

## Proceedings of the Global Symposium on Women in Fisheries now available

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ICLARM's Director-General, Meryl Williams writes:

All over the world, women contribute in multiple ways to the production, processing, marketing and management of fish and other living aquatic resources. The first ever Global Symposium on Women in Fisheries, held in Kaohsiung, Taiwan on 29 November 2001, generated the present collection of papers on women in fisheries. These published proceedings go beyond the actual Symposium in two ways. First, the papers that were initially presented have been revised and, therefore, more detailed and richer in information content than the short, spoken versions. These written versions have also benefited from the discussions during and around the Symposium. Second, two additional papers, from Africa, are presented in this volume, thus increasing the richness of African material on women in fisheries. The reader of this volume will find in it a wealth of information, albeit in a very heterogeneous form, that the authors have had to draw from many different sources. Some are primary research studies whereas most are historical reviews from first hand experience of the authors or derived from other written materials, often contained in reports of fisheries development projects, newspapers and source materials well outside the fish sectors. Such is the nature of our knowledge in the field of women's, and also gender, roles in fisheries that few of the primary sources were actually designed to address the field in a rigorous and analytical way. They rather addressed other aspects of fish and fisheries and incidentally revealed much of value, at least by description, on women's roles.

The papers for the proceedings are arranged by geographic region and there is an index to the contents so that information can be found by topic.

# Documenting fishing practices

## Traditional uses of plants for fishing in Micronesia

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Western and other scholars have traditionally divided the massive Pacific region beyond Southeast Asia and Australia into three sub-regions or categories: Melanesia, Micronesia and Polynesia.

More recently, with the elucidation of a suite of characteristics (e.g. linguistics, pottery, island location in the remote, deep Pacific Ocean), Green (1991) and others have suggested that the region be re-divided into two parts: Near Oceania, encompassing Australia and western Melanesia, which was settled as much as 60,000 years ago as part of the world's second great wave of human migration into previously unoccupied lands (Roberts 1998); and Remote Oceania, which encompasses the multitude of islands formerly grouped into eastern Melanesia (from the eastern Solomon Islands to Fiji), and all of islands formerly contained in Polynesia and Micronesia.

The many high and low islands of Remote Oceania were only first discovered and settled by humans 3800 to 1000 years or so ago. These were difficult exploratory discoveries, made by peoples collectively referred to as Austronesians (or in the earlier phases, the Lapita Peoples). They had a common heritage of language (formerly known as the Malayo-Polynesian group), and several other cultural traits, not the least of which has been their relatively similar transported landscape of agro-forests, irrigated swamps and dry field agriculture.

The Austronesians theoretically originated somewhere in Southeast Asia, possibly on or near Taiwan. These seafaring people needed three things to successfully sail long distances, back and forth across broad stretches of the Pacific Ocean.

First, of course, they developed the skills to fabricate durable, seaworthy craft. This involved the use of plant material and stone tools to make canoes that were stabilized by an outrigger, or in parts of eastern Melanesia and Polynesia by large, very sturdy double-hulls. In addition, these long

distance voyagers developed and passed on a complex navigational body of knowledge. Secondly, they successfully introduced a collection of viable cuttings and/or seeds of cultigens, along with the concomitant gardening knowledge needed to provide the sustainable carbohydrate food sources of these stone age, horticultural peoples. Thirdly, and most important for this article, these early island colonizers had an intimate, practical knowledge of how to harvest the edible animals of the reefs, lagoons and deep ocean.

In addition to their introduced domesticated plants, these early Austronesians used many species of the wild, native biota. Over time, on all the islands of Remote Oceania occupied by colonizing Austronesians, including those in Micronesia, an intimate and sophisticated series of relationships developed between the people, plants and animals.

What follows here is brief review of the use of plants, both native and introduced, that were related in some way with the important activities of fishing in the Micronesian areas of Remote Oceania. Plants are (or in some cases were) used to make or acquire many different kinds of equipment or materials used to collect edible sea organisms. These fishing items include spears, nets, traps, fishing poles, fishing line, fishhooks and poisons.

