MANON OSSEWEIJER

A toothy tale

A short history of shark fisheries and trade in shark products in twentieth-century Indonesia

Introduction

A grey triangular fin cutting the surface of an otherwise calm sea, which many people will immediately associate with the 1975 suspense movie *Jaws*, strikes dread in the hearts of beach-goers and fishermen alike. Beneath the fin is a creature most people love to hate, a creature whose predatory menace and mastery of the sea has made it notorious: the shark. More recently, sharks have been in the news and have starred in film documentaries in a more positive light. Sharks are presented as animals which have been at the top of the ocean food chain for millions of years, but have now become an endangered species. Since the mid-1980s, a relatively new predator has jeopardized the survival of the shark, the fisherman who catches sharks, even overfishes the stocks. Biological characteristics such as slow growth, late maturity, relatively long-lived, long reproductive cycles, and a limited number of young, make sharks inherently vulnerable to overfishing.

In response to demand in the international marine food resource market, sharks have become a new target species for fishermen of the tropical seas. Sharks are most often sought for their fins: the stringy tendrils of the dorsal, pectoral, and lower tail fins are prized as the namesake ingredient of oriental shark-fin soup, an expensive delicacy in Asian cuisine. To a lesser extent, sharks are caught for their teeth, skin, cartilage, and liver oil for use in health products, cosmetics, lubricants, and tourist trinkets. In response to the rising trade in shark and ray products, an international conservation lobby has started to seek ways to warn people about the consequences of the high level of global shark fisheries and to protect the shark through the Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES) and national legislation. Environmental action groups as well as international organizations such as the International Union for Conservation of Nature and Natural Resources (IUCN) and the Food and Agriculture Organization (FAO) of the United Nations have founded specialist groups and launched campaigns to attract people's attention

to the precarious situation of sharks and rays. This is done not only to protect sharks for their intrinsic value, but just as much for their scientific value. Much more attention could be paid to sharks' life-histories and medical knowledge derived from shark research (Cunningham-Day 2001:16).

Some of the action groups, such as the Singapore-based Sea Shepherd Conservation Society, have resorted to harsh methods of campaigning. In 2001 the society circulated a free postcard showing a bride and groom gazing lovingly into each other's eyes as they entered a blood-splattered banquet hall littered with mutilated sharks (Figure 1). Another example is anti-shark fishing posters which crudely say 'For 400 million years, the undisputed lord of the oceans. Now presiding over four ounces of tepid broth and a mushroom', or 'The shark in your soup had his fins chopped off, then was returned to the ocean to die an agonizing death. You'll be happy to know the onions suffered not in the least.'¹

Figure 1. Free postcard for the anti-shark-fin consumption campaign (Sea Shepherd Society Singapore, 2001)

Shark fishery is a classic example of a fishery in a frontier phase. Fishermen have been obliged to open up new horizons by sailing progressively farther from their home bases to find shark populations in more accessible areas. However, as John Butcher (2004:1) describes in his historical work on fishing frontiers: 'By the 1990s, nearly all of the three-dimensional sea was being exploited, catches had fallen sharply in many areas, and the freedom to move from one fishing ground to another had been severely curtailed' (see also Bailey et al. 1987). Usually a fishery develops as follows: in the first phase, a potentially profitable fishery is identified but remains undeveloped. Then, as basic technology, essential infrastructure, and market demand improve, a rapid take-off follows during which both the fishing catch and the effort required to land it increase rapidly. At the end of this phase, the fishery reaches maturity or full development. Stock variability now proliferates and catches start to exceed the economically optimal level. Almost invariably, a fourth phase of declining yields follows, as overfishing severely reduces the spawning potential. In the

¹ These cynical quotes are from anti-shark-fishing posters, designed respectively by Mark Conlin, R. and V. Taylor, and David Fleetham of Innerspace Visions. See www.elasmo.org.

most serious cases, stocks even fall below economically profitable levels and the fishery collapses.

Shark fishery, like other exploitations of marine resources, is therefore subject to 'boom-and-bust' cycles. Although in the fishery sector it is usual to speak of a process of fishing down the food web, whereby fishers, having over-exploited large predatory fish, switch to smaller species lower down the food chain which have undergone a temporary increase in numbers after the removal of their predators. In the case of shark fisheries it is precisely the large predatory species which is targeted. Historically, sharks have been regarded by the large-scale fishing industry as a species of low economic value, and for a long time have mainly constituted by-catch alongside other species. Since the mid-1980s, several countries have been promoting the hunting of sharks as an 'under-utilized' resource of palatable, nutritionally valuable meat (Butcher 2004; Seaweb 1996). Taking this into account, it is no surprise that the majority of countries have no controls on shark fisheries yet, and that so far there is not any meaningful international regulation.²

According to international organizations, the controversial practice of 'finning' – whereby only the fin is cut from the (often still living) shark, which is then thrown back into the ocean – is putting unprecedented pressure on shark populations around the world. Reported shark catches increased from 622,908 metric tonnes (mt) in 1985 to over 800,000 mt in 1998. Reported trade in fins increased from 3,011 mt in 1980 to 7,048 mt in 1997. However, much of the harvest, such as by-catch and trade, is unreported (WildAid 2001).

