



**FIELD REPORT No. 3**  
**AN ASSESSMENT OF**  
**THE ROLE OF WOMEN**  
**IN FISHERIES**  
**IN KOSRAE**  
**FEDERATED STATES**  
**OF**  
**MICRONESIA**



**COMMUNITY FISHERIES SECTION**



Secretariat  
of the Pacific  
Community



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# ABBREVIATIONS AND ACRONYMS

CETC	Community Education Training Centre
COM	College of Micronesia
EEZ	Exclusive Economic Zone
FAD	fish aggregating device
FAO	Food and Agricultural Organization of the United Nations
FSM	Federated States of Micronesia
GDP	gross domestic product
NAC	National Aquaculture Centre
NFC	National Fisheries Corporation
NGO	non-governmental organisation
OFCF	Overseas Fisheries Cooperation Foundation
SPC	Secretariat of the Pacific Community
SPREP	South Pacific Regional Environment Programme
USD	US dollar



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*Mountains account for about 70 per cent of Kosrae's land area*



# 1 . EXECUTIVE SUMMARY

## Objectives

The assessment of small-scale fisheries activities in Kosrae, Federated States of Micronesia was carried out from 8 May to 13 May 2000. The survey was conducted by Ms Lyn Lambeth (SPC Community Fisheries Officer), with the assistance of Mr Rooston Abraham, Fisheries Specialist of the Kosrae Fisheries Development Division and Ms Ropina D. Aloka, Coordinator of the Kosrae Women's Affairs Program. The assessment was requested by the Government of the Federated States of Micronesia in response to an identified need for more information on the needs of the subsistence and artisanal fisheries sector, and especially the involvement of women in the sector.

The main objectives of the field survey were to:

- ♦ review the social and economic role of women in the fisheries sector, including activities such as harvesting, processing and marketing of marine resources;
- ♦ provide details on both government and non-government services available to support the interests of fishing communities and identify support services specifically aimed at women in the small-scale fisheries sector;
- ♦ outline the problems faced by the small-scale fisheries sector, with particular attention to those problems faced by women; and
- ♦ provide guidelines to assist government and interest groups in finding solutions to these problems.

## Major findings

- ♦ Fishing has historically been an important activity for women in Kosrae and continues to be so today. The marketing of fish and seafood products is becoming increasingly important as more people become involved in the cash economy.
- ♦ A number of government and non-government agencies support fisheries development, training, and the conservation and management of marine resources. Regional training opportunities for those involved in the commercial fisheries sector are also available, with some opportunities now opening up for women.
- ♦ Overharvesting of inshore marine resources, lack of regulation or enforcement of fishing methods or gear, and poor environmental practices are some of the major problems facing the small-scale fisheries sector. Most training and assistance to the fisheries sector has sought to increase local involvement in commercial fishing and has mainly targeted men. Despite women's involvement in harvesting, processing and marketing of marine resources, they have had little or no training in these areas.

## 2 . RECOMMENDATIONS

To ensure that the small-scale fisheries sector in Kosrae is able to continue providing seafood for subsistence livelihoods and the local market it is recommended that:

- ♦ **Kosrae State Government support measures to reduce pressure on inshore marine resources.**

In combination with the present fish aggregating device (FAD) project aimed at encouraging fishermen to fish outside the reef, the Fisheries Development Division and other relevant agencies (for example, the Family, Food Production and Nutrition Project) should promote tuna and tuna products for the local market.

The SPC Community Fisheries Section can assist by promoting tuna and value-added tuna products as part of its community training assistance for Kosrae.

Aquaculture, as a means of providing seafood alternatives for local consumption and income for communities, could also be considered by the Fisheries Development Division. A pilot fish farming project has been suggested for Malem municipality, jointly run by the College of Micronesia (Kosrae Campus) and the Fisheries Development Division, with the assistance of the National Aquaculture Centre facilities. More detail on this is given in Chapter 8: Problems and Suggested Areas of Assistance.

- ♦ **National and State Government initiate and support public awareness programmes on destructive and unsustainable fishing practices, community fisheries management measures and environmental issues related to fisheries.**

Public awareness should be promoted through radio, school projects, community workshops, church groups and other effective means. Cooperation between various government and non-government groups working towards similar goals (sustainable fisheries development, conservation and community development) is the most effective way to use human resources and expertise.

Moves towards increasing community management of marine resources need to be supported by the work of State and National Government. The SPC Community Fisheries Section can assist by including environmental awareness and community-based management techniques as part of its community training assistance for Kosrae.

To ensure that all sectors of fishing communities are considered in fisheries development and management programmes in Kosrae State it is recommended that:

♦ **Kosrae State Fisheries agencies provide more training programmes for subsistence and artisanal fishers, particularly women.**

The Community Fisheries Section can assist in organising and running a workshop on some or all of the following topics: seafood quality and handling; promotion of tuna and tuna products for the local market; small-scale fish marketing; community-based management of marine resources; the role of fisheries regulations; and practical management measures for commonly harvested marine resources. A number of resource people, government and non-government, are already working in some of these areas and it would be imperative to include them in the planning and delivery of training.

The Department of Agriculture, Land and Fisheries should follow up this work with a training programme aimed at artisanal and subsistence fishermen and women. Coordination between the work of the Development Review Commission, the Conservation Area Support Officer and the Fisheries Development Division would ensure resources and expertise are fully utilised.

