

## Traditional fishing methods and fisheries management on Ahamb Island, south Malekula, Vanuatu

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### Introduction

In the Pacific Islands, fishing is as old as hunting and food gathering. Fishing is considered to be a form of primary production. Fishing methods vary from using bare hands to using more complex methods to catch fish and invertebrate. Modifications of traditional fishing methods over long periods of time have been made in most traditional community in order to develop fishing technology that improves gear efficiency and fish catches.

In this paper, we discuss the traditional fishing methods and traditional fisheries management practices on Ahamb Island in Vanuatu. In particular, specific examples of traditional management adopted by the chiefs of the island, and those that are widely accepted are discussed.

### Study site

Ahamb Island is located off the south coast of the main island of Malekula. It is 5.5 km<sup>2</sup> in area and the human population over the last 30 years has varied between 500 and 600 people. It is one of the most populated islands south of Malekula.

About 95% of the population's ancestral origin is from the main island of Malekula where they migrated to Ahamb Island because of dangers from malaria and cannibalism. There are 20 tribal clans on Ahamb.

Ahamb islanders have limited land resources and, so, rely on marine resources for their main sources of protein.

In a meeting with the islanders and the Vanuatu government in 1970, it was agreed that the main community farming activities should be carried out on the mainland of Malekula. The main reason for this was to limit farming activities on Ahamb Island that cause erosion and other disturbances to the environment because of the smaller island's increasing population.

### Division of labour

There has always been a division of labour in Ahamb society, and different age and gender groups perform different tasks. For example, adult males tend gardens and farms, and are sometimes accompanied by their wives. Younger unmarried women glean the intertidal and mangrove areas for shellfish, octopus and other invertebrates.

Younger unmarried men participate in fish drives and turtle drives, sometimes venturing out to the outer reef edge or deeper water areas to spearfish. Canoes are usually taken out to sea during these occasions.

### Traditional fishing methods

Traditional fishing methods range from gleaning for shellfish in shallow water areas to trolling for tuna and other deeper water fish. Bare hands are used for gleaning shellfish, crabs and invertebrate from mudflats, mangroves and intertidal reefs.

Women often use sticks (made from hard mangrove roots) that are sharpened at one end. The stick is used to poke fish in rocky tidal pools so that they are able to come out of their holes. It also assists the fisherwoman in getting shellfish from burrows because a woman will not use her bare hands to pick the shellfish from the burrows because of dangers of being bitten by moray eels and other fish camouflaged in the hole.

The women also use the stick to determine whether an octopus or triggerfish is in its hole and this is done by poking the hole with a stick and smelling the stick to find out whether the stick has some characteristic smell of an octopus or triggerfish. When not in use, the stick is often kept over the fireplace to help keep it dry and make it strong before it being used again on another fishing trip.

Bows and arrows are also used for traditional fishing. Bows are made from mangrove roots, and

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banyan tree roots are used to tie the ends of the bow together. The arrows are made from small pieces of bamboo, and one end is either sharpened or has barbs at the end. The barbs are made from the trunks of palm trees. Banyan tree roots are used to tie the barbs and bow together.

### **Fish drive**

The men of Ahamb typically only use this traditional fishing method for special occasions, for example, during the new yam harvest season. Although men are the ones who use this method, the whole community participates in the preparation of the new yam harvest season feast.

Women and young girls help prepare the coconut fronds for the fish drive (by weaving the fronds to a vine) and prepare the fish after the fish drive. The length of each vine with coconut fronds would be about 20 m. The vines entwined with coconut fronds are combined to make the larger fish drive drag net.

While the women prepare the feast, the men venture out to sea in canoes with their spears, bows and arrows and coconut fronds. Fish are driven toward shallow water areas of the lagoon using coconut fronds as dragnets.

The technique uses a long fish dragnet made of coconut fronds attached to two long strands of vine and is about 150–200 m in length. About 30–40 men participate in the fish drive holding the fish dragnet and encircling a section of the lagoon in a semi-circle facing the shoreline.

The fish drive begins in the deeper section of the lagoon and men are suspended in water as they swim and haul the dragnets to the shallower section of the lagoon. Men also use sticks to beat the water surface to scare the fish into the net. Then the men and their dragnets form a smaller circle about 20 m in diameter and the fish are trapped inside the circle of coconut fronds. Men then can use the spears or bare hands to catch the fish. The fish can also be shot with a bow and arrow. Occasionally, other marine animals are caught, including turtles and dugong.