Although it is not known if the level of shark fishing is sustainable, because of a lack of management and research, the negative impact of shark fishing and the trade in shark products might very well lead to a closure of the frontier and consequently the collapse of shark fishing in the near future. In addition to 'hard' proof in the form of numbers showing a decline in catch, there are signs which indicate the endangered status of certain shark species and stocks in particular regions, such as increased numbers of sting-rays in Florida, apparently brought on by removal of the hammerhead sharks which preyed on them, and a proliferation of lobster-eating octopuses in Australia, formerly controlled by sharks. These are salient pieces of evidence that sharks maintain diversity by preventing explosions of single species (Seaweb 1996; Cunningham-Day 2001:15). Two other warning signs are the decline in shark-fin size and the fact that fishermen are moving into remoter areas as they follow sharks; these are signs which should ring alarm bells about overfishing.³

The object of this essay is to examine the history of shark fisheries in Indonesia, at present the world's main supplier of shark fins. Presenting various

² Only four countries, United States, Canada, Australia, and New Zealand, have a shark management plan.

³ Chen Hin Keong 1996:31; Reid and Fox 1992; Fox 1998; Osseweijer 2001.

perceptions about sharks entertained by governments, fishermen, and consumers in the colonial past, or more precisely the early twentieth century, and the present, I show that the attitude towards shark fishing has grown more positive and is implicitly supported by the Indonesian government. The shark-fishing situation in the late 1990s is illustrated by a case study of the Aru Islands in eastern Indonesia.

Shark products and consumer perceptions

Sharks provide many products, both edible and inedible, such as fins, skin, lips, stomach, liver, cartilage, and teeth. Of all shark products, fins are the most valued. Shark fin is one of the most expensive fish products in the world. Fins are used to prepare soup, which is mainly appreciated by Chinese ethnic groups and can be sold for as much as US\$100 per bowl (Chen Hin Keong 1996). The benefits of shark fin as documented by ancient Chinese medical books include rejuvenation, appetite enhancement, nourishing to blood, beneficial to vital energy, kidneys, lungs, bones and many other parts of the body. Today, shark fin is primarily served at dinner parties to express the host's respect for his guests, usually at weddings and other important functions. The most shark fin is consumed between October and February, the customary season for weddings and other parties, with a peak during Chinese New Year (Vannuccini 1999; Chen Hin Keong 1996).

The world of the shark-fin trade, like that of some other exotic products, is an intriguing one, requiring a wealth of special knowledge to participate in it and to understand the value of fins fully, which means both their economic and cultural or culinary value. Shark fins are processed and marketed in many forms, such as fresh wet fins, raw fins in dried form only, semi-prepared with the skin removed but fibres still intact as one dry mass (which is usually the most expensive form as it is the cleanest and purest presentation), fully prepared, packed in cardboard boxes or simply in a single or double layer of viscose film, frozen prepared fins, fins in brine, and ready-to-eat or ready-to-cook products. There are various grades and categorizations. First there is a gradation according to the type of fin, which roughly distinguishes between first grade, or the first dorsal fin, the pair of pectorals, and the lower lobe of the tail, and lower grade, which consists of all other fins, namely second dorsal fin, the pair of ventral fins, and the anal fin. Another way of grading is based on colour. In this system white fins are preferred to black. Moreover, shark fins are traditionally traded as fin sets, and preference is given to complete sets from the same shark rather than a mixture (Vannuccini 1999). According to experts, a complete set consists of two pectoral fins, the first (rarely the second) dorsal fin, and the lower lobe of the tail fin. The proportion of fins by quantity should normally be around 50 per cent for pectoral fins, 25 per cent for dorsal fins, and 25 per cent for tail fins (Figure 2). It is rather difficult to pinpoint the pre-

Figure 2. First grade and lower grade shark's fins (Source: Vannuccini 1999)

ferred species. This varies from country to country and even among individuals, although it is safe to say that the fins of sharks over 1.5 metres in length are preferred by all consumers (Vannuccini 1999: section 6.2.4).

The commercial value of the fin depends on various factors, the principal ones being: 1. percentage yield of fin rays or fin needles, which varies with type of fin, with shark species, and how the fin is processed; 2. general appearance of the fin, its colour and cleanliness; and 3. texture or tenderness of the fin. Generally speaking, the price of shark fins, worldwide, increased dramatically in the late 1980s and 1990s. This reflects the substantial growth in demand, which is linked mainly to the opening of the Chinese market and the simultaneous reduction of tariffs, plus the relaxing of political pressure in China that discouraged consumption of this product in the past, as it was considered too luxurious for domestic consumption (Chen Hin Keong 1996).

