



The end of shark finning? Impacts of declining catches and fin demand on coastal community livelihoods



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ARTICLE INFO

Keywords:

Luxury seafood trade
Small-scale fishery
IUU fishing
People smuggling
Multi-scale governance

ABSTRACT

For several decades, fishing sharks for their fins has provided important livelihoods for eastern Indonesian coastal communities that fish the Halmahera, Arafura and Timor Seas. Fishery and interview data collected in 2012–13 from three case studies on the islands of Seram, Aru and Rote were used to examine changes in shark fishers' livelihoods over the preceding 20 years. While recent declines in catches and shark fin prices have had a substantial impact on fishers' livelihoods, the fishery's low visibility in some areas of its geographic range and its political complexity in general have meant that government and international development agencies have largely been unaware of this impact. Many respondents remembered the Asian Financial Crisis in 1997–98 and the turn of the millennium as a time when sharks were still abundant and shark fin prices high, but were concerned about the on-going fall of shark fin prices since March 2012. High-value species, particularly guitarfish, hammerhead and sandbar sharks were most affected, losing up to 40% of their pre-2012 value. These changes, combined with the loss of fishing grounds, few attractive options for alternative income and restrictive debt relationships with shark fin bosses, have led some fishers to resort to high-risk activities such as blast fishing, illegal transboundary fishing, and people smuggling. This paper examines the multi-layered causes and consequences of fishers' decision-making in response to adverse changes in their fishery, and explores options and obstacles to pursuing livelihoods that carry lower environmental, financial and personal risks.

1. Introduction

Shark fishing is often described as a relatively recent phenomenon, driven by a lucrative and booming market for shark fin that flourished with the expanding Asian upper classes during the last three decades. Yet humans have eaten sharks for thousand of years [1] and coastal communities have fished them since ancient times. In China, shark fins have been traded as a commodity since the Sung Dynasty (960–1279 CE) to make a prestigious soup historically reserved for royalty [2,3]. China's massive economic growth in the 1980s brought with it an attitude of 'to get rich is glorious' that resulted in a surge in the demand for shark fin, regarded as a fruit of prosperity [4]. This transformed artisanal shark fisheries in source countries into commercial fisheries and gave rise to the contentious practice of shark finning, where a shark's carcass is dumped back into the sea after its fins have been cut off [5]. Today, fishing sharks for their fins is the main driver of global declines in their populations; declines which are unprecedented in the 350 million years during which sharks have evolved in diverse marine habitats, withstanding extreme ecological change and five mass extinc-

tion events [6].

While the centre of the shark fin trade is in Hong Kong, its footprint extends across the globe, with suppliers that range from large industrial fishing operations to small-scale fishers who either target sharks directly, or retain them as bycatch [7]. Indonesia ranks as the world's largest shark producer, with a reported average annual production of over 106,000 t between 2000–11, or 13% of world chondrichthian captures [8]. During the same period, global imports of shark fin to trade centres in China averaged an annual volume of 16,815 t with a value of US\$377.9 million per year [7]. Indonesia's shark fin exports averaged 1235 t with an average value of US\$10 million per year, making it the third largest exporter of shark fins in terms of quantity and sixth largest in value [7]. Beyond these numbers, information on Indonesia's domestic shark fin production and trade is scarce. A study conducted in 2004 indicated that the majority of sharks are landed at fishing ports in Western and Central Indonesia, specifically Java, Bali, Lombok and Sulawesi [9], where vessels that target sharks normally land whole carcasses [10,11]. Other researchers regard the shark fishery largely as a product of prized bycatch by tuna longline vessels

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[12,13], and there is no doubt that bycatch makes a significant contribution to Indonesia's shark landings. However, an additional, little known fishery extends throughout eastern Indonesia, comprising small-scale commercial fishers that target sharks, fin them at sea, then sell the dried fins as a high-value cash commodity in a region with few similarly profitable livelihood opportunities [14,15].

Just as the rapidly rising demand for shark fin has had far-reaching implications by creating lucrative income opportunities in supply countries, these livelihoods are also vulnerable to market fluctuations. Recent reports suggest that shark fin prices and import volumes to Hong Kong dropped steeply in 2012 [4], for which a number of reasons have been proposed. These include campaigns aimed at reducing demand by raising awareness of the effects of finning on diminishing shark populations [16]; social dissent prompting a ban on shark fin soup at official banquets [7]; concerns about food safety and fake shark fins leading to reduced demand [17]; changes in custom commodity codes (where shark fins are labelled as shark meat) that disguise continued trade [4]; and diminishing supplies following global declines in shark stocks [4]. The last of these is in line with estimates of reduced fisheries production [4,7] and fishers' observations of declining catches over the last decade [18]. While the Chinese seafood market can largely withstand fluctuations by expanding its network of suppliers and shifting consumer preferences to other prized species, fishers' livelihoods in source countries are likely to be more immediately affected.