♦ **The National Fisheries Section and National Women's Interest Officer encourage and foster greater cooperation and dissemination of information between national, state, municipal and grassroots organisations (government and NGOs).**

The national government has an important role in directing policy and advising the four state bodies in their work but it also needs to ensure that the information is being passed on. There needs to be more cooperation and information-sharing at every level. The dissemination of information to grassroots women and organisations needs to be especially encouraged.

The SPC Community Fisheries Section should maintain contact with the National Fisheries Section and the National Women's Interest Officer in order to provide information and opportunities.

# 3 . INTRODUCTION

The SPC Women's Fisheries Development Section, now the Community Fisheries Section, was established in 1991 at the request of SPC member governments, to provide assistance and support to women in the fisheries sector. It was recognised that the needs of women had often been overlooked in development projects undertaken in many Pacific Island countries. Pacific Island women have traditionally been involved in fisheries activities, with the collection and processing of seafood for family consumption and small-scale income generation, but little has been done to document their activities and identify potential areas for development, or to assess problems such as overharvesting or the impact of development on their fishing areas.

This lack is not necessarily one of 'men's development' as opposed to 'women's development'. It is more a result of the nature of the fishing areas and the type of development involved. Traditionally, men have fished with boats offshore while women have concentrated their activities on the inshore areas, fishing, collecting or gleaning a number of species from the reef and inshore areas. Pacific Island countries are interested in encouraging the development of offshore fishing activities, to generate income and to reduce the pressure on inshore marine resources, and this has targeted the people most involved in this type of fishing — men.

When most people think of 'fisheries' they think of men going fishing in boats and, therefore, to speak of women's involvement in fisheries can be confusing. If marine resources are to be successfully developed and managed in a sustainable manner, then it is necessary to broaden our understanding of what the terms 'fisheries' and 'fishing' really encompass. Fisheries activities include not just going out in boats and catching fish, but also handlining and netting in inshore areas; collecting shellfish and other marine life from the reef and mangroves; cleaning, cutting, cooking and preserving seafood; marketing seafood; and a host of other activities having to do with marine resources that may involve men, women and children. All of these activities should be considered when planning fisheries development as well as the conservation and management of marine resources.

On Kosrae, women have traditionally been regular providers of seafood for the family, through their regular netting, handlining and reef gleaning activities. Men's contribution was mainly in catching those species that required fishing beyond the reef in boats or in diving or spearfishing.

# 4 . METHODS

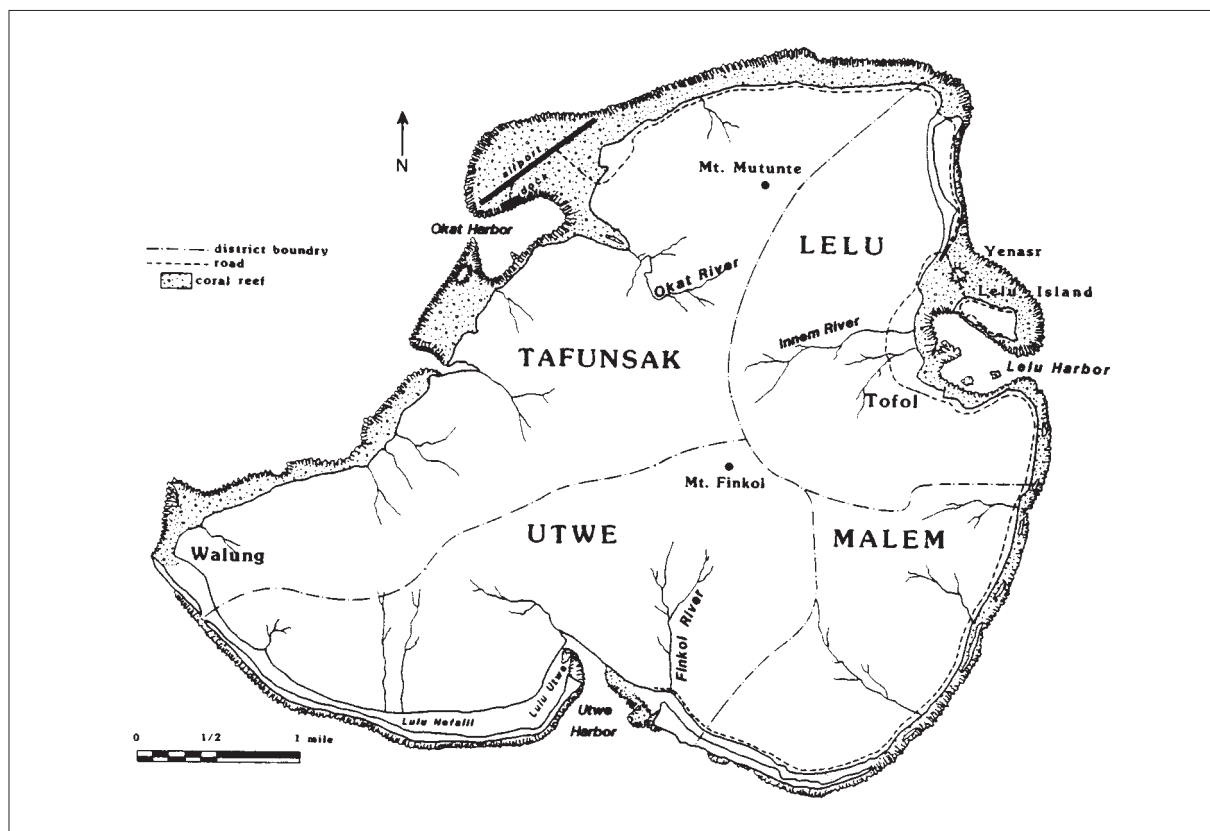
Interest from FSM in the SPC Women's Fisheries Development Project first arose at the Seventh Triennial Conference of Pacific Women held in Noumea in 1997. However, it wasn't until after the 1998 SPC Regional Technical Meeting on Fisheries (through the Head of the National Fisheries Section) that FSM officially requested the project.