### **Turtle drive**

A turtle drive is mainly done during a full moon when the tide is at its highest. Three to four large sailing canoes are used, with each one carrying four to five men. The person in the front of the canoe hangs onto the canoe's mast while also holding a torch or flashlight. Two people at the end of the canoe use long bamboo poles to steer the canoe. Once a turtle is spotted, one of the two men at the back of the canoe jumps into the water and catches the turtle by hand.

A turtle drive is highly regarded by the community and is commonly done by experienced fishermen. Some customary beliefs (e.g. abstaining from sexual intercourse before going out fishing) are associated with this practice, especially during the preparation of the drive and during the actual fishing.

### **Fish poisoning**

Using plants to stupefy fish is a common practice and is done by both men and women. Several types of plant species, vines and tree bark are used and are often prepared by women who pound them with stones or sticks. The pounded material is then wrapped in a cloth and squeezed into the river or tidal pools. All of the men in the village participate in this fishing method, especially when preparing for a feast.

The toxin, which does not affect humans, dissipates as the water flows downstream. The toxin stuns the fish, which then float to the surface and can either be speared or collected by hand. The freshwater eel, *Anguilla* spp., is often caught for village feasts using this method. Freshwater eels can reach 2–3 m and can weigh 15–20 kg. Spears are used to kill the eels, which are then cut into pieces using knives.

### **Lobster fishing**

Lobsters are often caught using a Y-shaped stick. The lobsters are then grabbed off the stick using bare hands. Lobsters are typically caught at night on a high tide, and when there is no moon. Dried coconut fronds are tied together and then lit to provide light for finding lobsters. Lobsters are common on all Malekula reefs.

### **Palolo (*Eunice viridis*) worm fishing**

*Palolo* worms are polychaete worms that are found throughout the Pacific Islands region. The worms are considered to be a delicacy, and *palolo* worm fishing is a major community activity (involving women, men and children) during the months of October to December (before the full moon), when the worms rise to the surface of the sea.

When the *palolo* worms rise to the sea surface, all of the island's clans go out to sea, taking coconut fronds tied together in a bundle and then lit as lights to attract the worms. Modern mosquito nets are now used to catch the worms, which are then poured into buckets. Women cook the worms inside a length of bamboo with vegetable leaves and coconut milk. It is believed that pregnant women should be the ones to hold the light because they will attract the most *palolo* worms.

### **Modification of traditional fishing gear and the introduction of modern gear**

Since the arrival of Europeans, traditional fishing gear has been modified or replaced by modern materials and techniques. For example, the use of monofilament gill nets is quite prevalent now (instead of the traditional method of using coconut leaves and vines), and gill nets are frequently used for fish drives.

Multi-prong spears are still widely used but iron and wires have replaced vines and mangrove roots. The Hawaiian hand sling (rubber and a piece of sharp rod) has become more popular than the traditional bow and arrow.

Dynamite is now being used to kill large schools of fish near the beach. Monofilament line for bottom fishing and trolling are have replaced traditionally woven line, and steel lures or barbed hooks have replaced shell hooks.

Modern vessels with outboard engines have also replaced dugout canoes and, combined with modern fishing gear, have decreased the time and effort required for fishing operations. However, more efficient fishing gear has resulted in the overexploitation of marine resources to feed the rapidly growing population of Ahamb Island.

### **Traditional fisheries management**

In the past, community leaders, especially chiefs, implemented traditional fisheries management. Some of the traditional fisheries management measures included closed seasons, closed areas, and size limits.

Closed seasons are used for octopus, turtles and various types of shellfish such as trochus and green snails. There is now a ban on killing turtles between September and December because of their breeding season.

The use of closed areas as a fisheries management tool is mainly for turtle egg-laying beaches, specifically those beaches in the vicinity of Faro and Limaning on Ahamb Island. In addition, the reefs near Faro and Limaningare also closed for collecting certain shellfish and octopus during the breeding seasons. There is now a ban on the use of explosives on islands and reefs around the South Malekula area.

Minimum size limits are now used to control the taking of turtles, trochus and green snails.

The use of fish poison to stupefy fish only occurs during high tides. In rivers, fish poisoning is used only in certain areas. Fishermen block sections of streams and rivers using stones. But fishermen have to re-open the blocked outlets after fishing. The medicine men (or magicians) are often called upon to bring rain the next day to flush the rivers after poisoning the rivers to stupefy fish and eels.

In the past, these fisheries management guidelines were laid down by chiefs and were adhered to by community members. With the introduction of new fishing gear and commercial fishing practices, however, it became difficult to enforce traditional management rules and regulations because fish were now a source of cash income. Traditionally, fish were caught to feed members of a household, but commercial fishing has led to fishing to earn cash. And commercial fishing utilises more efficient fishing gear to catch more fish for urban markets.