Pulau Osi (hereafter Osi), Dobo and Pepela (Fig. 1) are three fishing communities in eastern Indonesia whose livelihoods have been shaped by the international shark fin trade in the last two to three decades [18–20]. Their fishing grounds represent three major sea basins in the region: the Halmahera-Seram Sea, the Arafura Sea and the Timor Sea. These three communities share some defining characteristics: their distance from the capital, Jakarta, places them at the geographic and economic periphery of the country; their connections to regional markets are often irregular; and their remoteness and economic constraints make shark fin an ideal product to trade, since it can be sun-dried, stored without the need for ice or freezers, and sold at a higher price than almost any other seafood product [15]. It is in communities like these that the impact of both diminishing shark populations and major market fluctuations are most directly felt.

Although several studies have examined the reciprocal effects of

market dynamics, trade and consumer behaviour in China [2–4,16,17], the consequences of these factors for shark fishing livelihoods in supply countries are largely unknown. This study examines how the market dynamics described above have affected the livelihoods of eastern Indonesian shark fishing communities. Specifically, it addresses whether the reported steep decline in shark fin imports to Hong Kong is paralleled in fishers' catches, which serve as a proxy for the environmental impact of Chinese demand for luxury seafood in a source country. Next, this study reflects on how the fishery might change in the near future, considering in particular how ecological change, exclusion from fishing grounds and restrictive relationships with shark fin industry patrons (hereafter 'bosses', from the locally used term *bos*) act as drivers of fishers' livelihood decisions. These decisions are then discussed regarding their impacts on domestic and trans-boundary governance of marine territories, livelihood security and resource sustainability.

2. Methods

2.1. Communities

During 13 months of field research between March 2012 and November 2013, the lead author collected data in the eastern Indonesian fishing communities of Osi, Dobo and Pepela. Data collection followed a transdisciplinary approach that involved participation in short fishing trips, observation, semi-structured interviews and informal conversations with fishers and other community members.

Pulau Osi is located 2 km off Seram Island in Maluku province (Fig. 1). In 2012, 963 people lived in the community, most of whom relied almost exclusively on income from shark fishing or less profitable small-scale fisheries. Osi's fishers began commercial shark fishing in the early 1990s, with vast fishing grounds that encompassed Maluku and its neighbouring provinces and extended as far west as Bali and south into Australian waters. At the time of this study, they mainly fished around the islands of Raja Ampat in West Papua, which they regarded as a prime fishing ground for reef sharks (Fig. 1). In 2013, the regency of Raja Ampat was declared a shark sanctuary and shark fishing became punishable by law, displacing Osi fishers to less productive fishing grounds around Halmahera and the Seram Sea [21].

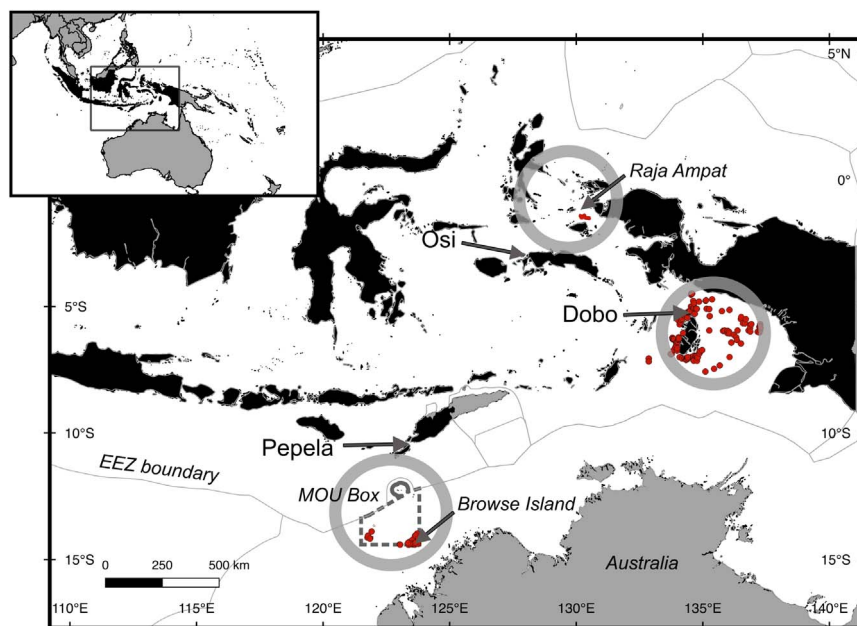


Fig. 1. Map of case study sites in eastern Indonesia and their main fishing grounds (grey circles): Osi island off Seram with fishing grounds in Raja Ampat and Halmahera; Dobo in the Aru Archipelago, from where most fishing occurs between the Aru islands and Papua (Arafura Sea); and the village of Pepela on Rote Island, with fishing grounds in the MoU Box (Timor Sea). Red dots show fishing sets recorded by fishers using GPS (Dobo, Pepela) and by GPS tracker (Osi). Please refer to the online version for colour figures.

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