all referenced the shark fin trade in EJF interviews. West Point is the first node along the supply chain for shark fins leaving the country, the fishers in this area said, but they do not know where and to whom the fins go from there. However, Ghanaian fishers in Harper said that shark fins were taken across the national border to San Pedro in neighbouring Côte d'Ivoire, a fact that was corroborated by two Liberian government officers based in Harper. This is facilitated either through fin traders based in Harper and Côte d'Ivoire, or by the fishers crossing the border with sacks of fins themselves. EJF work with Ghanaian shark fishers in San Pedro suggests that these fins, along with those from sharks landed in San Pedro, are bought by a Togolese trader who then transports them by road to Togo before dispatching them by air to Hong Kong. In return for the fins, the Ghanaian fishers in Harper receive money along with boat engines and fishing materials such as nets and hooks.

In Marshall, one fisher stated that he sells shark fins to Liberian traders who then sell them to the Chinese community living in Monrovia, who in turn dispatch them to East Asia. It was not clear if these are dispatched directly from Liberia or if they transit to another country before reaching East Asia.

Interviews with fishers also revealed a steep decline in the fin price compared to historical times. Along with fewer sharks being landed, the prices that fishers are now getting for fins are significantly less than that of 10-20 years ago, making the meat a greater proportion of the income generated.

Unlike the shark fin trade, the gill raker trade does not yet appear to have affected Liberia's ray fisheries. The fishers EJF interviewed stated that all parts of landed devil rays are consumed within Liberia. This was supported by observations on landing sites, with devil rays being processed and sold for local consumption. Similarly, all parts of guitarfish rays, which are valued internationally for their fins as well as gill rakers, were sold on the domestic market, according to EJF investigations.

"[Fins] can help pay gas money [for fishing trips]. Our kids can [get] help to [pay] school fees in Côte d'Ivoire and Ghana."

Harper fisher, March 2018

All parts of a landed devil ray having been processed for local consumption in West Point.© EJF

A national plan of action for sharks and rays in Liberia

A national plan of action for sharks and rays must create a clear roadmap to the sustainable management of these irreplaceable species. This needs to encompass essential basic activities from gathering baseline data on shark and ray populations to effective enforcement of a well laid-out management plan.

The United Nations' International Plan of Action for the Conservation and Management of Sharks (which encompasses all sharks, rays, skates and chimaeras) recommends that all states involved in shark and ray fishing should develop a national plan of action for these species.[77/78] In addition, several international agreements that Liberia is bound by also specifically recommend that member states fully implement their own national plan of action for sharks and rays (NPOA-Sharks). These international agreements include the Convention on International Trade in Endangered Species (CITES), the International Commission for the Conservation of Atlantic Tunas (ICCAT), and the Memorandum of Understanding on the Conservation of Migratory Sharks (CMS Sharks MOU).

The IPOA-Sharks recommends certain aims that national plans should have.[79] Key aims are as follows:

- Assess threats to shark populations, determine and protect critical habitats and implement harvesting strategies consistent with the principles of biological sustainability and rational, long-term economic use
- Identify and provide special attention, in particular to vulnerable or threatened shark stocks
- Facilitate improved species-specific catch and landings data and monitoring of shark catches
- Facilitate the identification and reporting of species-specific biological and trade data
- Improve and develop frameworks for establishing and coordinating effective consultation involving all stakeholders in research, management and educational initiatives within and between states
- Minimize unutilized incidental catches of sharks. Encourage full use of dead sharks

As the management framework and its enforcement develops, this must also be continually assessed and revised to ensure the most effective outcomes.[80]

Central elements for a national plan of action

There are several crucial elements that must be included to create the effective and efficient NPOA-sharks that Liberia needs.

Identification and monitoring

Managing sharks and rays sustainably requires a clear understanding of which species are being fished, how their populations are changing over time, and the specific threats to them. To achieve this, any NPOA-sharks should include production of clear identification guides and training for monitoring staff. Consultations with fishing communities will also provide vital local knowledge.

Landings from both industrial vessels and small-scale traditional boats should be monitored: recording species, sex, body measurements, weight and reproductive capacity. Alongside data on sharks and rays being landed, estimates of fishing effort are needed, such as number and types of vessels and gear, and duration of fishing trips.

This information can also a provide vital international resource: data gathered as part of the development of NPOAs in other West African nations has enabled the IUCN Red List of sharks and rays to be updated for the region, and ensured that sawfish are listed in CITES.