The SPC Community Fisheries Section was then asked to provide guidance and assistance to the women of FSM in the area of fisheries development and management. Because of the diversity between the four states it was decided that separate surveys would be undertaken for each state, with the initial survey covering Pohnpei.

Following a request by the FSM Head of Fisheries and an invitation by the National Women's Interest Officer, the timing of the visit to Pohnpei was designed to coincide with the 1999 Fifth FSM Women's Conference. This gave the SPC Community Fisheries Officer an opportunity to meet with women from all four states of FSM to discuss the special circumstances of each state and provide direction for future work in Kosrae, Yap and Chuuk.

As a result of that visit, a report documenting findings and making recommendations was published in August 2000 — *An Assessment of the Role of Women in Fisheries in Pohnpei, FSM*. In May 2000 a workshop on small-scale fisheries activities was held for women in Pohnpei. Following the workshop the Community Fisheries Officer undertook fieldwork in Kosrae, Chuuk and Yap. This report details the findings and recommendations for the small-scale fisheries sector of Kosrae State.

A list of the people interviewed can be found in the appendix.



Map of Kosrae

Source: Des Rochers, K. 1992. Women's fishing on Kosrae: a description of past and present methods. *Micronesica*. 25(1):1-22.

# 5 . BACKGROUND SOCIAL AND ECONOMIC INFORMATION

## Geography

The Federated States of Micronesia (FSM) consists of four states, Pohnpei, Kosrae, Chuuk and Yap, with more than 600 islands scattered over approximately one million square miles (386,190 km<sup>2</sup>) in the western Pacific Ocean. The total land mass is 270 square miles (700 km<sup>2</sup>). The huge island group constituting FSM includes almost every type of ocean topography: Pohnpei and Chuuk have high volcanic islands with neighbouring island atolls, Yap is a large island of sedimentary rock with neighbouring atolls, while Kosrae still has remnants of its volcanic core raised above the lagoon and no neighbouring atolls. The high islands have extensive mangrove forests, coconut groves, upland rainforest, and ferns or grasslands near the summit (SPREP 1993).

Kosrae is the easternmost and second largest island of the four states of FSM, with a land area of 42 square miles (109 km<sup>2</sup>). The island is mountainous, with dense vegetation in the interior, surrounded by mangrove forests, sandy beaches and a narrow fringing reef. Mountains account for about 70 per cent of the land area with several peaks rising to around 2000 feet (610 metres) above sea level (Des Rochers 1992; Statistics Unit 1999). Legend has it that Kosrae was shaped by the gods from the transformed figure of a sleeping lady — the skyline of the mountains from several parts of Kosrae reveal the silhouette of a sleeping lady.

## Population

The 1998 population estimate for FSM was 114,100 with an average population density of 422 people per square mile (163 people / km<sup>2</sup>). More than half the population live in Chuuk State, about one third live in Pohnpei State, and the remainder in the smaller states of Yap and Kosrae. Chuuk has the highest population density of the four states and one of the highest in the world. Kosrae is the least populated state with around 7300 inhabitants recorded in the 1994 census, and has the lowest population density (SPC 1998).

FSM has a very young population with a high ratio of dependants (people under 15 and over 64) to those in the economically productive ages (15–64). This ratio has, however, declined from 102 dependants per 100 people of working age in 1973 to around 90 dependants per 100 in 1994. The higher the dependency ratio, the higher the number of people who need to be cared for by the working-age population. The decline reflects a decrease in fertility; fewer numbers of births lead to a proportional decrease of the population younger than 15 compared to the working-age population. The decline in fertility could be explained by a combination of factors: educational improvements, especially for women; higher participation of women in the workforce; changing attitudes in favour of smaller families; and possibly an increase in the mean age at marriage (Demmke et al. 1997).

Kosrae consists of four main municipalities: Utwe, Malem, Tafunsak and Lelu. The administrative centre and most commercial activities are concentrated in Lelu municipality.

## Economy

FSM became self-governing in 1986 under the Compact of Free Association between the FSM and the United States. The Compact of Free Association gives the US continued responsibility for defence and security, while FSM receives financial assistance with a step-down in funding every five years until the expiration of the Compact in 2001 (SPC 1995). FSM has a federal government, based in Palikir, Pohnpei, as well as four state governments, each with its own administrative organisations and a high degree of autonomy. In Pohnpei and Yap traditional leadership continues to have a considerable influence on the political process.

The economy of FSM is dominated by the public sector with government expenditure accounting for over 82 per cent of gross domestic product (GDP) in 1994. Much of this expenditure is in the form of wages and salary payments to public sector employees based in the main urban centres of each state (OFCF 1997). The step-down in Compact funding has resulted in some government job cutbacks in recent years. Although the number of private sector jobs has exceeded those in government, public sector wages are significantly higher than private sector wages. The public sector is the major employer in FSM, accounting for one in every three jobs (SPREP 1993).