The expensive dried fins are retailed in specialty shops in cities, where other (mostly) dried products are sold, such as sea cucumbers, sea horses, edible birds' nests, ginseng roots and the like. Sometimes fins are packed in special gift boxes and sell easily for hundreds of dollars. In wet markets, semi-processed fins are sold. However, in Singapore and Hong Kong, two major centres for shark-fin consumption, only older women are still knowledgeable

about the preparation of shark fins. It takes two to three days to soak, cook, and simmer the fins. Their daughters and granddaughters have lost interest in traditional recipes, mainly because their life-style has changed and they no longer have time to spend so many hours cooking.

Shark fisheries in Indonesia

In Indonesia, shark fishing has long been a practice in which artisanal or small-scale fishermen engaged, but unfortunately there are no thorough descriptions of how it was actually done. Starting in the early twentieth century, shark fishing began to appear in colonial newspaper articles and was mooted as a new opportunity for Netherlands Indies fisheries. In a 1930 article on shark fisheries in South Africa, it was explained that this new business was flourishing and was thought to be a way to increase fishermen's safety at sea. In those days, sharks were clearly regarded as vicious, dangerous animals which had to be hunted as much as possible. It was also suggested that shark fishery would be good for Indonesia, especially in the region between Batavia and Singapore (*Haaienvisscherij* 1930c:1624). A fortnight later, in the same weekly agricultural newspaper, a shark-fishing experiment in the Lingga Archipelago (Riau) was described. Sharks were caught with gill nets and used for their skin, meat (to be salted and dried), and fins. The skin was to be exported to Europe, the meat and fins were destined for Singapore (*Haaienvisscherij* 1930d:1702).

Mrs Weber-van Bosse who accompanied her husband, Professor Weber, on a scientific expedition on the *H.M. Siboga*, vividly conveys the contemporary perception of sharks even earlier in the twentieth century:

While we were still at dinner, the steward told us excitedly that sharks were swimming around the ship, and instantly everyone was up and rearing to catch these sailors' enemies. [...] I firmly believe that every sailor is convinced that there is always a shark lurking nearby to devour him or to bite off his leg, should he accidentally fall into the water, and that for this reason the sailor bears the sharks such a profound hatred.⁴

In the articles promoting shark fishing, it is this – sharks being the enemy of fishermen and sailors – which is given as a reason for starting shark fishing on a large scale. This was backed up by an economic reason, namely to promote the 'sea predator fishery', a fishery 'which might become much more significant than the catch of fish as popular food' (*Haaienvisscherij* 1930b:145).

According to an American ichthyologist, around 43 per cent of a shark's weight had economic value, consisting of 15 per cent meat, 6 per cent tanned epidermis, 6 per cent cattle feed, 5 per cent fish oil, 5 per cent fertilizer, 2 per

⁴ Weber-van Bosse 2000:34. All English translations of Dutch quotes from colonial accounts in this article are my own.

cent split leather, and 2 per cent fins. Although the dried meat was traded to Java, Madura, and China, the dried fins were sent exclusively to China (*Zeevisserij in Indië* 1929:1025-6; *Haaienvisserij* 1930b:145). He contends:

When the public reads about sharks, what springs to mind is a frightening fish, which, with a pilot fish in front, renders ships at sea unsafe and provides material for a host of fascinating adventures in popular boys' books. Rarely is it supposed [...] that the shark is a fish which can be as useful to humans as a cow. (*Nieuwe bron van inkomsten* 1929:1159.)

As a result of this promotion, the government advisor on sea fisheries in the Netherlands Indies, Johan Poortman, who was asked to draft a plan for future sea fisheries in the Indies waters along the same lines as that for European fisheries, included shark fishery in his assessment. Therefore, in June 1930, on the initiative of the Dutch government, a KPM (Koninklijke Paketvaart Maatschappij)-sponsored steamship was dispatched to the Lingga Archipelago in Riau to start collecting samples of shark products. Four smaller motorboats accompanied the steamship and the sharks and rays were caught in heavy set nets. This one-year experimental business focused on good quality shark skins, dried and salted shark meat, and dried fins. In the *Indische Gids*, it was excitedly stated that if it were true that the shark could be frequently found in the Indian archipelago in such numbers as found nowhere else in the world, then Indonesian waters would contain a wealth so great that it would be almost impossible to calculate, an opportunity that had so far been left untouched (*Zeevisserij in Indië* 1929:1256).

After only five months, the same journal reported disappointing shark catches. The reason given for the small catch was that the sharks had migrated elsewhere, seeking places unknown to fishermen. Professor Delsman, director of the Aquarium in Batavia, who was interviewed for the journal, explained that scientists still had a great deal to learn about shark behaviour. However, he considered it likely that the sharks had migrated in response to a change in monsoons (*Haaienvisserij* 1930a:1025-6; see also *Indisch verslag* 1931:155).

