

Freshwater fishing, fisheries management and the roles of men and women in Tonia Village, Viti Levu, Fiji

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Introduction

There is limited information on freshwater fishing in Fiji. In this paper we describe the freshwater fishing methods, fisheries management, and the respective roles of men and women in Tonia Village, Viti Levu Island, Fiji. The traditional fishing methods of *qolua*, *nimanima*, *duva*, *bubura*, *cina*, and pole-and-line and net fishing methods are described here.

Traditional fishing methods

Qolua

This fishing method uses hollow bamboo stalks with either one or both ends open to allow fish to enter. The stalk is usually placed in a deep section (60 cm) of the river and is left long enough (1–2 hours) to allow fish to enter one of the ends of the bamboo stalk. After fish have entered the bamboo stalk, both ends are blocked with non-hollow bamboo stalks so that when the fisherman or fisherwoman retrieves the stalk the fish caught inside do not escape. This method is selective because it catches mainly eels.

Nimanima

This fishing method is used in creeks where there are large depressions in the rocks. These depressions, called *diro*, can be as deep as 30 cm and are formed by water scouring the rocks. Fish often become trapped in *diros* after a flood or heavy rain.

When the water recedes after a flood and returns to its usual level, a *diro* still holds water inside it even though there is no new freshwater input from the stream. With this method, a fisherman scoops water out of the *diro* using a small container. Water is removed until the fish can be easily caught. The name *nimanima* literally means scooping out water from a *diro*.

Nimanima is practiced in creeks rather than in rivers and ponds because creeks typically have the characteristic depressions in the rock. This method is commonly used during the dry season when no

additional water enters the *diro* while scooping water out. Different varieties of fish are caught using this method but prawns and eels are the main species. This method is practiced by both men and women.

A disadvantage of this fishing method is that it is labour intensive and can take about 30 minutes to an hour to remove water from the *diro*. This is especially true if the *diro* is large, which then requires considerable effort to remove the water. This is also a destructive fishing method because small fish are killed once the water is removed from the *diro*, and then the *diro* completely dries out if there is no more rain to fill it again.

Duva

The roots of *duva* (*Derris* spp.), although officially banned by the Fiji government's Department of Fisheries, are commonly used by men and women to catch fish. The roots of the *duva* plant are pounded and wrapped in a cloth and soaked in the selected area of the stream or river where the fisher wishes to stupefy fish. Once the toxin stupefies the fish, it floats to the surface. This method is not selective and stupefies both adult and juvenile fish. The toxins from the pounded roots can stupefy fish but do not harm humans.

Bubura

This method is usually done by men individually or in a group and requires the fishers to walk on muddy and swampy ground with very little water. The fishers continuously strike the ground with long multi-pronged iron spears. The spears are about two metres long and have three to four iron prongs at the end. The striking continues until the fisherman has struck an eel or fish with his spear. This fishing method is used to catch eels, which inhabit swampy areas in Tonia. It is an easy method to use but the catch rate is usually low. This method specifically targets eels, but is destructive to vegetation growing in swampy areas and along the creeks.

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Cina

Cina means “light” in Fijian. This fishing method requires the use of light. Traditionally, leaves were tied together in a bundle and lighted as a torch, but now fishers use kerosene lamps and flashlights or torches that are powered by batteries. The torches are used at night to catch fish while they are sleeping. In addition to the use of light, bush knives and spears are also used. Fishers hold the light above the water as they walk along the creek or the river. Sometimes they dive if there is someone else to hold the light. Usually this method is done by a group of two or three people.

This method is commonly used during the dry season when there is no rain. The water level is also low and very clear and not murky during the dry season because of the lack of rainfall and runoff into the river. The water needs to be clear so that the fishers can see the fish underwater. Both men and women practice *cina* and are often seen fishing together. A variety of fish are caught using this method.

Pole-and-line

This method uses a pole and a line that has a cork and hook at the end of it. The cork is tied between the pole and the hook. When a fish is caught, the floating cork moves up and down in the water and the fisher pulls in the fish.

Pole-and-line fishing requires the use of live bait, in particular earthworms. All types of freshwater fish are caught, depending on the type of bait used. The method is very efficient.

Nets

Women use nets in rivers and streams. Nets are usually made of monofilament and have two wooden handles for moving the net through the water. The handle also serves to hold the net down on the bottom of the river or stream while the women beat the surface of the water with a stick. Usually more than one woman is involved so that one beats the water with the stick while the other holds the net in place. The one that beats the water with the stick may also help remove any grass or wood or whatever else the fish may use as a hiding place.

