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Indigenous Use and Management of Whales and Other Marine Resources in East Flores and Lembata, Indonesia

メタデータ	言語: eng 出版者: 公開日: 2009-04-28 キーワード (Ja): キーワード (En): 作成者: Barnes, Robert H. メールアドレス: 所属:
URL	https://doi.org/10.15021/00002662

Indigenous Use and Management of Whales and Other Marine Resources in East Flores and Lembata, Indonesia

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1. INTRODUCTION

On the south coast of the small island of Lembata, there is a small village, Lamalera, whose residents hunt sperm whales in sailing boats. This activity has brought it a degree of fame internationally and made it the most important tourist destination in the region. Their way of life has been depicted in television films in Britain, Japan and Germany. Lamalera seems to be a favorite of Japanese tourists in particular, and at least two books in Japanese have been written about it [KOJIMA and EGAMI 1997; KOJIMA and EGAMI 1999]. I have also published extensively about this village and its fishery [see in particular BARNES 1991 and 1996].

Of course, the people of Lamalera harvest many other sea resources, including other varieties of whales and porpoise, rays, sharks and many other varieties of fish, and sea turtles. For the most part, villagers derive their subsistence from marine resources and from vegetable foods received in trade for fish and meat from the fishery. The people of Lamalera rarely hunt terrestrial animals. Therefore, in this paper, the terms 'large game' and 'large animals' refer to large rays, large sharks, and other large fish, large porpoises and whales, large turtles, etc.; the terms 'small game' and 'small animals' refer to small rays, small sharks, and other small fish, small porpoises, small turtles, etc.

Lamalera is not the only whaling village in the vicinity. Residents of Lamakera, Solor also occasionally capture whales, although different species than the residents of Lamalera hunt. In addition, the many coastal villages of the islands take large numbers of fish and occasionally dugong. For example, the census bureau of the East Flores Regency reported that 10,472 tons of fish were caught in the regency in 1997, although how it arrived at the figure is unclear, since most fish caught are likely unreported [BADAN 1998: 170].

2. FACTORS AFFECTING THE CATCH

I have previously described how modern economic activities tend to place the subsistence fishery under duress and limit the use of the traditional boats built for whaling; on the other hand, economic difficulties at the national level such as those Indonesia has been experiencing since 1997 may force some to return to subsistence fishing, at least temporarily [BARNES 1996: 341–343]. I have also shown that there have been considerable fluctuations in the numbers of boats in use and the size of the catch over the past 100 years. In 1894 the missionary Wintjes counted thirty-eight boat sheds used for storing the large 10 meter long boats intended for whaling lined along the back of the beach [WINTJES 1894: 29]. If most of these sheds were occupied by boats then in use, this number justifies Heslinga's comment that the boat sheds were abundant because each family required the use of at least one boat [HESLINGA 1891: 73]. By comparison, in 1969, the most successful year in catch in recent decades, there were twenty-nine boats on the beach, of which twenty-five were in active use. By 1982 the number of active boats had fallen to fourteen. In 1987, after two boats were permanently dismantled, the number of boats fell to twenty-seven, while the number in active use rose to fifteen. In 1995, the governor of the Province of Nusa Tenggara Timur provided a subsidy of Rp 2,500,000 (\$1,100 U.S.) a year on a rolling basis for the rebuilding of the boats. The effect of these subsidies was an increase in boats in service to 18 in 1996. This number rose to 19 by 1998, and although the subsidies ceased by 1999, the number of active boats reached 20 that year. In 2001 there were still 20 serviceable whaling boats. In addition, by 1999 there were an additional eight boats of similar size which had been constructed so that they could be powered by outboard motors, rather than sails and paddles. The latter are not used for hunting sperm whales, which are capable of sinking or overturning boats and therefore ruining motors, but they are used for other types of game, including killer whales and giant manta rays.