The descriptions of shark fishing mentioned above are all comments by Dutch people who were encouraged to invest in the new fishing branch. References to local people fishing for shark in the colonial period are far fewer. The oldest report is by a civil servant writing to the Governor-General in Batavia in 1800, saying that the bay was rich in fish and teeming with sharks. The Javanese feared the sharks but caught them in great numbers. Apparently, all the oil found in these people's houses was shark oil (Delsman 1923:62). Elsewhere there are brief mentions of shark fisheries in Maluku (*Zeevisserijen* 1882:328), shark and ray fishing near the Rokan River in east Sumatra, described by H. Delsman (1922:157), and local, small-scale shark fishing off the shore of the north coast of Java and Madura using long lines, as noted in

the *Indisch verslag* (1931:150).

A more detailed account is given by W. Kooiman (1918:501-3), who wrote about shark fishing in Wijnkoopsbaai (today Teluk Pelabuhan Ratu) with the romantic title 'A dreamer on a shark fishing trip'. He describes how every night at half past seven the *prahoe oesoep*, the smallest boats used in Pelabuhan Ratu, with three men on board, would leave with the offshore wind to sail to the fishing grounds close to the bay. There, with the help of torches, the fishermen started fishing for bait fish (ribbon fish or *ikan layur*) using a long line. Around five o'clock in the morning, the boats left the fishing grounds to set sail to the offshore area where sharks would be caught. Using a long line (80-200 *depa* or *vadem*⁵) tied around his knees and neck, the fisherman woke up immediately he felt a strong tug. The line was tied to the boat and, if the shark was a large one, the men let the shark drag along behind the boat. By constantly hauling and then giving rein to the line, the shark became exhausted (*hieo ngamok*). In the end, the weakened shark gave in and could be hauled into the boat. If the shark was too big, the line was cut to prevent serious accidents.

The line is hauled in and the shark, finally in view, is violently thrashing the water with its huge tail and rotating the line, so that its white belly becomes visible and then once again its shiny leaden back. [...] [B]y the large dorsal fin, which rises quite a height above the gunnels, the people waiting on the beach know whether or not a shark has been caught. (Kooiman 1918:503.)

After independence up until the 1980s, there is a blank in information on shark fisheries in Indonesia. Most of the western and central provinces of Indonesia saw the greatest expansion in the shark catch during the early 1980s. Since then, catches have generally decreased or remained constant. In the eastern provinces of North Sulawesi, Maluku, Nusa Tenggara Barat, and Irian Jaya, the catches have been increasing enormously since the late 1980s. Thus while there has been an increase in overall shark catch, there has also been a significant shift in its geographical distribution. At the peak of the shark-fin trade, the total export of shark fins from Indonesia was 547 metric tonnes, which is the equivalent of about 40,000 to 60,000 metric tonnes of live-weight shark. The recorded landings of shark in that year totalled 36,884 metric tonnes (Chen Hin Keong 1996:19).

A decline in fin size is often seen as an indicator that a shark population is being threatened. Perhaps the sudden increase in fin prices (in dollars) since the Asian economic crisis (1998) might be an indicator as well, although caution should be exercised here. Shark fins, like other maritime products, have always been traded in dollars (Singapore and US dollars), and the crisis resulted in a devaluation of Asian currencies. Apart from the fact that there

⁵ A *depa* (also known as *vadem* or fathom) is approximately 1.8 meters (De Graaff and Stibbe 1918:686).

is hardly any good overview of the population dynamics of each shark stock, which makes it impossible to estimate whether the level of the current shark harvest is sustainable or not, the government of Indonesia, or more precisely the Department of Fisheries and Sea Affairs, does not have any special management or policy for sharks.

Case study: the Aru Islands

Shark fins, like other products for which Aru is renowned, which include pearl oysters, edible sea cucumbers (*trepang*), edible birds' nests, mother-of-pearl shell, and birds of paradise, have gone through boom-and-bust cycles, often more than once. Having been part of a trade network in Southeast Asia for nearly two thousand years, from the mid-seventeenth century the Aru Islands developed into a region where marine products for the China market were collected, with Dobo as its major trade entrepôt (Spyer 2000:25; Swadling 1996:166). Especially since the nineteenth century, written sources have described this trade in Aru, which initially was mostly in the hands of Makassarese, Moluccan, and some Arab traders, but after 1860 was dominated by Chinese migrant traders. Up until the present, Dobo has retained its role of trade entrepôt, where dozens of Chinese trader families have lived for generation after generation, buying the natural resources which are in such high demand from local Arunese fishers and hunters, and in return providing the islanders with modern consumer goods and food products (Osseweijer 2001).