FSM has both a monetised modern sector concentrated in urban areas and a traditional sector prevalent in the rural areas. The traditional sector relies on agriculture and fisheries subsistence activities. The 1994 census indicates that, of the four States, Kosrae had the highest percentage of its work force employed in the formal sector (cash economy) compared to the lowest at 52 per cent in Chuuk (Demmke et al. 1997).

The main economic sectors of Kosrae are marine resources, tourism and agriculture.

## Culture

The people of FSM are Micronesian, with the exception of the Polynesian people of Kapingamarangi and Nukuoro Atolls (Pohnpei State). The four states, separated by large expanses of water, have distinct cultures and identities, and eight major indigenous languages are spoken. English is the official language of all states, with Kosraean being the indigenous language of Kosrae.

As elsewhere in FSM, the socially important group in Kosrae is the extended family of several generations, held together through the male line and with authority in the hands of the oldest members. The extended family maintains an overall supervision of its members, with separate and clearly defined rights and duties for family members. Over the years there have been many changes in Kosraean society, but the extended family, with its duties, obligations and rewards, is still a strong force. Clans are also found on various parts of the island, with members being descendants of a common ancestor and clanship being traced through the female line. The extended family includes those who marry into the group, but those people generally retain membership of their own clan. In this way the clan may be very large and scattered over the community. Clans usually have a name — often that of animals — and in the past may have served to define rights to land and to regulate marriage by prohibiting marriage within the same clan (Ashby 1985; Alkire 1977).

Prior to European contact Kosrae had a centralized traditional political system with Lelu being the highest ranking district and the seat of the paramount chief. Similar to the ruins of Nan Madol on Pohnpei Island, are the ruins of a city of basalt and coral on Lelu, a small, hilly island now connected to the main island of Kosrae by a causeway. The ruins of Nan Madol and Lelu are similar in structure and age (at least 1500 years old) and were built to house the paramount chief and those of royal descent. Including the paramount chief, there were 18 chiefly titles, divided into nine high titles and nine low. The political system was closely tied to land tenure (Alkire 1997).

## Religion

Kosrae was a major supply stop for whalers around the 1830s and consequently the traditional culture was significantly altered by new influences, as well as new diseases that reduced the population to 200 by 1880 (Ritter and Ritter 1981). Protestant missionary work began at the same time and ended in total conversion by the end of the century. Today, the church is the centre of Kosraean village life with Sundays devoted to church, and activities such as farming and fishing being prohibited. Many of the hymns sung in church are identical to those heard in Boston more than 100 years ago.

## Education

Schooling in FSM is compulsory with a curriculum and school system based on the American education system. The level of education reached by people in FSM has clearly improved over the past 20 years although the percentage of males with post-elementary education is still significantly greater than that of females. Nineteen per cent of males and 27 per cent of females over 25 years of age have had no formal education. At primary and secondary level, enrolment rates for females are generally equal to or higher than those for males, yet at tertiary level, females lag behind males.

The College of Micronesia, based in Pohnpei, has a campus in each state. The college offers a variety of courses and presently has around 700 students. All programmes go through an accreditation commission enabling courses and subjects to be transferable to other institutions.

In Kosrae the enrolment rates for primary and secondary levels are as high or higher than those of the other states. However, at the tertiary level the enrolment rates of Kosraeans drops significantly compared to the other states — 18 per cent in Kosrae compared with 26–28 per cent in each of the other three states (Demmke et al. 1997). In 1998 the Kosrae Statistical Bulletin reported that nearly twice as many males as females were undertaking tertiary study abroad. The most common destinations for Kosraeans studying abroad are Pohnpei, followed by Hawaii and the US mainland (Statistics Unit 1999).

The National Division of Education is currently developing a comprehensive education programme to cover the government priorities identified in the First FSM Economic Summit — agriculture, fisheries and tourism. A Career Education Summit will seek ways of promoting careers in these areas. Staff development will also need to be addressed.



*Walung, in Tafunsak municipality, can be reached by boat at high tide*

# 6 . THE FISHERIES SECTOR

## Fisheries: traditional and modern

The role of men and women in providing seafood for the family was very important in the past, before the introduction of the cash economy. Increasing numbers of people are now involved in paid work and much of their food, local and imported, is now purchased from shops. However, subsistence fishing and the collection of seafood from the reefs and mangroves still plays an important part in providing food for the family. There is a strong demand for fish and fish products in FSM, and per capita consumption has been estimated at over 70 kg per year (FAO 1998); much of this is supplied by the subsistence sector. Artisanal harvesting of marine resources is also becoming more important as greater numbers of people, men and women, fish and collect to sell locally. The increasing mobility of people, both on land and at sea, has also given them access to more fishing grounds than in the past.

Land ownership and tenure is complicated within FSM and varies from state to state. Traditionally, the chiefs controlled the distribution and use of land resources and accessible marine resources. Rights could be given, earned and inherited. Ownership of shallow reefs and the intertidal flats and their resources was traditionally held by the adjacent landowner. This traditional ownership is no longer recognised in Kosrae and Pohnpei, but remains to a large degree in Chuuk and Yap (SPREP 1993).

