

## Is the demand for fins driving the high capture of sharks, or are there more significantly valuable commodities?

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### Abstract

Around two decades ago, finning became the flagship campaign for many environmental non-governmental organisations (eNGOs) advocating for shark conservation. Despite the large body of research indicating otherwise, many eNGOs and major media outlets continue to present finning as the main driver for the capture of most shark species. They also consistently deliver misleading statements on the numbers of sharks killed solely for their fins yearly. I argue that although important, other factors, mainly the demand for meat, are responsible for the intense fishing pressure on many shark species. I designed a questionnaire, and enumerators presented it to fishers in three ports in West Sumatra, Indonesia, to answer why fishers target sharks. The main reason for catching small sharks was meat (87.8% of respondents), while fishers captured large sharks for their fins (93.5%). Most sharks caught were small (77.3%), and their flesh was the main product. The response to question 11 (*If shark fin had no value, would you still land sharks?*) was a substantial 93.9%. This result shows that fishers would still capture sharks for meat regardless of the fins' value in a country with one of the highest landings of sharks in the world. Conservation efforts should consider changing *in situ* market and social conditions and perceptions to address their goals effectively. Otherwise, eNGOs will develop campaigns that create fundraising and branding opportunities but miss their conservation goals.

**Keywords:** conservation, finning, Indonesia, shark fishing

### 1. Introduction

Finning, cutting off sharks' fins and discarding their bodies, came to the forefront of shark conservation over a decade ago (Jacquet et al., 2008; The Pew Charitable Trust, 2021; WWF, 2005). As a result, the use of shark fins in Asian cuisine and medicine came under intense scrutiny, notably from environmental non-governmental organisations (eNGOs). They presented various arguments against this practice, including animal cruelty (Humane Society International, 2021), wasteful practices (McGuire, 2018), and, most importantly, the unsustainable fishing of vulnerable species due to their life-history characteristics (Tripp, 2014; WWF, 2021).

Various studies have investigated the trade of this expensive commodity (Clarke et al., 2006, 2004), but there is a dearth of knowledge on why fishers target sharks in most countries. Nonetheless, some researchers recognise that meat consumption is a significant factor in shark exploitation (Clarke, 2014; Dent and Clarke, 2015; Shiffman et al., 2020; Shiffman and Hueter, 2017).

However, many eNGOs, major news outlets, and websites like Wikipedia continue to perpetuate the misconception that the fin trade is the most significant reason for the unsustainable exploitation of most shark species (Fairclough, 2013; Ghani, 2018; Oceana, 2021; Wikipedia, 2021; WildAid, 2021). Here I present arguments against this idea. I do not aim to minimise the importance of finning on the capture and decline of a select group of sharks, mainly pelagic species with circumglobal distributions. For example, shark and ray species actively targeted for their fins represent around 6% of the world's chondrichthyan species. Unfortunately, many eNGOs concentrate on this

small shark species group (Oceana, 2021) while ignoring the conservation issues that affect most elasmobranch species.

Furthermore, many endemic and coastal species have unknown statuses because the conditions of their populations are data poor. Nonetheless, they likely suffer from high levels of exploitation and, as a result, may be threatened or endangered. Here I hope to modestly contribute to the efforts to broaden the discussion to include other significant and, in many cases, more meaningful drivers for capturing most elasmobranch species, specifically their meat.

I present data collected through interviews in West Sumatra, Indonesia, where enumerators asked fishers why they caught sharks to help identify the main motives for this activity. Although this is by no means an extensive sample, neither geographically (three landing sites in West Sumatra, Indonesia) nor numerically, I hope it will help to reinforce the need to make the shark exploitation debate broader in scope.

## 2. Methods

I designed a questionnaire to understand why fishers catch sharks and whether fin was the main driver behind this fishery (Appendix 1). In 2014, enumerators asked 20 questions to fishers in three landing sites in the province of West Sumatra, Indonesia (Air Bangis, Gaung and Pasie nan Tigo). I chose these sites because they showed significant landings of sharks, rays, and skates, as determined from multiple visits.

Before interviewing, enumerators gained consent and informed every participant of the purpose of the interview, the confidentiality of the information provided, and the right to omit uncomfortable questions or withdraw from the interview.

The two gears covered in this study were handline and gillnet. Indonesian fishers ubiquitously use handline, even in vessels licensed for other gears, in this case, liftnet boats targeting small pelagic (sardines, anchovies, and scads) and large pelagic species (tropical and neritic tuna). The gillnet presented here consists of three different types (drift, set, and gole gole), but I show the combined results as the answers did not differ.

## 3. Results

Enumerators collected and I analysed 172 questionnaires. Where they filled questionnaires partially or incorrectly, I only extracted and used data that were complete. I did not use some of the answers if the information provided was irrelevant or the interviewees did not answer clearly. For example, question 14 (*What are the main types of sharks you catch?*) did not yield significant results as the common names used were too general.

