HONDURAS

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INTRODUCTION

The Republic of Honduras is located on the Central America Isthmus, with a northern coastline on the Atlantic Caribbean Sea and a small coastline on the Pacific Ocean to the south. The Exclusive Economic Zone (EEZ, 249,542 km^2) is extensive in the Caribbean, and the total national territorial waters represent twice the area of the land. In contrast, the Pacific extent of the EEZ is contained within the Gulf of Fonseca and does not extend to open waters. Honduras hosts the southern end of the Mesoamerican Barrier Reef System (MBRS), which terminates in the Bay Islands. Fishing contributes around 5% of the country's gross domestic product (GDP), though aquaculture is the main source of fisheries products. The Honduran national industrial fishery began in the 1950s, having previously been dominated by foreign fleets, mostly the United States (FAO, 2002). Shark fisheries in Honduras were historically small-scale and concentrated in coastal shallow waters and Miskito Cays of the Caribbean. There was an effort by the Western Central Atlantic Fisheries Commission (WECAFC) to develop the fishery in the 1970s, but the effort did not see substantial response. In 2011, the country was declared a Shark Sanctuary, but with limited consultation and socialisation of the law. To accommodate the traditional fishers in the Miskito Cays, the law was amended in 2016 to allow landing of incidental captures. In the Pacific, rays and sharks are landed in *cimbra/simbra* (small hook longlines) and gillnet fisheries for local consumption. Although sharks and rays in the Caribbean are landed and exported, there is no reporting or official monitoring of catches or landings.

Fishery-independent monitoring indicated that overall species diversity for sharks and rays in the Bay Islands was similar to other countries in the MBRS, though abundance was lower overall for both groups in comparison to Belize (Ochoa et al., 2016; Baremore et al., 2021a). Species abundance and diversity was higher in the Miskito Cays (Ochoa et al., 2018b) than the Bay Islands. Continued monitoring is needed to determine whether the changes in sanctuary legislation will affect the populations.

Caribbean: Coastal habitats are highly river-influenced and include sand, mud, coral reef, and mangroves, and encompass 671 km of coastline. The Bay Islands represent the southern extent of the Mesoamerican Barrier Reef and are located over 60 km from the mainland. The coastal Moskitia Region includes widespread mangrove habitats, while the remote Miskito Cays are comprised of shallow patch reef and sand habitats. The EEZ of Honduras is extensive in the Caribbean, covering 218,000 km^2, of which 82% is greater than 200 m in depth.

Pacific: The Pacific EEZ of Honduras is entirely encompassed within the inner Gulf of Fonseca, which is bordered by El Salvador to the north and Nicaragua to the south and includes 133 km of coastline and 747 km^2 of water. The Gulf of Fonseca is shallow (<200 m deep), and highly river- and tidally-influenced, and is an important habitat for juvenile sharks and rays. The Honduran coastline is comprised of mangrove habitat, though coastal development and shrimp farming have diminished the habitat.

FISHERIES

Fleets

There are more than 10,000 artisanal marine fishers in Honduras from at least 160 fishing communities. Aquaculture represents more than 90% of the fishery production. Caribbean marine fisheries are a mix of subsistence, artisanal, small-scale, and industrial operations. Industrial fishing vessels are largely based in the Bay Islands, but fishing grounds for Caribbean Spiny Lobster (*Panulirus argus*), Queen Conch (*Aliger gigas*), shrimp, and finfish (grouper/snapper) extend from the shelf edge in the remote Moskitia fishing grounds to the Nicaraguan border. Reconstructed catches from 1950–2015 showed that artisanal fisheries surpassed commercial fisheries around the year 2000 (Canty et al., 2019). Artisanal vessels in the Caribbean are generally less than 9 m in length, and include paddled wooden canoes, fibreglass boats with outboard engines, and narrow wooden or fibreglass *cayuco* style vessels with diesel engines (Funes et al., 2015). There are no industrial fisheries in the Pacific coast of Honduras because large vessels cannot be accommodated in the shallow waters in the Gulf of Fonseca.