### Traditional management of land and marine resources

**In the past there was a king or paramount chief of the whole island who understood 'magically' all the resources of the land and the sea. He divided the island into sections, with a chief for each section. That chief was responsible for looking after the resources in his section, from the mountains to the edge of the reef. If the people from one section were chasing a fish and the fish crossed over into another section, they would have to stop chasing it at the border between the two sections. The paramount chief had a deep understanding of spawning times and sites, and fishing was strictly regulated according to phases of the moon. If a chief failed to provide for the people in his section he could be killed — giving him a strong incentive to succeed.**

**Source: Rooston Abraham, pers. comm., 2000.**

Traditionally on Kosrae men were involved in farming and, less regularly, fishing beyond the coral reef. Fishing in the shallow waters of the lagoon was the domain of women. Net fishing was a varied and highly developed fishing activity practised by Kosraean women, with different nets designed for specific fishing techniques, marine habitat, tide, and number of people fishing. Up until the early 1970s over ten different net fishing techniques were in use on Kosrae. By the early 1990s these varied techniques and specialised gear had been replaced almost entirely by the use of monofilament gillnets (Des Rochers 1992).

On Kosrae women have traditionally been regular providers of seafood for the family, through their regular netting, handlining and reef gleaning activities. Men's contribution was mainly in catching those species that required fishing beyond the reef in boats, or in diving or spearfishing.

## Harvesting

### Subsistence and artisanal harvesting

The mean annual commercial production from coastal fisheries in FSM between 1989 and 1994 was estimated at 637 tonne\* with a value of USD 1.5 million, while the mean annual subsistence coastal fisheries production for the same period was estimated at 6243 tonne with a value of USD 11.2 million (Dalzell et al. 1996). For Kosrae, the estimated artisanal landings was 85 tonne compared to 250 tonne for the subsistence sector. Jobs in agriculture and fisheries account for around 18 per cent of the workforce in Kosrae (SPREP 1993).

Subsistence and artisanal fishing are important for their role in nutrition, informal employment and their contribution to the cultural identity of coastal communities. The contribution of subsistence activities and informal employment to the economic and social well-being of Pacific Island communities is sometimes overlooked in the drive towards development and the management of commercially important resources.

### Invertebrates

The collection of shellfish, crabs and other invertebrates is still an important subsistence activity for many women. Mangrove crabs, *Scylla serrata*, **powa**, are a highly regarded food item and source of income for many families. They are caught by trap, by hand in the mangroves or using baited lines from adjacent rivers and estuarine waters (Smith 1992). The overharvesting of mangrove wood for firewood and building has reduced the mangrove crab's habitat and may have led to their reduced numbers.

Land crabs, *Cardisoma* sp., **aieng**, live in burrows in the forest and come out at night to feed. These crabs migrate to the sea to release larvae from their eggs at spring tide. They emerge at dusk, a few days before the full moon. Women collect land crabs at night by hand, especially during their spawning migrations. Coconut crabs, *Birgus latro*, **aie**, are similarly collected for subsistence at night with coconut meat baits laid in the bush, or by searching for burrows with sticks during the day or night. The growth of coconut crabs is slow and recruitment is low and highly variable, making recovery of heavily exploited populations slow.

Giant clams, *Tridacna* sp., **netula**, were an important traditional food although *T. gigas* has become locally extinct due to overharvesting. *T. maxima* is the most common species found throughout FSM but numbers appear to be declining. *T. squamosa* seems to have disappeared from Kosrae though low numbers may still be found in Yap, Chuuk and Pohnpei. The four states of FSM are now involved in various hatchery and restocking projects using *T. derasa*, *T. gigas* and *Hippopus hippopus* supplied by the National Aquaculture Centre on Kosrae. Giant clams are collected while spearfishing outside the reef or while reef gleaning.

Women harvest the mangrove clam, *Anodontia edulenta*, **popol**, at low tide by searching in the mud with their feet. The clams are mostly used for family consumption. Trochus, *Trochus niloticus*, **takasungai**, only endemic to Yap, was successfully introduced over 70 years ago and is now found in all four states. Trochus are collected by both men and women during the limited open season. Kosrae maintains sanctuary areas within which harvesting is not permitted.

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\* 1 metric tonne = 1.1023 ton (short ton)

Octopus, Cephalopoda, **koet**, are caught using a metal hook to remove them from their holes. Spiny lobsters, *Panulirus* sp., **ungung**, are speared by men while diving in deep water during the day, or may be speared or caught by hand at night during a full moon at low tide. Spearfishing is done only by men.

Only one species of sea cucumber, the curryfish, *Stichopus variegatus*, **wurur**, is harvested by women for their own use in Kosrae, although other species for collected for export have been overharvested. Curryfish internal organs are collected by cutting a small slit with a knife, or using the finger to make a hole in the underside to remove the intestines. The sea cucumber is then returned to the water where it regenerates its internal organs after an unknown amount of time.

Shells are collected by people walking over the sand or coral at low tide or, for the larger shells, diving in deeper water. Ornamental shells such as cones and cowries, various shells used in handicrafts (money cowries and helmet shells), and specimen and rare shells such as the golden cowry are collected for the tourist market (Smith 1992).