Although shark fins formed part of the total package of luxury marine products from Aru, pearls, mother-of-pearl shells, and trepang must have figured more prominently, at least in the eyes of the nineteenth-century writers who reported on trade of the Aru Islands. Shark fins barely rate a mention. The earliest accounts of the shark-fin trade are by Wallace (1962:329) and Van Hoëvell (1890:76, 86, 99). Up to that time, trepang and pearl shell had made up the bulk of Aru exports. Wallace describes shark fins as one of the many products brought to Dobo by Aru Islanders living in backshore villages. Van Hoëvell gives trade statistics in which shark fins are mentioned as one of the significant export products from Aru. The amount of shark fins and the price they fetched, however, reveal that this product was not yet very popular. Whereas mother-of-pearl and edible sea cucumber exports were 1325.5 *pikol* (at f100) and 863 *pikol* (at f30), respectively, in 1885 shark fins were only 252 *kati*⁶ (at f0.50) (Van Hoëvell 1890:99).

Apart from these reports, which mention shark fins as a product, there are no descriptions of the fishery itself. Consequently, it is difficult to say who caught the sharks in Aru – local people or outsider fishermen. However, it seems likely that specialist shark fishermen from southeast Sulawesi, who are

⁶ One *pikol* is approximately 62 kilograms; one *kati* is 0.617 kilogram (De Graaf and Stibbe 1918:688).

known to have targeted sharks for centuries, caught the sharks for their meat and fins. Sulawesi fishermen undertook long annual voyages and fished for sharks using hand lines. To attract the creatures, they used a shark rattle, a bamboo pole hung about with coconut shells (Wallner and McLoughlin 1995). Local perceptions of sharks are briefly mentioned by the assistant-resident of the Moluccas, C. Bosscher, who in his description of the physical appearance of the Arunese says that they had beautiful long hair which was bunched together but never touched by a comb. This tangled mop of hair was believed to scare off sharks and other fish (Bosscher 1854:342). Thirty years later, Riedel (1886:253) explained that certain Aru families honoured crocodiles and sharks as their ancestors and kept carvings of these animals, which they were forbidden to consume, in their houses. Whether Arunese fishermen really did catch sharks for their fins is not known. Certainly, older Arunese people remember particular shark species, especially rays, always having been caught for food.

In the late 1980s, shark fishing in Aru boomed again. As Patricia Spyer recounts, local fin prices had shot up and tail and dorsal fins were found sun-drying in front of houses and Chinese shops; new boats were built, and shark nets were made or repaired. New consumer products bought with shark money were to be seen everywhere, in backshore villages as well as in the main town of the archipelago, Dobo. As a result of the massive exploitation of sharks, in 1994 there were already signs of a decline in the shark population in Aru waters (Spyer 2000:22-3).

Non-local shark fishermen

Today, as in many other fisheries in eastern Indonesia, fishermen from southern Sulawesi dominate the Aru shark fishery.⁷ Sulawesi shark fishermen, like their fellow fishermen targeting other marine species such as Trochus shells (*lola*), are known for migrating from one region to another, 'following the resources', that is, as soon as stocks become exhausted in one place, they move to another. While their network covers the whole of Indonesia, they do still have a home village in Sulawesi or elsewhere in eastern Indonesia. As James Fox (1992:17) said of Buton fishermen, there is a clear impression

[...] of a highly mobile (almost nomadic) younger male population who for the most part have taken up sailing at an early age and therefore have little formal education; who spend a great deal of their time away from their 'home village'; and who may eventually, as circumstances permit, marry a woman from any settlement within their 'network'. In the off-season, most of these fishermen would engage in farming, in boat-building or in local petty trading to earn their meagre living.

⁷ Unless explicitly sourced, the next two paragraphs rely heavily on and are partly taken from Chapter IV of my unpublished PhD thesis (Osseweijer 2001).

This is equally true of the shark fishermen of Aru: Bugis and Buton fishermen are seasonally involved in shark fishing and arrive in Dobo at the beginning of the west monsoon in September. Many of them remain in Aru until December and continue fishing from March to June, after which they return to their families in Sulawesi. During the fishing season, the fishermen live on their fishing vessels. There are also fishers who live in Dobo and return to Sulawesi only once every few years. Buton shark fishermen come from various locations in eastern Indonesia (Bonerate, Flores, and Alor), which together form what is known as the Buton network (Abe 1999).

When I visited Aru in 1996, the shark-fin fishery was completely in the hands of Sulawesi fishermen. By the following year, however, the Arunese residents of the village of Batugoyang had taken up shark fishing and had made it their primary maritime product. In southeast Aru, where my research was carried out, the presence of Sulawesi fishermen (of whom the majority are Bugis) was highly visible: in the trade settlement of Meror, almost without exception, there were several of their brightly coloured boats, locally referred to as *motor pancing* (fishing boats), riding at anchor. Sometimes the number of these boats would rise as high as twenty. The fishers themselves were easily recognizable by their appearance: rather short men wearing a typical checked sarong.