### Plants used in fishing in Micronesia

The uses listed here come from a variety of sources and are by no means comprehensive for fishing applications throughout the region, nor, of course, for many other uses for which most of these plants have traditionally served in Micronesia and the rest of Remote Oceania.

### Fishing hardware — poles, lines, nets, floats, traps, torches, spears, goggles and lure

*Allophylus timoriensis* – Wood from this tree is used to make traps in Ifaluk and fishing poles in Marshalls.



*Artocarpus arilis* – On Woleai the leaves of breadfruit trees are used to make a kite for trailing fishing line and as a lure. The insect resistant trunk and large branch wood of breadfruit trees is used in Chuuk (and other islands) to make the hulls of small fishing canoes.

*Bambusa vulgaris* – On Yap, bamboo is used to make net spacers and fish traps, and on some islands, such as those in Chuuk and Kiribati, the stems of bamboo are used to make fishing poles and floats for fishing nets.

*Bruguiera gymnorhiza* – In the Marshall Islands the fruit of this mangrove tree has been used to strengthen fishing nets, and in Kiribati its wood has been used to make fishing rods.

*Calophyllum inophyllum* – On some atolls, such as Namoluk in the central Carolines as well as in Kiribati, the wood is traditionally used to make goggles for spearfishing. In Kiribati stems of this tree are used to make scoop net frames and fishing rods.

*Casuarina equisetifolia* – In Kiribati the dense, heavy wood of this tree is sometimes used to make fishing rods.

*Clerodendrum inerme* – This sprawling or climbing, shrub is used on some islands such as Ifaluk and in Chuuk to make fish traps. In the Marshall Islands the wood of this plant is used to make fishing poles as well as fish traps (with *Pemphis acidula* and *Allophylus timoriensis*). In Kiribati, branches of this plant are said by some to be used to make fish traps, scoop net frames and fishing rods.



*Cocos nucifera* – Coconut palms are extremely useful plants. On Yap stems are used to make fishing spears, and the shell of the nut is used to make fish hooks. On Ulithi the sennit fiber is used to make 'sweeps' to drive schools of fish into traps, the burning leaves serve as 'torches' for night fishing, and the shell is used to make one-

piece fishhooks. On Namoluk, wood of this palm is used to make fishing spears. On Kosrae, leaves also traditionally served as a burning torch for night fishing. In Kiribati smaller saplings are traditionally used for fishing poles, and its wood is used to make fishnet floats.

*Crinum asiaticum* – The shining, white, basal part of the leaves of this large, bulbous, lily is used as a lure to cover hooks in traditional Yapese fishing. It may have been used in some islands, such as Guam, as a remedy for sickness caused by eating poisonous fish. On Namoluk the hollow 'skin' of the trunk is used in trolling lines in deep sea fishing.

*Cyperus laevigatus* – On the island of Onotoa in Kiribati, this native 'nut sedge' was used for weaving fishing lines and nets.



*Derris trifoliata* – On Kosrae, the stem this sprawling, woody plant — often used to poison fish — is sometimes used as cordage to fasten bundles of Nipa palm fronds, or to bind mangrove crabs when *Hibiscus tiliaceus* fiber is not available.

*Dodonaea viscosa* – In Kiribati the stems of this widespread woody plant are used to make fishing poles and frames for dip nets.

*Enhalus acorides* – In some islands, including those in Yap, Chuuk and Pohnpei, the persistent bundles of vascular fibers (or strong leaves) of this seagrass or saltwater herb are utilized in the construction of long lasting nets for catching reef fish. It is also used as protective medicine for women who are going into the ocean.

*Ficus prolixa* – This large, sometimes huge, native fig or banyan tree produces strong fibers on its roots that are reportedly used for fish lures on Ifaluk. On Puluwat the aerial roots are said to be used occasionally in large (seine) net fishing.

*Ficus tinctoria* – On Ulithi, Ifaluk, Kosrae and perhaps other islands fishing lures or bait are made from the fine fibers extracted from the bark of this fig tree. On Puluwat the wood is used in fishtraps, and the rope-like, aerial roots were used in fish drives. In Kiribati, the easily bendable roots are used to make scoop net frames, and sometimes fishing rods.