The number of whales the village captures per year can vary markedly (Table 1). In 1966, for example, they took only 15, but in 1969 they caught 56 [BARNES 1996: 311]. In 1983 the total catch of whales fell to 2, but rebounded to 38 in 1995 [BARNES 1996: 311]. In 1996 they took at least 12 sperm whales, at least 7 in 1997, 30 in 1998, at least 6 in 1999 and in 2000, and at least 26 in 2001. The record for giant manta rays is equally varied (Table 1). In 1959 they caught 249, but only 29 the following year. The largest number recorded that I have information on is 360 in 1969 (an exceptional year), and the smallest is 10 caught in 1985. In 1994, manta rays were prolific around Lamalera until August. They had another good year for manta rays in 1995, when they also took over 100 whale sharks. The next year, 1996, was a poor year for manta rays, and some boats took none at all. The years 1998–2001 were all poor years¹⁾. Villagers attribute their low catch of manta rays in recent years to competition from Taiwanese fishing ships, which began operations off the village in appreciable numbers in the 1990s. Allegedly, when the ships are around the fish disappear and come back only when the ships depart. The Lamalera villagers retaliate by cutting the Taiwanese fishing gear, and in 2000 the acting regent of Lembata, who is from Lamalera, temporarily impounded several of the Taiwanese ships for fishing there illegally.

Among additional possible causes for the fluctuations in catches, the following (derived from conversations with the fishermen) may be suggested. Over-exploitation of resources by villagers has to be considered, although in general, I am not inclined to credit local exploitation

Table 1. Running Record of Annual Catch of Sperm Whale and Large Ray 1959–1995

	1959	1960	1961	//	1965	1966	1976	1968	1969	1970	1971	1972	1973	1974
sperm whale	34	26	31		34	15	25	43	56	37	43	36	23	26
ray (<i>bēlelā</i> + <i>bōu</i>)	249	29	87		97	195	269	186	360	188	*	*	*	*
	1975	//	1977	1978	1979	//	1982	1983	1984	1985	1986	1987	1988	1989
sperm whale	21		21	15	15		8	2	7	11	9	7	7	4
ray (<i>bēlelā</i> + <i>bōu</i>)	*		*	*	148a		79	99	62	10	138a	225	*	*
	1990	1991	1992	1993	1994	1995								
sperm whale	12	14	7	10	27	38								
ray (<i>bēlelā</i> + <i>bōu</i>)	*	*	40	*	*	*								

 *No record. aRecord Incomplete.

Source: Barnes 1996: 311

as a significant cause of the fluctuations, and the marine biologist who accompanied me to Lamalera in 1979 did not think that the local hunting of whales threatened the stock significantly or that conservation measures were required [HEMBREE 1980: 45]. We actually know very little about natural fluctuations in marine resources in the area, and they may be related to meteorological patterns or population dynamics and have nothing to do with over-exploitation. The considerable decline in the number of whales taken in the late 1970s and the early 1980s might have been related to the motorized vessel and whaling gun used in a Food and Agricultural Organization of the United Nations project in Lamalera in the mid-1970s, but the trend continued throughout the 1980s, although it reversed somewhat in the 1990s [BARNES 1984]. The Timor Strait was a popular location for commercial whalers in the early nineteenth century, and records kept in Kupang, Timor showed a marked decline in English and American whalers calling at Kupang during the 1840s and 1850s. Seamen told the authorities that this decline was due to over-hunting, which caused the whales to move away from the area, but in fact, shifts in government policies and in the world market for whale oil were probably more decisive factors, as may have been the discovery of more popular whaling grounds elsewhere [BARNES 1996: 311, 329–336].

Villagers themselves point to the difficulty in getting crews during periods when there are abundant opportunities for wage-paying employment. Seaworthy boats often remain in their sheds for long periods during the fishing season for this reason alone. As they say, "If the boats do not go out, you can get no fish." Another consideration limiting the availability of men and boys to make up crews is the increased use of modern gill nets, which has led to an increase in the number of small and highly mobile two-man sampans. Men have the option of fishing for smaller fish at night with nets, which necessarily means that they are unavailable to go to sea the next day in the whaling boats. If the large boats that go out either sight whales or manta rays, or especially if they are successful in catching numbers of the animals, men are more likely to make themselves available to form crews over the next few days. However, during periods when there are no sightings, many of them return to night net fishing. The length of the season in which the large boats go to sea is not fixed. If game appears near the village toward the end of the season, people will continue to go out in the large boats and the season will be extended. Seasons of low catches are likely to be shortened, as the windless and extremely hot conditions in October necessitate much laborious, uncomfortable paddling. Men then move on to on-shore occupations, such as house or boat building, and to coastal fishing.