Honduras was declared a Shark Sanctuary in 2011 (Decreto Legislativo No.107-2011), but with little consultation or socialisation of the law. In 2016, the law was amended to allow for landing of incidental captures by local indigenous and artisanal groups (Decreto Legislativo No. 26-2016). This loophole is exploited, especially in the Miskito Cays, as the definition of incidental is obscure and there is no government monitoring of catches or landings; however, the sale and transport of shark products is illegal. The artisanal fishery for sharks in the Caribbean is mostly gillnets and longlines, which are often baited with Freckled Guitarfish (*Pseudobatos lentiginosus*). Fisheries that capture sharks and rays on the Pacific coast are primarily small (<8 m) fibreglass open boats with single outboard engines.

Gear

Shrimp trawls, lobster traps, longlines, gillnets, hook and line, and 'bandit' type hydraulic/electric reels are used by industrial fishers in the Caribbean. Artisanal fishing gear in the Caribbean includes traps, beach seines, cast nets, gillnets, hook and line (hand and electric), harpoons, and longlines (Baremore et al., 2021b; Rivera et al., 2021). Pacific artisanal fishers use cast nets, hook and line, small-hook bottom longlines with J and circle hooks placed as bottom or hanging soaked lines (*cimbra*) and multi-panel monofilament gillnets of varying mesh sizes (Ochoa et al., 2018a). The length of the longline is approximately 3.5 km with an average of 1,364 hooks per boat. The hook size used varies from number nine to ten depending on the target species of the fishery. In gillnet fishing, an average of three nets are used per fishing trip, with an approximate distance of 300 m and a height of 5 m. The gillnets that are used are made from synthetic fibres, mainly nylon and monofilament.

Although Honduras is legislated as a Shark Sanctuary, sharks continue to be fished both as part of a targeted fishery in the remote Moskitia region using baited gillnets and longlines, and from the longline/*cimbra* and net fisheries of the Pacific. Rays are not included in the sanctuary law and are fished primarily in the Pacific with nets.

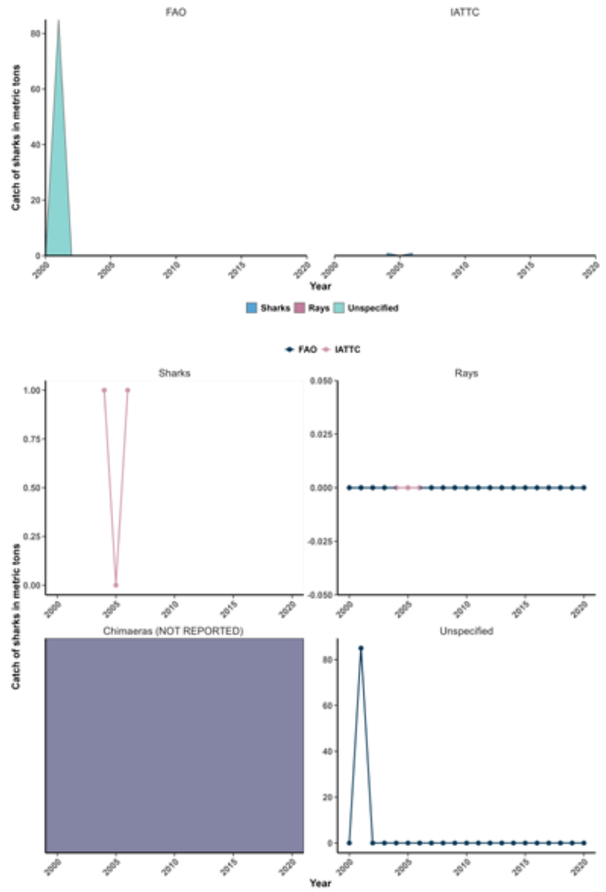
Honduras was one of four countries (with Belize, Panama, and St Vincent and the Grenadines) that made up 75% of large-scale fishing vessels (>24 m) flying Flags of Convenience in High Seas Fisheries, with 406 total vessels in 2005.