EJF staff sampling a landed Bentfin Devil Ray in West Point. © EJF

While shark and ray catch information is limited in Liberia, EJF's long-term monitoring of West Point, Robertsport and Harper will assist in identifying species of concern. EJF's tailored shark and ray ID guides, and practice of photographing each landed shark to verify species has substantially reduced problems with identification. These simple methods can be used to train government employees, increasing capacity and accuracy of monitoring.

More monitoring is needed at other key pelagic landing sites, and increasing monitoring effort of demersal landings would help to fill critical data gaps, especially for poorly documented species such as the endangered Guitarfish Rays. This monitoring will provide crucial information to guide fishery measures, aiding NaFAA in managing national fish stocks.

Understanding the catch and trade in shark and ray products

Are sharks and rays targeted and harvested for their fins, meat or both? Are these products sold domestically or internationally? Do shark and ray products form a high proportion of fishers' income? Answers to these questions will provide vital information on how the fishery should be managed, what enforcement measures are needed, and how to ensure that the needs of the local fishing communities are incorporated into any national plan.

Raising awareness, consulting and engaging local communities in shark and ray management and conservation

Compliance with measures to protect and manage sharks and rays can be greatly improved if local communities are aware of the importance of these species and are able to voice their own views on proposed measures.[81] Experience implementing NPOA-sharks in other West African nations shows that public outreach boosts understanding of the importance of sharks and rays as well as their high susceptibility to over-fishing.[82/83]

In the course of developing their NPOAs, Guinea Bissau, Mauritania and Sierra Leone all consulted local fishing communities, and this was fed into the development of shark and ray fishery management measures.

EJF's experience of engaging shark fishing communities has been positive, with community meetings and film showings raising awareness of the important roles sharks and rays play in the ecosystem and providing crucial information on the shark fin trade. Liberia's NPOA can build on this momentum, consulting these communities to better understand gaps, such as the socio-economic value of the shark and ray fishery, while developing a management plan that contains measures that reflect community needs.

Well-enforced, well-designed management

The NPOAs from other West African nations have included measures such as bans on shark and ray fishing in protected areas, bans on finning, species-specific bans, minimum landing sizes, change of mesh sizes in shark fishing nets and introduction of shark fishing licenses (see Annex 1).

Countries have also employed economic measures, such as shark fishing licenses and taxes on exports of shark and ray products. These can discourage people from entering the shark fishing industry, while also generating money for the country.[84] It is critical that alternative income to shark and ray fishing for artisanal fishers and coastal communities are identified, developed and employed.

Whatever combination of these Liberia opts for, it will need to ensure that such measures are strict enough, based on scientific evidence, to achieve true sustainability for shark and ray populations.[85/86] And, once in place, these measures are far from the final step. Their impact will need to be monitored and enforcement of all regulations will be a key aspect of success.

Other West African nations have included measures such as bans on shark and ray fishing in protected areas, bans on finning, species-specific bans, minimum landing sizes, change of mesh sizes in shark fishing nets and introduction of shark fishing licenses in their national plans.

Coordination and collaboration

Good collaboration and coordination between states is vital for effective monitoring and control of the trade in shark and ray products and sustainable management. Neighbouring states can benefit from data-sharing, combining scientific capacity, and collating best practices.

Liberia could work with Côte d'Ivoire, which also has yet to develop an NPOA. This is an opportunity for both countries to develop shark management plans that are complementary and coherent.

By implementing its own NPOA, Liberia can also meet components of international treaties it is party to – such as CITES, ICCAT and CMS MOU Sharks – enhancing the country's international standing.

Eradicating illegal fishing

It is clear that the poor monitoring, control and surveillance by West African countries continues to thwart efforts to tackle IUU fishing, and by extension presents significant hurdles in managing shark stocks through unaccounted catches.[87/88/89/90]

EJF has had considerable success mobilizing communities in Liberia to document and tackle IUU fishing, and this model could help government agencies in recording illegal shark and ray take through an NPOA.[91] Encouragingly, the Liberian government is currently planning to develop a National Plan of Action to prevent, deter and eliminate IUU fishing (NPOA-IUU) in its waters. It is critical the framework complements any shark management strategy the government develops. In addition, shark by-catch data that is presently collected by NaFAA fishery observers aboard licensed industrial vessels also needs to be factored into catch assessments to provide a more accurate picture. This can be achieved through developing a database of shark catch statistics from artisanal, industrial and IUU fishing.