Modern education is another factor affecting the ability to regularly form crews. First, older boys, who a hundred or so years ago would have joined the crews as apprentices and begun to develop boat handling and fishing skills, today remain in school for much of the time. Those who are successful at the elementary and junior high school levels may seek careers or further education outside of the village and thus become permanently lost to the pool of crew members. Of course, this trend may well bring other advantages to the village as it successfully adapts to the modern world, but it does have direct adverse effects on the subsistence fishery.

Villagers have also speculated that the decline in whales in the late 1970s might have been related to the activity of the new undersea volcano Ilé Hobal, which appeared in 1974 to the southeast of the Lerek Peninsula [BARNES 1996: 7–8, 312]. In July 1979, a landslide and a tsunami on the Lerek Peninsula might also have had a short-term impact on whale numbers.

The sea immediately offshore Lamalera is very deep, permitting sperm whales in particular

to come quite close to shore, which is why Lamalera is favorably situated for the sperm whale fishery, as opposed to the shallow Java Sea to the north of the island. Sperm whales feed on deep lying squid which are frequent in these waters, but become vulnerable to attack by the boats when they surface to breathe. They are also sensitive to sound, which can carry long distances through water, suggesting the possibility that the noise of undersea volcanic activity or even the noise of motorized ships might affect their behaviour. Villagers know that manta rays feed on plankton and that they come to the surface only when plankton rise to this level. However, it would require biological studies to determine what affects the behavior of plankton and thus the availability of manta rays²). In general, it is difficult to find much scientific information about manta rays, and the fishermen of Lamalera appear to have a much more detailed knowledge about the variety of large (and small) rays than can be obtained from the standard books on sharks and rays [e.g., COLEMAN 1991; COMPAGNO et al. 1989; GRZIMEK 1973]. In any case, Hembree [1980: 6] notes that, "The seas off Lamalera are low to moderate in features related to biological production". He also noted, "If the stock of cetaceans and effect of the fisheries at Lamalera and Lamakera on the stocks is to be clearly understood, more information will have to be obtained" [HEMBREE 1980: 46]. To my knowledge, his recommendation that a representative of a suitable organization be stationed in Lamalera to monitor the catch and obtain biological samples has never been carried out.

3. RESOURCE USE

The general pattern of resource use is that the villagers harvest the marine resources and prepare them for local consumption and for bartering to mountain villages in exchange for vegetable foods. Although villagers now have fields (which they lacked in the past) in which they can grow some vegetable foods, and sources of cash income other than the fishery, this basic pattern still obtains. Sharks, fish, turtles, and smaller porpoise are usually consumed fresh, while some small fish are dried. Most products from manta rays, sperm whales, killer whales and other very large marine prey species are dried for later consumption and for barter. The direct bartering of food items rather than payment by cash is maintained in Lamalera in order to provide insurance during periods of crop or fisheries failures. Relationships developed with people with whom one regularly barter food can, to a degree, balance out such fluctuations in resource availability, although there are limits to which this aim can be achieved.

As Hembree [1980: 45] writes,

"An important consideration is the dependence of the people on cetaceans to supplement a protein-poor diet during an annual season which normally includes a 'period of hunger'. Cetaceans are completely utilized and their barter value makes an important contribution for the balanced diet of both the people of Lamalera and the inhabitants of nearby mountain villages."