The size of the fish caught depends on the size of the net’s mesh. A variety of fish such as *ika droka*, *vo* and tilapia are caught using this method. In the past, nets were made from finely woven lines but today monofilament netting is used.

Subsistence fisheries and the roles of men and women

Fishing in Tonia is mainly done for leisure and/or to feed the family household. Each fisher chooses a

suitable fishing method to catch fish for his or her own family.

Women dominate fishing activities with their fishing net and catch fish to feed their family. In contrast, men work in the gardens, tending crops and livestock, but take part in traditional fishing methods such as *burabura*, *nimanima* and *cina* whenever they are able.

Women and men from Tonia do not fish in the sea because they live inland and do not have access to reefs and coastal areas. All of their fishing is done in rivers, streams and freshwater pools. Women prefer catching fish in creeks and small ponds because it is easier for them to catch fish there than in deeper rivers.

Each fishing method is used during a specific season, time of day, and weather conditions to ensure maximum efficiency of the given fishing method. For example, *nimanima* cannot be used during the rainy season and *cina* is used only at night when the water is clear. *Burabura*, on the other hand, is used only on a fine day (blue sky, no rainfall and sun is shining brightly) with very little water in swampy areas.

The types of fish caught for subsistence purposes vary and depend on the fishing method used. For example, eels or *duna* (*Anguilla marmorata*) are caught using the *burabura* and *qolua* methods, while prawns or *ura* (*Macrobrachium* spp.) are caught using the *nimanima* method. Different freshwater fish species are caught using *cina* and net fishing methods; for example, jungle perch or *ika droka* (*Kuhlia ripetris*), a native fish species in most Fijian rivers and the introduced grass carp (*Cyprinus* spp.).

Traditional fisheries management

Managing the freshwater fisheries resources of Tonia Village is important for subsistence fisheries and for the conservation of resources in the long term. Very few traditional fisheries management measures are in place and these include closed areas or tabu areas, and enforcement through traditional village-based controls (e.g. a ban on destructive fishing methods).

Closed areas or tabu areas are mainly enforced when there is a death of a chief or clan elder. A specific pond, stream or a section of the river will be closed for fishing until the 100th night after the burial. The reason for closing the area is to allow the fish stock to increase during the three months of mourning, or 100 nights.

Once the ban is lifted, villagers are able to fish in the area using different methods with no restrictions on the size of fish caught. Juvenile and undersized fish are also taken during a fish trip. Because of the Fiji Department of Fisheries’ awareness programmes,

villagers are beginning to realise the need not to catch juvenile and undersized fish and leave them in the river for the future.

Fish caught from the tabu areas are used for the 100th night feast after the burial or *vakabogidrau* (the name of the feast).

Although closed areas are only declared in order to prepare for the 100th night feast after the death of a chief or clan elder, this method could also be used effectively for conserving fish stocks in streams, ponds and specific sections of a river.

Recently, Tonia villagers have realised that destructive fishing methods such as the use of *duva* (*Derris* spp.) is not good. Now, a ban on the use of *duva* is in place and the village chief can impose penalties if a fisher is caught using it. In addition, the use of chemicals and dynamite are now prohibited.

Roles of men and women

Men's roles in the village are clearly distinct from those of women, and the division of labour is clearly understood by both. Men's roles are entwined in leadership, farming, house building and repairing, and keeping the village compound clean. Men also collect firewood and are involved in any physical activity that is required for the smooth running of their household or the village community as a whole.

Nearly all men's activities are done in groups, which makes men's work much easier than working individually and independently. The village organiser, or *turaga ni koro*, divides the men into groups and each group has a leader to guide

activities, such as planting and weeding of a new plantation area. Each individual in the group takes a turn in the planting of their crops.

After each person plants their crops, the group leader then decides whether to continue with planting or to shift to another activity. There may be only a few days in a week dedicated to group work but other days may be devoted to family activities such as firewood gathering.

Men's role in fishing in Tonia Village is limited, and fishing methods used during their leisure time include *nimanima*, *burabura* and *cina*. One of the main roles of women is to fish to provide protein for their household. Both men and women also fish for recreation. Other women's activities include cooking, washing, looking after children, and household cleaning. Women also work in organised teams or groups, especially mat weaving and sewing. Women in the church or clan organise groups of women to sew and weave mats from pandanus leaves. These work sessions provide opportunities for women to support the church and the clan and also to learn from each other.

Women use their fishing nets by themselves or go out in groups to fish in streams, ponds and sections of the river near the village. They usually go out in the morning after cleaning the house and return in the afternoon before the sun goes down. The catch is cooked for dinner and women typically fish on a daily basis. Almost all of the women catch enough for their own household's daily consumption, and fish are never sold because urban markets are quite a distance from the village.