© EJF

Recommendations

The Government of Liberia should implement a national plan of action for the conservation and management of sharks and rays within a three-year timeframe, under which relevant government agencies should:

- Collect baseline data on shark and ray populations. This data collection should focus on 12 priority species that are of primary conservation concern (see Annex 2 for full list). It should also pay special attention to demersal shark catches, and pelagic shark catches from Buchanan and Marshall, where data is especially lacking.
- Develop a national database to store data from artisanal and industrial shark and ray catches, along with documented cases of illegal, unreported and unregulated (IUU) fishing.
- Analyse the trade in shark and ray products with a particular focus on the international trade in shark fins.
- Consult and work with fishing communities to create well-designed, easily delivered measures to protect sharks and rays that also benefit local people.
- Foster strong collaboration between the state agencies relevant to shark and ray conservation in Liberia, including NaFAA, the Forest Development Authority, Environmental Protection Agency and the Department of Customs.
- Promote collaboration with neighbouring states to ensure that sustainable management of sharks is coherent and effective across the region.
- Undertake a holistic approach to fisheries management and ensure that IUU fishing is reduced through effective monitoring, control and surveillance and extensive community engagement to promote co-management, community support and participation.
- As a priority give political leadership and dedicate new resources to eradicating IUU fishing in Liberian waters.
- Ensure effective monitoring and enforcement of the NPOA is undertaken to ensure its successful implementation and impact, and revise actions accordingly.
- Ensure future fisheries partnership agreements with third-countries take into account the goals of the NPOA and support its implementation.

Annex 1

Current shark fishery regulations for Sub-Regional Fisheries Commission (SRFC) member states[92/93]

Country	Shark fishery regulations
Mauritania	• Minimum landing size of 60 centimeters for houndsharks (*Mustelus mustelus* and *Leptocharias smithi*) • Ban on shark fishing in the Banc d'Arguin National Park (PNBA) in 2003 (except houndsharks: *Mustelus mustelus* and *Leptocharias smithi*) • As part of the IRM-EU agreement, ban on tuna seiners and longline surface boats fishing for: Basking Shark (*Cetorhinus maximus*); Great White Shark (*Carcharodon carcharias*); Sand Tiger Shark (*Carcharias taurus*), and Tope Shark (*Galeorhinus galeus*)
Cape Verde	• Ban on finning in all territorial waters since 2005
Guinea	• Introduction of a shark fishing license • Ban on finning in all territorial waters since 2009 • Ban on fishing seven species of rays and sharks critically threatened with extinction
Gambia	• Ban on finning in all territorial waters since 2004 • Measures adopted making it mandatory to land sharks caught in Gambian waters on Gambian soil
Guinea-Bissau	• Ban on shark fishing in the Marine Protected Areas • General fisheries law protecting endangered sharks and prohibiting harmful gear
Sierra Leone	• Introduction of a shark fishing license • Ban on finning • Creation of an export tax for shark products • Increased size of mesh in shark fishing nets (300 mm stretched mesh)
Senegal	• Three species of sawfish placed on the list of protected species • Minimum landing size of 85 cm for Blackchin Guitarfish (*Rhinobatos cemiculus*) • Minimum landing size of 145 cm for Scalloped Hammerhead Shark (*Sphyrna lewini*) • Gillnets for sharks and rays: stretched mesh: 280 mm; side mesh: 140 mm

Annex 2

A Liberia NPOA-Sharks should concentrate on the following 12 priority species:

- Great Hammerhead Shark (*Sphyrna mokarran)*
- Scalloped Hammerhead Shark (*Sphyrna lewini)*
- Smooth Hammerhead Shark (*Sphyrna zygaena)*
- Blackchin Guitarfish (*Glaucostegus cemiculus)*
- White-spotted Guitarfish (*Rhinobatos albomaculatus)*
- Bigeye Thresher Shark (*Alopias superciliosus)*
- Chilean Devil Ray (*Mobula tarapacana)*
- Bentfin Devil Ray (*Mobula thurstoni)*
- Giant Devil Ray (*Mobula mobular)*
- Blue Shark (*Prionace glauca)*
- Shortfin Mako Shark (*Isurus oxyrinchus)*
- Longfin Mako Shark (*Isurus paucu)*

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