## Fish

Inshore fish species, harvested mainly by women using monofilament gillnets, include snappers (Lutjanidae, **srihnac, niahluh**), emperors (Lethrinidae, **srinkap**), groupers (Serranidae, **kalsrik**), parrotfish (Scaridae, **mwesrik**), rudderfish (Kyphosidae, **won, ikensahk, eloh**), rabbitfish (Siganidae, **mulap, mweosra, luh-luhk**), surgeonfish (Acanthuridae, **kaput**), trevallies (Carangidae, **lalot, srapsrap**), mullet (Mugilidae, **ac, kuhraf**), squirrelfish (Holocentridae, **ollol**), and goatfish (Mullidae, **futfut**).



*Handlining on the reef flat, Lelu*

Handlining on the inner reef flat is popular with both men and women, and in areas such as Walung women often provide enough fish for the family in a few hours of fishing. Species caught include emperors, groupers, snappers and triggerfish. Small fish, curryfish intestines or tuna meat can be used for bait. Spearing is often done at night, using torches.

Poison fishing with the roots of *Derris* sp., **op**, a traditional practice once used with hibiscus fibre hand-nets, is still used in some areas today. The root is gathered and placed in a small bundle, pulverised to release a milky sap and then fanned near a rock or coral head. The drugged fish are then caught with a gill net or picked up off the surface (Des Rochers 1992). Liquid bleach is also reportedly used by some people to catch fish. Under national and state law the use of poisons is prohibited, but reporting of infringements is rare and enforcement difficult.

Locally made canoes are still popular for fishing, with or without an outboard motor. Night spearfishing is best done without the use of an outboard motor. Men and women use canoes, though women less often and almost always without an outboard motor.

Trolling is mainly practised by men, although sometimes women will accompany them to catch tuna. Species caught include: yellowfin (*Thunnus albacares*, **olwol**), skipjack (*Katsuwonus pelamis*, **katsuo**), mackerel tuna (*Euthynnus affinis*, **makurul**), dogtooth tuna (*Gymnosarda unicolor*, **silo**), albacore (*T. alalunga*), bigeye (*T. obesus*), frigate tuna (*Auxis thazard*) and bullet tuna (*Auxis rochei*). Albacore, bigeye, frigate and bullet tunas are not common and have no Kosraean names. When caught, albacore and bigeye may be referred to as **olwol**, frigate and bullet tunas as **makurul**. Dolphinfish (*Coryphaena hippurus*, **siram**), barracuda (*Sphyraenidae*, **tola**) and wahoo (*Acanthocybium solandri*, **al**) are also commonly caught by trolling.

Flying fish (Exocoetidae), **mokol, ik sok**, are caught by scoop net at night, with one boat able to catch up to 200 flying fish in one night.

### Fishing Medicine and Magic

**As in many areas of the Pacific, Kosrae had a number of beliefs and practices concerning fishing. The belief in the use of special medicines and magic for fishing may have been popular in the past but this is not the case today. In the past, some families were known to have special medicine and magic for fishing. For example, women were able to call eels to them, or used secret recipes to attract fish to their net. The use of local or traditional medicine for the treatment of injuries from fish or other marine resources may still be practised today.**

**Source: Rooston Abraham, pers. comm., 2000.**

In Malem district there is limited reef area compared to other districts, and no channel or harbour. This restricts the fishing in that area and the residents tend to target different species from other districts. Very small fish species such as gobies (Gobiidae), **ik sroso**, and damselfish (Pomacentridae), **sruh**, generally not eaten in other areas, are caught by women in Malem using hands and sticks. Saltwater eels (Muraenidae), **semis**, and freshwater eels (Anguillidae), **ton**, are also targeted nowadays not only by people in Malem but those in other municipalities. The area outside the reef flat is particularly good for fishing, presumably because the lack of access has prevented heavy fishing, and people from other areas travel by boat to fish there.

## List of commonly caught fish and invertebrates

English name	Scientific name	Kosraean name
<b>Fish</b>		
Yellowfin tuna	<i>Thunnus albacares</i>	olwol
Skipjack tuna	<i>Katsuwonus pelamis</i>	katsuo
Mackerel tuna	<i>Euthynnus affinis</i>	makurul
Dogtooth tuna	<i>Gymnosarda unicolor</i>	silo
Dolphinfish	<i>Coryphaena hippurus</i>	sirami
Barracuda	Sphyraenidae	tola
Wahoo	<i>Acanthocybium solandri</i>	al
Flying fish	Exocoetidae	mokol, ik sok
Snapper	Lutjanidae	srihnac, niahluh
Emperors	Lethrinidae	srinkap
Groupers	Serranidae	kalsrik
Parrotfish	Scaridae	mwesrik
Rudderfish	Kyphosidae	won, ikensahk, eloh
Rabbitfish	Siganidae	mulap, mweosra, luhluhk
Surgeonfish	Acanthuridae	kaput
Trevallies	Carangidae	lalot, srapsrap
Mullet	Mugilidae	ac, kuhraf
Squirrelfish	Holocentridae	ollol
Goatfish	Mullidae	futfut
Gobies	Gobiidae	ik sroso
Damsel fish	Pomacentridae	sruh
Saltwater eels	Muraenidae,	semis
Freshwater eels	Anguillidae	ton
<b>Invertebrates</b>		
Mangrove crabs	<i>Scylla serrata</i>	powa
Land crabs	<i>Cardisoma</i> sp.	aieng
Coconut crabs	<i>Birgus latro</i>	aie
Spiny lobsters	<i>Panulirus</i> sp.	ungung
Giant clams	<i>Tridacna</i> sp.	netula
Mangrove clam	<i>Anodontia edulenta</i>	popol
Trochus	<i>Trochus niloticus</i>	takasungai
Octopus	Cephalopoda	koet
Curryfish	<i>Stichopus variegatus</i>	wurur

## Large-scale commercial fisheries

FSM's Exclusive Economic Zone (EEZ) contains substantial tuna stocks that are fished by foreign fishing vessels under access agreements. Fees collected from other nations fishing within FSM's EEZ are the largest single revenue source for FSM apart from Compact funds. Access fee revenues have risen from USD 2 million for 926 licences in 1979, to over USD 21 million for 634 licences in 1994. This includes transshipment fees and goods and services (OFCF 1997). The Micronesian Maritime Authority covers licensing and management of foreign fishing vessels, observer placements, catch report and revenue collection, conclusion of agreements with foreign fishing interests, and conservation and management of living marine resources in the EEZ.