In 1996, before I had spoken to any backshore fishermen, I encountered shark fishers from Sulawesi in Meror. Unlike local Arunese villagers who visited Meror every day, the shark fishermen were not at all shy and liked hanging around on the veranda of the nature conservation office where I was staying. Although they enjoyed asking questions about my stay in this remote place, they were less willing to talk about their business in Aru. After some time, this reluctance wore off and a couple of fishermen showed me some of their shark fins, locally categorized as 'super', in the very narrow, low cabin of their boat. Bugis boats are lower and more streamlined than their high Buton counterparts. The boats have a capacity of between ten and fifty tonnes and are either owned by the captain (*juragan*), who has borrowed money from a trader in Sulawesi (or even in Dobo) to buy the engine, or are (partly) owned by the trader, who then receives a certain percentage of the catch. Besides these, there were also boats owned by *haji* in Dobo or Sulawesi. In all cases, there was an unmistakably strong relationship between the Sulawesi fishers and Chinese traders in Dobo. Invariably on such boats there is a clear division of labour. Navigation is the responsibility of the captain. The crew or *anak buah kapal* (ABK) shoulder the manual work, such as catching bait, pulling in lines, cutting and drying fins, and day-to-day maintenance of the ship. The crew and the captain share the catch, of which the captain always receives a bigger share, as well as the expenses of each fishing trip (fuel, food and other supplies) (see also Abe 1999).

During the time I spent in the region, contact with these shark fishermen continued to be difficult. Even attempts to become better acquainted with

them in an informal setting, for instance, during an Idul Fitri picnic organized by one of the Meror traders, did nothing to dispel the great reluctance shown by the fishermen to share any information about shark fishing. In a group interview with the whole crew of one of the Bugis boats in Meror joined by some interested colleagues from other boats, we all sat on the deck of a trader's boat and for a few minutes the young fishermen spoke about shark fishing. They gave some names of the sharks they regularly caught, and pointed them out in my booklet of shark photos, all showing off their knowledge by summing up as many names as possible, such as the 'seven fin shark' (*tujuh sirip* or whitetip reefshark), the *tarantikolo* (blacktip reef shark, and common blacktip shark), and the *pandru* (white spotted guitarfish, and the giant shovel-nose ray). It was mostly the older fishermen who gave some explanation of shark fishing, as it was their right by seniority to display their knowledge. Depending on weather conditions and the total catch, they explained, fishermen usually spent fifteen to twenty days at sea in the vicinity of Enu Island⁸ and as far south as Australian territorial waters. Then they would return to Meror to buy provisions in exchange for some shark fins. The sharks were caught with pelagic long lines longer than 100 m, using hooks of 7.5 and 9.5 cm, baited with dolphin meat. The lines were put out at night, and hauled in early in the morning. Then the crew would start cutting off the fins of the sharks, mostly dead by then, keeping the fins together as a set of four. The fins were left to dry in the sun on the roof of the cabin. The shark carcasses were thrown overboard, because shark meat fetched only Rp. 500 per kilo and was not worth the space it would take up, as it would have to be salted and stored in barrels. A small proportion of the total catch of shark fins was sold in Meror to pay for fuel and necessary purchases.

The crew consisted mostly of relatively young men, who had come along with their relatives. Once one of these young men proudly described his work while two of his friends, both crew on other Ujung Pandang boats, listened and nodded:

I have been in Dobo for four years now, with my uncle. We come from Ujung Pandang. We sail the *Cahaya Perkasa*, which is owned by a man in Ujung Pandang, and we catch sharks. We don't receive a steady income. This only happens when we sail the boat of our Chinese 'boss' in Dobo. Usually we stay at sea for twenty days, and then, if the catch is enough to settle the debt and make a little profit as well, we return to Dobo. We repay our credit to our 'boss' and sell the fins. Today, shark fishing is very good: 'super' fins yield Rp. 650,000 per kilo. So, unlike in the past, when twenty fins would hardly cover the debt, today we all receive a few million rupiah profit!

⁸ Enu and Karang are known as islands where green turtles (*Chelonia mydas*) come ashore at high tide to pick a suitable spot to lay their eggs.

Whenever the boats anchored in Meror, the crews would hang out in the small settlement, sitting in the shade of the big tree in front of one of the shops, or loafing around in the store, watching television or just talking. Quite often the fishermen liked to provoke the Arunese villagers and would shout remarks at them as they strolled on the jetty. Fishermen who were cleaning or painting their boats always found this a source of entertainment. Especially when drunk, the fishers could be very nasty towards both the men and women of the village, although most of the time the fishermen would start brawls among themselves. Local villagers often complained about their behaviour, saying that 'being Muslim they should know how to behave better'. Generally speaking, though, the villagers accepted but did not appreciate the presence of the Sulawesi fishermen, and kept them at arm's length from their village life. Equally unimpressed, the shark fishermen thought that Arunese Islanders were primitive and backward.