A giant manta ray may yield a ton or more of edible meat. Unlike the people of Lamakera, who use only the meat, those of Lamalera use every part of the ray. Lamakera inhabitants do not use the cartilage and gills, and its beach is liberally strewn with discarded parts of rays. According to Hembree [1980: 41] the yield from a 9 meter sperm whale is approximately 3.5

tons. Of course, there is a loss of weight through the process of sun-drying the meat. Meat, some blubber and viscera may be eaten fresh or dried. Oil is derived from blubber through drying, although its use in lamps has declined. Viscera are also cleaned and packed in bamboo with salt to ferment, and are consumed in this fermented form. Bones may be boiled with papaya leaves to remove the bitter taste of the latter. Large skull parts are occasionally burned to produce the heat needed to shatter larger boulders in preparation for house construction. In recent years, a world market for spermaceti has significantly increased following a lapse of approximately a century and a half, and the village now contributes to this market [BARNES 1996: 309–310]. It also supplies the local market for shark fins (sold for cash). There is a limited local and tourist market for whale teeth, and ambergris, which is very occasionally found, may be sold on the national market. However, there is cause for concern, given that a sperm whale liver sample contained unacceptably high levels of mercury [HEMBREE 1980: 26–27].

4. RESOURCE MANAGEMENT AND CONSERVATION

While the fishermen are active in fishing and hunting, they are in an essentially passive position regarding the availability of game, as they can seize only those opportunities that present themselves. They do not engage in fish farming, for example, and they have no real control over stocks of fish and cetaceans. Thus, it cannot be said that they are active conservationists. On the other hand, they are certainly aware of the international politics concerning commercial whaling, and they do express anxiety about the prospect of animal rights groups disrupting their whaling activities. So far, there have been no such disruptions, although on at least one occasion a tourist ship tried to place itself between a whaling boat and the whale it was pursuing. Their subsistence whaling is not regulated by the Indonesian government and has not, as far as I am aware, drawn the attention of the International Whaling Commission. One of the sons of the man who was responsible for the *Menula Belolong*, the boat I first went out on in 1970, was appointed Minister for the Environment in the first two cabinets of Abdurrahman Wahid. He may have taken steps in respect to the Taiwanese fishing ships, but if so, I am unaware of the results, if any.

It is conceivable that an increased use of outboard motors, which considerably enhances the fishermen's ability to chase manta rays and porpoises, might lead to a degree of over-fishing, but I have no evidence that this has happened, and in any case outboard motors are difficult to maintain given the village's remote location, whereas Lamakera fishermen who use them in considerable numbers, have access to repair facilities across the Solor Strait in Waiwerang, Adonara, or if necessary, in the town of Larantuka, Flores. Lamakera villagers sell large quantities of manta ray meat in the market in Waiwerang. From the point of view of conservation, their failure to utilize the whole carcass compares unfavorably with the residents of Lamalera.

The illegal use of explosives for harvesting fish takes place elsewhere, and I have been informed that the people of Lamalera do not indulge in this practice. Furthermore, they have apparently successfully discouraged people from elsewhere coming to the area and using explosives to harvest marine resources.

Although there may be no overt steps taken toward the conservation of marine resources in the modern sense, there are aspects of local culture which may, to an extent, have comparable

consequences. The boats are regarded as living beings, and they are directly related to the ancestors, who have a controlling influence over success or failure in the fishery and over good luck or misfortune. They believe that any form of dissention or misbehavior will result in failure in catching marine resources. I have given several such examples elsewhere [BARNES 1996: 299–300]. In particular, disagreements about the size of individual shares are believed to have an immediate effect such that the boat crew will have no success until a ceremony has been conducted in the clan house associated with the boat. If old people fight while the boat is at sea or if children are rowdy in the dwelling associated with the boat, the boat's crew will be unsuccessful in the fishery, even if game is abundant and other boats are successful. Even losing a harpoon at sea can mean that a boat will be unsuccessful.

Severe injury to members of the crew is also believed to affect the crew's success. In 1997, a harpooner's arm became entangled in the harpoon rope and he was pulled out of the boat and underwater. He was rescued, but had to have his arm amputated. This accident occurred on a day in which the fleet captured seven whales, normally an unusually fortunate event. However, because of the accident, the village was unable to take any more whales for the rest of the year. In 1995, one of the seaworthy boats, which had been used consistently over the previous decades, did not go to sea at all because one of its members was accused of a murder within his family. This accusation had not been resolved in 1995 (and still remains unresolved), and accordingly the boat crew was unable to hold the appropriate ceremony to appease the ancestors, which was necessary for a successful return to the sea.