Foreign fishing vessels from Japan, Taiwan, Korea, People's Republic of China and the Philippines have access agreements for offshore tuna fishing and are encouraged to use the available ports and transshipment facilities. Between 1979 and 1990 payments by Japan accounted for almost 77 per cent of total revenue obtained from access fees. Tuna exports are mainly for fresh sashimi grade to Japan and, to a lesser extent, fresh tuna and other fishes to Guam and Hawaii. The purse seine fishery is the most important in terms of both volume and value, taking over 80 per cent of the total tuna (mainly skipjack) catch by foreign vessels in FSM. Longliners targeting yellowfin and bigeye tuna for sashimi, and pole-and-line vessels targeting skipjack account for the remainder. The fresh tuna longline fishery has expanded rapidly in recent years with an increase in the number of Chinese vessels entering the area under charter arrangements (FAO 1998).

Many of the foreign longline vessels licensed to fish in FSM waters choose to unload their catch from ports in Guam or other neighbouring countries. Reasons for this include, among others, a lack of skilled services and facilities for the repair and maintenance of vessels, and limited runway space that restricts the size of aircraft that can be accommodated — the aircraft that are able to use the runways do not have sufficient fuel range to reach Japan with a full load of fish and must transfer their cargo at Guam or other airports in the Marianas (FSM 1997).

The National Fisheries Corporation (NFC) operates a Boeing 727 out of Pohnpei, providing shipments for the Kosraean tuna fishing industry, with connections to Guam, Pohnpei and Chuuk. In 1998 Pacific Tuna Industry (PTI) exported around 550 tonne of tuna landed from foreign longline fishing vessels (Statistics Unit 1999). All of the fish exported by PTI in 1998 was destined for the Japanese market. As with the rest of FSM, marine products are the major export commodity for Kosrae, comprising over 90 per cent of the value of total exports for the state.

## Regulations

Maritime powers are distributed between the FSM National and State governments. Fisheries within the territorial sea (12 nautical mile from island baselines) are controlled by the adjacent state, with the national government controlling the EEZ outside the territorial sea. At the same time, National legislation recognises that the states do have a role in the management of fisheries outside the territorial sea, and that the states may want the National government to have a role within the territorial sea.

The main management measures for subsistence fisheries in the Pacific have been through traditional arrangements such as customary fishing rights. In Kosrae these traditional arrangements have broken down. Modern fisheries regulations have failed to effectively manage the inshore resources and habitat. The 1982 Code of the Federated States of Micronesia prohibits catching marine life using explosives, poisons, chemicals or other substances. Trochus and black-lip pearl oyster are protected by size limits as well as a closed season. Turtles are protected by size limits, closed seasons and a ban on taking them while they are on shore. The taking of marine mammals for commercial purposes is prohibited, although they may be taken for traditional purposes. Enforcement of these regulations is a major problem facing all the State Fisheries agencies.

The large-scale commercial tuna fishery is managed through licensing with domestic, domestic-based and foreign fishing vessels, each requiring a different type of permit. The Micronesian Maritime Authority determines the level of fishing with respect to any stock of fish and these allocations are first made to domestic fishing vessels, then to domestic-based vessels, with the remainder being distributed to those foreign vessels covered by a foreign fishing agreement (FAO 1998).

A fisheries bill was recently developed as a model for each state to add to, or delete sections as applicable to their particular circumstances. This model law has so far only been approved by Kosrae State. The bill aims to improve the conservation, management and development of marine resources.

## Processing

Women do much of the primary and secondary processing of fish and seafood products for home use and sale in the markets. Primary processing such as gutting, scaling, cleaning of fish and shellfish is done for family consumption. Light salting of small fish is done by rubbing salt into the skin of the fish and storing in a covered container. Fish smoking is rare and only done when necessary for preservation. Ice is available from the marinas and is used by fishermen and women. Fish is most commonly sold whole and on ice.

## Marketing

The increasing participation of men and women in the cash economy has meant that people working for a wage are less involved in subsistence fishing. They do, however, provide a market for those involved in small-scale fishing for the local market. A variety of shops and markets for fish exist in Kosrae, ranging from small shops with ice chests to the three marinas — at Tafunsak, Lelu and Utwe — with unloading facilities, marinas and freezers. Tafunsak and Lelu also have ice making facilities. All three marinas are now leased to the private sector. Okat Marina at Tafunsak is the largest, built with Japanese funding.



*Okat Marina, Tafunsak*

Okat Marina presently employs five staff. Reef fish are sold for between USD 1.25–1.50/lb, yellowfin tuna around 75 ¢ and skipjack tuna 50 ¢/lb. Bad quality fish are rejected but because most fishermen now use ice, this doesn't happen often. Buyers are also aware of quality and are willing to pay a higher price for the better quality fish.