PRODUCTION

Overall landings

Because Honduras is a Shark Sanctuary, there are no landings statistics available for shark species. Although rays are not included in the sanctuary legislation, no official landings data exist for rays either. Neither taxa were included in catch reconstructions conducted for periods prior to the 2011 sanctuary legislation.

Hondura's total catch of shark, ray, chimaera, and unspecified species reported to the Food and Agriculture Organization of the United Nations (FAO) and Inter-American Tropical Tuna Commission (IATTC) from 2000–2020 in metric tonnes (mt) | Source: FAO (2022) and IATTC (2022)



Species-specific

Landings from the Caribbean Miskito Cay gillnet and longline fishery were characterised over six days in January 2017, resulting in 315 individuals identified and measured (297 from gillnets, 18 from longlines; Ochoa et al., 2018b). Blacknose Shark (*Carcharhinus acronotus*) was the primary species landed (n=175, 56%), followed by Sharpnose Shark (*Rhizoprionodon* spp.; n=61, 19%). Other shark species included Blacktip Shark (*C. limbatus*; n=7), Tiger Shark (*Galeocerdo cuvier*; n=10), Caribbean Reef Shark (*C. perezi*; n=17), Atlantic Nurse Shark (*Ginglymostoma cirratum*; n=8), Scalloped Hammerhead (*Sphyrna lewini*; n=7), and Great Hammerhead (*S. mokarran*; n=9). Freckled Guitarfish was landed and used to bait gillnets and longlines.

In the Pacific, observations of *cimbra* landings from the Gulf of Fonseca over five days in September 2018 resulted in 21 sharks and 78 rays (Ochoa et al., 2017). Juvenile Scalloped Hammerhead represented 20% of landings by species (n=20), while *Hypanus* spp. and Pacific Chupare (*Styracura pacifica*) made up 69% (n=68) of species landings. *Gymnura* spp. (n=5) and *Aetobatus* spp. (likely Pacific Eagle Ray, *A. laticeps*; n=5) were also landed. Additional monitoring during eight days in the months of October–December 2019 resulted in a total of 122 individuals recorded in the landings of 28 boats from the community of Boca de Rio Viejo, Choluteca. The most abundant single species in these catches was Scalloped Hammerhead (40%, n=49), the second species most frequent catch was Pacific Eagle Ray (25%, n=30), followed by Longtail Stingray (*Hypanus longus*; 24%, n=29), Pacific Chupare (4%, n=5), Mazatlan Butterfly Ray (*Gymnura* cf. *crebripunctata*; 4%, n=5), and Pacific Cownose Ray (*Rhinoptera steindachneri*; 3%, n=4).

TRADE

Processing

Sharks and rays are primarily processed as dried and salted meat, locally known as *cecina*. Rays are marketed fresh as white fish, with a consumer preference for Longtail Stingray due to the colour and texture of its meat. In the Pacific, the meat of juvenile sharks and rays is sold as fresh fish fillet to local buyers who take the product to the Tegucigalpa markets, and from there it is distributed to the rest of the country. Fresh and dried shark and ray meat is marketed as fish fillet or *cecina*. Shark fins are traded separately.

Domestic

Products are mostly used as dried, salted meat for local consumption, though some are exported to El Salvador and Guatemala. Demand for *cecina* is highest during the Lenten season. This is primarily prepared and consumed by older generations (over 40 years old) as a traditional soup leading up to the Lenten season. Younger generations have eschewed consumption of *cecina* according to market sellers interviewed (Graham pers. comm). Because of the manner of preparation, most consumers are not aware that they are eating shark or ray. Fresh ray and small shark fillet is sold locally as white fish.