*Hernandia nymphaeifolia* – This large indigenous coastal tree is sometimes used in Kiribati to make fishing rods.

*Hibiscus tiliaceus* – The light wood of this tropical shrub or small tree in Yap is sometimes cut into small pieces to make local net floats and frames of fish nets because it does not rot easily. In Chuuk, fishing equipment such as poles, floats, and fish net frames such as those used to catch flying fish are also made from its wood. On Puluwat, where it is plentiful only in swampy depressions on Alei Islet, the wood is used to make fishing net floats. On Pohnpei it is said to have replaced coconut fibers for fishing net fibers after it was introduced by people. On Kosrae the light wood is used to make fishing floats and poles. In the Marshall Islands it is used to make frames for nets to catch flying fish; and floats of the light wood are used to hold a submerged string which attracts shell bearing animals; the captured shells are then used to beautify handicrafts. In Kiribati, the sprouts, when straight, make good fishing rods.

*Lumnitzera littorea* – This native mangrove tree is used in Kiribati to make fishing rods, and fish traps, because it does not deteriorate in sea water.

*Morinda citrifolia* – This useful upright growing shrub or small tree is known as in English as the Indian Mulberry. In Kiribati, the wood may be used to make fishing rods.

*Pandanus tectorius* – In Kiribati, roots of this common coastal or lowland native tree are used to make floats for fishing nets.

*Pemphis acidula* – This native, coastal woody shrub or small tree is sometimes referred to in English as ironwood because of its heavy, hard, rot-resistant wood. In Kiribati, it is used as building material for fishing rods and to make traps for moray-eels, and in earlier times, fishing hooks.

*Phymatosorus scolopendria* – This creeping fern has sturdy, dark-colored rhizomes (roots) that produce erect, glossy green fronds which, in Yap, and are tied to outriggers of canoes for good luck when fishing.

*Pipturus argenteus* – On Nomwin, Namoluk, and Puluwat, fishing lines are or were made from the inner bark of this native shrub or small tree. On Puluwat the leaves are used in fishing lures, and the strong fiber extracted from the inner bark was also used for attaching fish hooks. In the Marshall Islands the bark of this tree furnishes strong strands useful for fish line, and branches are also said to attract live cowries when placed under a rock in the sea.

*Plumeria rubra* – This small, ornamental tree is known in English as either 'plumeria' (its genus name) or 'frangipani'. On Ulithi and Namoluk atolls these trees are a source of wood that is sometimes made into frames for underwater goggles.

*Premna serratifolia* – This native shrub or small tree provides fruit used in Ulithi as one of eight fruits placed in the 'flying fish bundle'. On Kosrae, branches are used to make the frames for two kinds of fish nets used by women in reef fishing. And in the Marshalls and Kiribati, the straight, pliable saplings and branches make good fishing poles.

*Rhizophora apiculata* – The prop roots of this common native mangrove species are used to make fishing gear in Yap.

*Rhizophora mucronata* – On Puluwat this mangrove tree, which is found commonly in lagoon areas, provides wood for fishing spears and parts of fish traps. In Kiribati, it is used also to make stakes for fish traps because it resists seawater and 'ship worm' (*Teredo navalis*).

*Schizostachyum lima* – This native bamboo species in Yap, which is smaller and thinner than the alien *Bambusa vulgaris*, is used there for fishing poles.

*Tacca leontopetaloides* – This large, stemless herb, often referred to in English as 'arrowroot', is used in Kiribati in the construction of fishing lines and nets.

*Terminalia catappa* – This small to large, spreading tree is used in Kiribati to make fishing rods.

*Tournefortia argentea* – This small native tree, known in English as 'tree heliotrope', is used in Kiribati in the construction of fishing rods.

## Fish poisons made from plants

*Barringtonia asiatica* – The large, one-seeded fibrous fruits are buoyant, and after maturing on the tree they drop off and may be carried out to sea by the tides and drift along with the currents, eventually washing up on the shores of many tropical Pacific islands. The seeds of fruits contain a poisonous saponin, which has been used traditionally on many tropical Pacific islands to stupefy fish and octopus. To stun fish in tidal pools of the reef, the firm white seed is pounded, pulped or grated to release the poison, then mixed with water, and thrown into pools where fish are found. This method of stupefying fish does not appear to harm the flesh of the fish as food.