When fishing in the Arafura Sea, off the southeast coast of Aru, these fishermen usually do not hunt for sharks within the waters traditionally claimed by local Aru communities. Only when hit by bad weather do they anchor near Enu Island, and on these occasions they collect sea turtle eggs on the beach and catch fish at sea. As a general rule, Sulawesi fishers do not recognize local marine ownership conventions and uphold the national idea that open access is applicable to the Indonesian seas. The Indonesian slogan *Satu nusa, satu bangsa, satu bahasa* (One land, one people, one language) is emphatically transferred to fisheries, turning the sea into common property, teeming resources which can be exploited by all Indonesian citizens. With this idea of freedom in mind and in search of rich fishing grounds, many Sulawesi fishermen in Meror, of Makassarese, Bugis, and Butonese origin, find themselves fishing close to and even in Australian waters. They proudly recounted stories about their shark fishing in the Australian Economic Zone, which begins only a few hours' sail from southeast Aru. Sometimes they also recalled being caught by the Australian navy and taken to Darwin. Although Ashmore Reef and four other reefs on the northwest Australian continental shelf are identified in a Memorandum of Understanding as a region to which traditional Indonesian fishermen are given access, these waters south of Aru are not subject to such a special arrangement (Campbell and Wilson 1993; Fox 1998).

The main reason to go as far as northern Australian waters is the abundance of big sharks there, as opposed to the recent situation in the Arafura Sea. It is considered lucrative enough to take the risk of crossing the territorial border and being caught, which usually results in losing both the catch and the boat (which are seized and burnt). Especially with shark fin prices as high as they have been since 1998 (up to Rp. 650,000 per kilo), the potential catch has seemed worth the risk of losing a less than optimally seaworthy boat.

Nevertheless, for many fishermen, whether they own their boat or not, the loss of a vessel is devastating. Often it is their only means of income and the whole crew and their families are affected.

As Fox contends, the magistrates in Darwin intended to warn small-scale fishermen by seizing boats and catches when they enter Australian waters (Fox 1992:21). However, in 1998 when I visited Aru, the newspapers regularly carried stories about Indonesian shark fishermen being arrested in Australia, and the Sulawesi shark fishermen in Meror still talked about trips to the Australian waters. The penalty was high, but obviously the risk of being apprehended was considered fairly negligible.

Although these are the main players, there are other shark fishers in this region. One group, which hardly ever interacted with Arunese villagers or Sulawesi shark fishermen, was Dobo-based fishers on boats owned by Chinese. They catch sharks using two-kilometre-long drift nets. They too operate in the region between Enu and Australia. Only occasionally did these boats put in to Meror (during bad weather, or just to pay a visit to traders) and the roofs of the cabins were completely covered with hundreds of shark fins drying in the sun: mainly of blacktip and whitetip reef sharks, and tiger sharks. Scattered among the fins were other parts of a shark's anatomy like stomachs. The other outsiders were the fishermen on boats locally referred to as *Tanjung Balai* boats. These boats were said to come from Karimun, one of the Riau islands off the east coast of Sumatra, but operating from Benjina, the industrial fishing settlement along the Workai strait in Aru. These boats primarily fished for *ikan merah* (red snapper – *Lutjanidae* spp.) for which they had refrigeration facilities on board, but regularly attracted sharks with their baited long lines as well. For these fishermen, sharks were just a by-catch, but a very lucrative one, and selling fins brought them extra income. On a daily basis they could easily catch between three and ten big sharks with 'super' category fins.

Arunese shark fishermen

The Arunese, who live along the backshore, or the east coast of the islands, depend economically on their natural coastal environment, which consists of forest, savannah, mangroves, sandy beaches, tidal flats, and islets. In these various environments, the islanders are mainly involved in activities referred to as *mencari*, the foraging (of natural resources). To a large extent, they rely on the collection of non-domesticated foodstuffs, of which extraction of starch from the *Metroxylon* palm (sago) is one of the most significant. The harvest of the sea, too, has been important in Aru's coastal zone, for both consumption and trading purposes, and since the 1980s it has become the most important source of livelihood (*mata pencarian*). Almost all male villagers participate in fishing and diving at sea, or gathering on the tidal flats and coral reefs (Osseweijer 2001:62-

3). Having noticed the fortunes made by Bugis and Buton shark fishermen, a large group of Batugoyang men followed the trend and shifted from diving for pearl oysters and trepang, the traditional resource-extraction activities, to shark fishing, which has become one of their main income-generating activities. They have been able to do so because they have obtained gill nets from other fishing boats in their waters; sometimes in exchange for access to the waters near Batugoyang, but more often simply stolen from these boats. With more probity, a few men bought nets with a government subsidy for underdeveloped villages to start small businesses (locally referred to as *Inpres Desa Tertinggal*).

During the west monsoon (September to March), all boats are used for shark fishing, six days a week. The boats are traditional *belang*, but a bit larger and always with cabins instead of plastic covers, and are owned or shared by a family group, of which the custom in Beltubur provides an example. Usually the fishermen leave at the end of the day, between 4 and 7 p.m., taking along several sets of nets (*kepala*) approximately 40 *depa* in length. Early in the morning, the shark catch is landed on the sandy beach of the lower village, and female relatives of the fishermen come to cut the fins from the carcasses. The sharks caught are mainly very small, yielding fins known as *kacang-kacang* (very small). The meat is cut, salted, and then taken into the village to dry in the sun. It is for home consumption only. The village seems to be festooned with shark fins being dried on racks or lines. The men spend the day mending their nets.