In some years, toward the end of the season, some boats stock up on provisions and sail to the south end of the Flores Strait between Flores and Solor, where they camp on the beach near Lewotobi. This is often a very favorable location for hunting manta rays at that time of year, although in 1995 they did not make this trip because rays remained abundant near Lamalera. Lewotobi men also harpoon manta rays and porpoises, but not whales, and they build small boats only. This location is also favored by people from Lamakera, who hunt rays there at any time of the year. Unlike the people of Lamalera, however, they have no camping rights on shore (a right Lamalera acquired by helping Lewotobi in a war). However, because the Lamakera boats are equipped with outboard motors, they can easily travel back and forth between this area and their village.

While at Lewotobi, the people from Lamalera refrain from hunting sperm whales, for fear of damaging their boats so far from home; they also refrain from hunting on the journey to and from Lewotobi, given that the boats are heavily laden during these trips. However, one exception was brought to my attention. Sometime between 1910 and 1920, a harpooner named Boli Lapaq of the Sinu Langu section of the clan Lela Onā was planning to take a boat named Olemau to Lewotobi and asked a native priest from the nearby village of Lewotala to hold a ceremony to keep the boat and crew safe and ensure success in the hunt. The priest told them that Boli Lapaq would harpoon a whale the next day, as they were leaving for Lewotobi. The harpooner did not believe him. The priest replied that if Boli Lapaq did not harpoon a whale, he would give him an elephant tusk. On the other hand, if Boli Lapaq did harpoon a whale, he owed the priest an elephant tusk. The next day Boli Lapaq and his crew arrived at the strait between the islands of Lembata and Solor, where they encountered a school of whales, which were rolling around and acting quite tame. The harpooner took this as an omen and wanted to harpoon one of the whales, but the other crew members tried to stop him. They were concerned that they would

lose their provisions, pots and plates if the boat was damaged or capsized. Finally, a whale surfaced near the harpooning platform and rolled over, presenting the spot under its flipper where it is most vulnerable. The harpooner struck it there, penetrating the heart and killing it instantly. The crew asked if they should turn back. The harpooner refused, stating instead that they would take it to Lewotobi and present a portion of the head to the lord of the land. The lord of the land of Lewotobi was traditionally given a portion of the catch made by the Lamalera boats while they are there, and in this case they gave him the section which in Lamalera would have gone to the lord of the land there.

5. CONCLUSION

Conservation is of direct interest to the fishermen and whalers of Lamalera in so far as it involves protecting their resources from indiscriminate fishing with longlines by Taiwanese ships or by using explosives to kill fish by people from outside the region. The management of resources otherwise is simply a matter of taking advantage of whatever resources are present within reach of their boats (large and small) by hunting and fishing. When the whaling season ends and if fish are scarce in the vicinity of Lamalera, they will travel farther afield to fish. In October and April it is common for individuals to travel up the coast to Bobu in central Lembata to camp and fish with lines or spearguns. Others travel to Mingar to the west and even to the town of Lewoleba on the north coast, where they have relatives with whom they can stay. Organized crews using the larger boats may travel to Lewotobi on the southeast coast of Flores, where they stay for several weeks; and in the past such groups went to Duli on the south coast of Pantar [BARNES 1996: 177–178, 313–322]. When the fishery fails, they must seek other, shore-based, occupations. There is generally an abundance of smaller game near the shore, however, which usually provides them with the resources they need when larger game is not available. Since the Indonesian government does not directly concern itself with the conservation of the game animals the residents of Lamalera hunt, the question of dual management does not arise.

NOTES

- 1) I ceased to collect data systematically on Lamalera's annual catch after the publication of my book in 1996, and my trips to the region in 1996, 1998, 1999 and 2000–2001 had different objectives. The post-1995 information I present here was gathered casually in conversations with friends from the village.
- 2) Some relevant considerations may be found in the contribution by Kenneth Ruddle in this volume.

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