Export

No formal trade of shark products occurs due to the Sanctuary legislation. However, ray fisheries underpin local markets, are sold fresh and salted within Honduras and the export of dried,

Fishing boats in Oak Ridge, Roatan, Honduras | Cory Doctorow | flickr.com (CC BY-SA 2.0.)

salted meat through Guatemala and El Salvador occurs during the Lenten season. Sharks are processed to resemble finfish when dried, with fins and claspers removed.

CULTURAL SIGNIFICANCE

Culturally, dried salted shark meat is consumed during the Lenten Season, in the lead up to Easter. This practice is declining as the younger generations do not appreciate the taste or the tradition.

RESEARCH

MarAlliance conducts quasi-annual monitoring for abundance and distribution of sharks and rays in the Bay Islands and Miskito Cays, monitoring of deepwater sharks in the Caribbean, and opportunistic landings surveys in the Caribbean and Pacific. Ilili undertakes opportunistic landings and fisher surveys in the Moskitia.

MANAGEMENT

Governance framework

Management bodies include La Dirección General de Pesca y Acuicultura (DIGIPESCA) which collects fishery data, and El Instituto de Conservación Forestal (ICF) which oversees protected areas. The Secretary of Agriculture and Livestock (SAG) regulates the fishing seasons for species such as the Caribbean Spiny Lobster, sea cucumbers, shrimp, Queen Conch, and Nassau Grouper (*Epinephelus striatus*). Protected areas are co-managed by non-governmental organisations (NGOs) with enforcement by the Navy where resources are available. There are eight MPAs of varying levels of protection, including National Parks, Biosphere Reserves, and Wildlife Refuges.

A National Shark Advisory Committee comprised of government institutions (e.g., DIGEPESCA and ICF), Academia (e.g., Universidad Nacional Autónoma de Honduras) and NGOs (e.g., MarAlliance and Shark Legacy Project) was created in 2014 and guided shark research and policy.

Policy

- Shark Sanctuary legislation (2011): Decreto No.107-2011: amendment to law (2016), Decreto No. 26-2016.
- Manual de Normas Técnico-Administrativas para el Manejo y Aprovechamiento Sostenible de la Vida Silvestre de Honduras. Acuerdo No. 045-2011.
- Regional Regulation OSP-05-11, agreed between Central American countries in November 2011: implemented in 2012. Its objective is to ban shark finning and requires sharks to be landed with fins naturally attached.
- Key points: Regulation OSP-05-11, was adopted via Sistema de la Integración Centroamericana's (SICA) Fisheries and Aquaculture Sector Organization of the Central American Isthmus (OSPESCA). It binds Belize, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, and Panama to land sharks with fins naturally attached.
- Honduras is a signatory to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since 1985.

Enforcement and monitoring

In the Bay Islands, monitoring of protected areas are conducted by rangers from the Bay Islands National Marine Park, and supported by the Navy.

Community involvement

MarAlliance conducts community outreach and education events, including classroom and experiential learning, stakeholder engagement through presentations and meetings with managers, fishers, and community members, and museum exhibits.

Gaps

Despite its designation as a Shark Sanctuary, shark and ray fishing occurs. With limited information on landings prior to the legislation and near none following 2011, information on landing sites, species landed, fishing effort, utilisation and export are needed.

RECOMMENDATIONS

Clarification of current laws and enforcement is needed. Continued research is needed on species abundance, movement ecology, fisheries, and trade.

Policy

- Clarification and socialization of laws regarding the sanctuary legislation; and
- Conduct structured landing statistics and information about trade in La Moskitia.

Science/knowledge/research

- Expand research into bycatch mitigation measures, and baselines of abundance should continue to be conducted.
- Expand research on shark and ray abundance, distribution, and diversity on the Atlantic coast, along with incidental catch estimates from local fisheries. Research of species diversity and fishing mortality of juvenile sharks and rays is needed in the Pacific.

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Atlantic Chupare *Styracura schmardae* being processed in Honduras | Nhering Daniel Ortiz Lobo | iNaturalist.org (CC BY-NC)

Whitespotted Eagle Ray *Aetobatus narinari* | owenunderthesea | iNaturalist.org (CC BY-NC)