Sharks were identified as essential catch components by weight and revenue by 73.5% and 95.9% of the respondents, respectively. The main reason for catching small sharks was their meat (87.8%), while a much lower percentage responded that fins were of value (5.5%). On the other hand, fishers targeted large sharks mainly for their fins (93.5%), while 6.5% indicated that meat was the main factor in capturing them. Other factors like income from other products or bycatch were insignificant.

There is no doubt that the most expensive parts of a shark are its fins. However, as calculated from the interviews, most of the sharks caught (77.3%) are small, and 91.7% of respondents indicated that meat was the commodity with the highest economic importance regardless of shark size. Fins from small sharks were secondary in value

and are not the main incentive to capture these sharks (77%). Only 5.5% of respondents indicated that small fins were more valuable to them than meat.

Only 66.9% of interviewees sold shark fins, while a low 3% said they caught sharks for their fins alone. Only 21.3% of the respondents said they targeted sharks. The most telling of the questions presented in the questionnaire was *11. If shark fin had no value, would you still land sharks?* The response to this question was an overwhelming 93.9%, indicating that regardless of the value (or lack of) of shark fin, fishers would still capture sharks for meat and other commodities like oil.

Over half of the respondents indicated that they consumed sharks (64.1%), and only one fisher acknowledged dumping the shark's body after cutting the fins (0.6%).

The main gear used to catch sharks was handline (69.8%), although gillnet (25.4%), or a combination of both (4.7%), were also used. This result is due to many interviews conducted on the liftnet fleet where fishers use handline to supplement their income and food.

Fishers target sharks around anchored fish aggregating devices (aFADs; 56.5%). aFADs (or *rumpon*) are ubiquitous throughout the Indonesian archipelago, and various artisanal, semi-industrial, and industrial fisheries use them.

The average time since fishers started catching sharks was 7.5 years. The main reason respondents chose to catch sharks was the high price of fins and meat (61.4%). The high value of fins alone accounted for a low 5.7%, while the need to supplement income due to financial difficulties accounted for 31.8% of the responses.

#### **4. Discussion**

A common problem in conservation is the assumption that drivers from a decade or two ago are still relevant. eNGOs should review the mechanisms that drive fishers and consumers to ensure that their campaigns and advocacy efforts have real-life results in near real-time. The cessation of shark finning remains the most prominent objective in many eNGO and animal welfare websites (Animal Welfare Institute, 2021; McGuire, 2018; WildAid, 2021).

The presence of shark fins from so many species in Hong Kong, the trade centre, does not imply direct targeting for this commodity. Many species, particularly those with small fins or from species or specimens of small size, are usually targeted for their meat, with oil, skin, teeth, cartilage, and fins as by-products. In Indonesia and India, two of the largest shark-fishing nations globally, fishers consume or sell shark meat, and they do not target fins, except in some specific fisheries (Jaiteh et al., 2016). Because they commonly come from impoverished backgrounds, they will maximise their earnings through the sale of fins. Nonetheless, it is true that some fleets, industrial longline and gillnet, may target valuable oceanic species, where their catch may represent around 30% of the shark fin trade (Clarke *et al.* 2006).

By addressing the overfishing of sharks as a taxonomic group, eNGOs ignore fundamental management issues that affect the status of all species. The reality for many countries is the mismanagement of all taxonomic groups of aquatic organisms. Therefore, shark conservation should form part of a broader strategy, the comprehensive management of all marine living resources. Therefore, eNGOs should address the management of shark populations within the bigger context of ecosystem management.

Oceanic sharks are present in large areas, and some of these species show circumglobal distributions. In contrast, many nearshore demersal and pelagic species exhibit limited distribution ranges, making them more susceptible to overfishing and possibly extinction. In addition, by being close to shore, these species are more easily targeted by artisanal and semi-industrial fleets, typically poorly monitored worldwide. For example, in the Indian Ocean alone, there are an estimated 584,000 artisanal and semi-industrial vessels using a wide array of gears (Moreno and Herrera, 2013), many of them incidentally catching or directly targeting sharks. Additionally, habitat degradation presents a much more significant threat for nearshore species than oceanic ones (Dulvy et al., 2014).

Shark meat is an essential and cheap supplement to the diet and trade of coastal communities (Dent and Clarke, 2015; Lack et al., 2014). The overwhelming responses to questions 10 and 11 show that a decline in price or cessation of the fin trade will not result in a similar or even significant decrease in the commerce for shark meat. This effect may not apply to some industrial fleets (e.g., longline) that may target sharks for their fins and may or may not keep their meat for sale.

Implementing the regulations concerning shark finning in the different oceans deters, to some extent, its practice. Various Regional Fisheries Management Organisations (RFMOs) and countries have requirements to land the fins naturally or artificially attached to the bodies of the sharks (IUCN SSC Shark Specialist Group, 2021). Consequently, fishers cut the fins from the shark to allow for easier storage. Personal observations in Mauritius and communications with fishers who used to catch sharks attest to the relative success of this practice by the longline fleets that fish in international waters and offload in ports with solid monitoring, control, and surveillance.