*Derris trifoliata* and *Derris elliptica* – These sprawling, woody plants are found growing near wetlands, as well as in forested areas inland. Parts of these members of the pea or bean family contain rotenone, and when crushed and spread in streams or on the reef they will kill fish and shrimp. The introduced *D. elliptica* is, today, the major source of the poison used in some islands, however it is illegal to cultivate these plants or to engage in fish poisoning on several of these islands.

## Miscellaneous uses

*Bambusa vulgaris* – On Yap, the long wide stems of this large bamboo are used to make the common rafts sometimes used for fishing when skin diving.

*Calophyllum inophyllum* – On Ulithi, the fruit of this tree are one of eight fruits placed in the 'flying fish bundle', which was traditionally offered to spirits by 'public fish magicians' during their long, annual ritual.

*Claoxylon carolinensis* – On Pohnpei this small native tree is believed to have magical properties, and consequently, cut stems of the tree are applied to fishing nets to make them more efficient.

*Crinum asiaticum* – Some parts of this large lily may have been used in some islands, such as Guam, as a remedy for sickness caused by eating poisonous fish.

*Cyperus javanicus* – This perennial sedge is said to be used as 'fishing medicine' in Chuuk.

*Enhalus acorides* – In Chuuk, parts of this seagrass are said to be used as protective medicine for women who are going into the ocean.

*Hibiscus tiliaceus* – Ulithi the bark of this plant is traditionally used to treat constipation and running ears, caused by eating a tabooed octopus, which angered a spirit. And in Chuuk the fruit of

this woody species has been used as a magical medicine against sea spirits.

*Morinda citrifolia* – In Kiribati, the fruit is used as a stimulant on long fishing trips or ocean voyages, during cruises of three or four days, as it is said to be 'hot and comforting to a tired body'.

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## Maka feke – Octopus fishing Tongan style

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Traditional Tongan fishing techniques are partly based on myths, legends and beliefs. Bataille-Benguigui (1988) concluded that Tongan fishing techniques have a religious basis, are associated with rites or taboos, or are non-ritual but still concerned with the art of fishing.

Increased urbanisation and westernisation of Tongan society and life have resulted in a relaxation of traditions as well as a replacement of old fishing techniques and customs with more modern ones. However, remnants of traditional fishing practices and techniques are still alive.

In Tonga, octopus is caught for consumption, bait, for sale in the local market, and to give as a gift. Octopus, or *feke*, is caught by women, men and children. Common techniques include the use of iron bars (*a'a feke*) by reef gleaners of all ages and by both genders, free-dive spearing (mainly by male fishers), and *maka feke*. *Maka feke* is done by both men and women of all age groups while they are reef gleaning, or is done by men from (motorised or non-motorised) boats.

This article focuses on *maka feke*, the 'stone for the octopus catching', which is a traditional Tongan method for catching octopus. Sources indicate that the legend of *maka feke*, as well as the technique, is widely spread across Polynesia ([www.webcentral.co.uk/ilegends.htm](http://www.webcentral.co.uk/ilegends.htm); Bataille-Benguigui 1988; [www.ocean-park.go.jp/kaiyo\\_e/d/d401000.html](http://www.ocean-park.go.jp/kaiyo_e/d/d401000.html)).

According to legend, there was once a rat on a canoe. This canoe got hurled around in a storm and eventually started to break up. Afraid and shivering, the rat looked for help or something to cling to. When the rat noticed an octopus swimming nearby he asked it to take him to land. The rat also promised a generous payment for this rescue service.

The octopus agreed and allowed the rat to sit on his head while he carefully swam towards land. Once they reached the beach, the rat jumped off and quickly ran up onto dry land. When the octopus demanded his reward, the rat mischievously replied 'feel the top of your head'. Another ending to the tale is that the rat made fun of the octopus' naivety.



Completed 'maka feke' lure.



Two maka feke lures ready for use.

'Maka feke' lure showing how the 'rat's feet and tail' are tied to the cone-shaped stone coated with a cowrie shell.