Batugoyang men have created their own niche fishery by using drift nets in fishing grounds close to the shore. They leave it to Bugis and Buton fishermen to catch larger sharks using long lines and bait, happy to let them sail much farther away from the archipelago. Hence a harmonious situation prevails in the shark fisheries, as long as each group remains in its own waters, and as long as outsider fishermen do not enter the inshore waters where most of the islanders engage in other resource extraction activities. In Beltubur, a village some two-and-a-half hours sail to the north of Batugoyang, only one man occasionally fished for sharks. Others complained, saying they would like to catch sharks but did not have the necessary nets. The sons of the two Chinese-Indonesian traders, like other traders' children in the region, were involved in shark fishing, both using their own small boats and being assisted by young men from Kei and Tanimbar, who temporarily spent time in this remote region earning a living. The reason most often heard there to explain the reluctance to go shark fishing was that the tiger shark and the hammer-head shark are associated with certain families.⁹ Those who have a special

⁹ Aru islanders perceive the land and seascape as places that remind them of their ancestors (*kai-jenan*), who set their footprints there (see also Pannell, this volume). The landscape is a collection of actions and events by ancestors in a far-away past (*ninuijjesir*), ancestors who are not with the people in this world anymore, but reside in another dimension. All ancestors are associated with land and sea animals, and certain ancestors of certain family groups or clans are known to have relations with sharks. Therefore, members of these clans are not allowed to catch or eat sharks.

mythical relationship with the hammerhead are also known for their power to call the shark to protect their family or to scare off enemies. In a symbolic coming onto land, the shark symbol is used for magic charms, made from the veins of sago palm fronds, to protect garden produce. The punishment for ignoring the charm and stealing fruit and vegetables is to be attacked by a shark while diving. Despite such old traditions, it is highly likely that even the Aru Islanders with their shark ancestors will soon be attracted by the high prices for shark fins, as has already happened in the Solomon Islands (Cunningham-Day 2001:11).

As far as overfishing is concerned, both local and outsider fishermen in Aru did not seem to be very worried about the future of shark-fin fisheries. Arunese fishermen from Batugoyang noticed smaller catches, but at the time of my fieldwork did not believe that this presaged a difficult future. Sulawesi fisherman acknowledged smaller catches and decreasing fin sizes, too, but as long as prices were still rising it was profitable for them and hence a matter to be shrugged off. In the unlikely event of severe depletion of sharks, the fishermen explained, they would just move to other regions known for abundant sharks. This is the way they have always done in fisheries.

Conclusion

Sharks have evoked various images down the centuries. Whereas Chinese consumers very much appreciate sharks for their fins, and other body parts, for many centuries Westerners and Indonesians alike have feared sharks as dangerous animals and as enemies of humankind. Sharks were better dead than alive. Certain ethnic groups in Indonesia, such as the Arunese families in the case study, value the shark as a potentially dangerous but mythical and ancestral animal, which should not be caught or consumed. In response to the opening of the Chinese market for shark fins in the 1980s, the shark-fin trade in Indonesia boomed, and various groups of Indonesian fishermen have turned to shark fisheries. Especially fishermen from Sulawesi stepped into this niche and expanded the fishing frontier to the eastern Indonesian seas and even to the Australian Economic Zone. Suddenly the shark became a target species with which to earn plenty of money in a short period of time.

As a result of this 'discovery' of the commercial value of sharks and the continuous growth of the fin trade, which has been accompanied by a rapid decline in shark-fin catches per fishing boat (usually a sign of overexploitation), since the 1990s there has been growing international concern about the status of shark species. There is a widely acknowledged need to improve shark fishery monitoring, expand biological research, and take management action (Chen Hin Keong 1996:1). Sustainable management plans for shark fisheries should be based upon reproductive rates, which requires knowledge of shark

life-histories, including vulnerable life stages, population dynamics, and spatial and temporal distribution. Life-history knowledge is also needed to put legislative protection in place, which is preferably targeted at individual species and vulnerable life stages as well as particular nursery and mating zones (Cunningham-Day 2001:9-10). In the case of Indonesia, as for many other places, this knowledge is not yet available. However, management of shark fisheries is only possible if there is a change in attitude that would allow the implementation of regulated sustainable exploitation of marine resources. Otherwise shark fishery is likely to collapse, and fisheries that have collapsed are by no means an exception. Looking at the history of world fisheries, several well-known cases spring to mind, among them the Atlantic cod fishery (Kurlansky 1998) and the spiny dogfish fisheries in British Columbia in 1907-1949 and in the Scottish and Norwegian waters in 1946-1986 (Cunningham-Day 2001:25).

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