Coastal communities in many countries in the Indian Ocean, and presumably elsewhere, catch and consume sharks in one manner or another (Moreno personal observations). I have informally interviewed fishers and observed shark landings in 11 coastal countries on the Indian Ocean (India, Indonesia, Kenya, Madagascar, Maldives, Mauritius, Mozambique, Seychelles, Sri Lanka, Tanzania, and The Islamic Republic of Iran). Sharks were offloaded whole, without exception, in all these countries. It is an indication that meat is an essential commodity. Even in countries where religious reasons preclude shark meat consumption, specifically Iran, fishers catch and export sharks to other countries where economic necessities prevent the exclusion of cheap protein (e.g., Pakistan) (Moreno, personal observation).

Various studies suggest that the increase in whole shark landings may result from the laws and conservation measures passed by countries and RFMOs, but many eNGOs posit that fins continue to be the primary reason for their capture. The results presented here show that artisanal and semi-industrial vessels catch sharks for their meat, at least in Indonesia and other developing countries.

Informal questioning of fishers in Peru and observations in Colombia and Brazil gave similar results. I do not present these numbers as the interviews were few. Nevertheless, the conclusion was that shark meat was the main driver, and fins were a by-product. Furthermore, the few fishers interviewed indicated that a ban on finning or a complete loss in revenue from fins would not deter them from catching sharks.

Moreover, shark capture and consumption are not exclusive to developing or Asian countries. The wealthy north also consumes sharks in large quantities, commonly under different names (Boston Newsmagazine, 2016; Christian Science Monitor, 2018; Clarke, 2014; Dent and Clarke, 2015). For example, Spain has the highest captures

globally, and the United States ranks among the ten top nations capturing sharks (Fischer et al., 2012).

Even documentaries that try to demonise finning (Seaspiracy, 2021) miss the point when showing the landing of whole sharks, proof that finning is not the sole reason for their capture.

The situation from country to country, and even within a country, may vary substantially. In eastern Indonesia, for example, shark finning is still a significant activity for some fleets. Because of storage issues, fishers may dump shark bodies in the ocean after finning (Vanessa Jaiteh personal communication). However, in the many ports visited by the author in Indonesia, sharks are landed whole, specifically for their meat. In addition, fins, oil, and cartilage are usually by-products for most species. These conflicting results indicate that the reasons behind shark exploitation are varied and nuanced. As a result, local and international demand may have different effects in the same country and species.

Most shark fins found in Hong Kong, estimated at around 60% of the total, came from small specimens (Clarke et al., 2006). Because the average size of sharks, among other marine fish, has likely decreased worldwide in the 17 years since that study, we can safely assume that the percentage of small fins found in the trade centre, Hong Kong, has increased. Furthermore, since fins from small sharks are not very valuable, we can also conclude that most sharks worldwide are not targeted for their fins even though fishers sell them to gain supplementary income.

Even though the information presented here is neither new nor the idea original, I felt compelled to write this paper due to the sensationalistic and misleading approach to the finning issue by some NGOs and the media. eNGOs' websites commonly use emotionally charged photos and misleading statistics solely for fundraising and branding purposes. Unfortunately, in addition to misinforming the public, this approach misses the most significant driver likely causing the decline of many shark species worldwide, their meat.

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1 **Appendix 1.** The questionnaire used in this study.

1. Port	2. Date	3. Boat type/gear
4. Are sharks an important part of your catch by weight? ____ (Y/N)  5. Are sharks an important part of your catch revenue? ____ (Y/N)	6a. Note the % of sharks caught by size. Small/Large ____/____  6b. Rank from 1-5 your reasons for catching sharks. Small/Large sharks (1 = most important 5 = least important)	a. Food ___ b. Shark fin income ___ c. Income from other shark products ___ d. Bycatch ___ e. Other (provide details): _____
7. Rank these shark products in order of economic importance: 1 = High, 6 = Low Small/Large sharks  Meat ___/___                      ___/___ Oil Fins ___/___                        ___/___ Skin Teeth ___/___                      ___/___ Cartilage	8. Do you sell shark fins? (Y/N)	9. Do you actively target sharks? (Y/N)
	10. Do you catch sharks only for the fins? (Y/N)	11. If shark fin had no value would you still land sharks? (Y/N)
	12. What gear do you use to catch sharks?	
13. Do you consume sharks?	14. What are the main types of sharks you catch?	
15. Is there a season for catching sharks? When?	16. Do you cut the fins of sharks at sea and dispose of the body? If yes, why?	
17. Where do you catch sharks? Inshore, offshore, coral reefs, mangroves, FADs, other?		
18. When did you start fishing?	19. When did you start landing sharks and why?	