## **Aquaculture**

A National Aquaculture Centre (NAC) was established in Kosrae in 1991 to develop an integrated aquaculture programme for FSM. The National Fisheries Section of the Department of Economic Affairs based in Pohnpei State is responsible for the administration of NAC. The main focus of the centre is the spawning and re-seeding of giant clams in FSM as well as export of clams for both the live food trade and aquarium trade. Its main work has been the propagation of giant clams for re-seeding in other states. Three species of clams are being used as broodstock for the restocking (*Tridacna derasa*, *T. gigas* and *Hippopus hippopus*). A training programme brings potential clam farmers from each state to Kosrae for training. The farmers then receive clams and equipment to establish farms in their home states.

A Kosrae State project involving re-seeding of trochus and green snail has also been using the NAC facilities, with nearly 300 green snail broodstock coming from Tonga in 1999. The introduction of the green snail pilot project was made possible under joint efforts of the National Fisheries Section and the Kosrae State Department of Agriculture, Land and Fisheries (Fisheries Development Division) with funds and technical assistance provided by the FAO–South Pacific Aquaculture Development Program, which concluded in August 1999.

# 7 . SERVICES FOR SUPPORT AND ASSISTANCE WITH MARINE RESOURCE USE AND MANAGEMENT

## **Government agencies**

### **National Fisheries Section**

The Fisheries Section of the Department of Economic Affairs coordinates planning for marine resource development, conservation and management between municipal, state and national governments. They are responsible for providing technical, advisory and support services to the states and the National Government in their fisheries development and management activities. The Section is also the technical focal point for the Convention on Biological Diversity and is charged with looking after all biodiversity issues, including the implementation of a National Biodiversity Strategy Action Plan project under the funding scheme of the Global Environment Facility through the United Nations Development Programme. It is also the focal point for other regional organisations such as SPC, the South Pacific Applied Geoscience Commission and others. With government restructuring there are now only two staff in the National Fisheries Section. Their ability to be involved in activities at the state level is, therefore, limited and their role is more that of an advisory and coordinating body for and between the states.

### **Kosrae Department of Agriculture, Land and Fisheries**

The structure of the Kosrae State Fisheries agency has been changed in the past few years, moving from a separate department (the Department of Marine and Fisheries Resources) to what is now two of six divisions under the Department of Agriculture, Land and Fisheries: the Marine Surveillance Division and the Fisheries Development Division. In addition to national level tuna fishery development projects, various initiatives have been initiated by the states to develop or share in tuna fisheries development.

The Marine Surveillance Division has a number of responsibilities including: surveillance of Kosrae's territorial waters; enforcement of FSM and Kosrae State marine laws and regulations; coordination of search and rescue operations; maintaining and upgrading surveillance equipment; ensuring appropriate training for surveillance staff; monitoring and repairing mooring buoys around Kosrae (there are 56 buoys to be serviced, used mainly for dive locations); establishing a coral reef monitoring programme; and coordinating the repair of outboards, diesel engines and refrigeration at the fisheries workshop.

The main objective of the Fisheries Development Division is to increase production from marine resources. Technical assistance has been requested and delivered by the SPC Fisheries Development Section, deploying FADs and running FAD fishing workshops. The Division is looking at FADs as a possible way to increase the availability of fish to the local market.

Objectives of the first Kosrae State Summit, 1996 include: institutional support for the fisheries sector; management and enhancement of resources; increased small-scale production; and increased large scale production. Potential projects suggested cover technical assistance; data collection; placement of FADs, trochus and green snail propagation, and enhancing private sector equity (OFCF 1997).

A Japanese-funded project, providing Yamaha skiffs with 30 HP outboards, has also aimed to increase the amount of fish for sale on the local market. The first ten boats were to be rented by fishermen for one or two days a week but it was then decided to sell the boats for a low price. The buyer must provide a USD 1000 deposit and then produce records for fish (including lobster) showing they sell 300 lb of fish a week. The average catch of reef fish for a boat for one trip can be around 300 lb, and for tuna 100–200 lb, depending on the weather (Solome Martin, pers. comm. 2000). Over the following couple of years the boat buyer will need to pay another USD 2000 before fully owing the boat.

There have been some concerns about the screening process to decide which of the applicants were entitled to a boat, with some non-fishermen ending up with boats and unable to meet the fishing criteria.

### **Development Review Commission**

The Development Review Commission (DRC) implements the Kosrae Island Resource Management Programme. This body, like the Environmental Protection Agency in Pohnpei, is mandated to protect the environment and is responsible for providing permits for any development, including coastal development and any major marine project such as slipways, marinas and upgrading of navigation aids. DRC is assisted by a board appointed by the Governor. The board does the final deliberation on permits, based on recommendations made by DRC and a special technical advisory committee consisting of representatives from various government agencies (e.g. tourism, construction and engineering, transport, history and culture, agriculture and fisheries) as well as representatives from each village.

DRC is also involved in increasing public awareness on environmental issues and is especially concerned about the impact of increasing development on mangrove areas, overharvesting of sea cucumbers, the use of poisons for fishing and the use of small mesh nets. Waste management is also seen as a problem area, with littering in mangrove areas presenting another threat to this important ecosystem. DRC has five permanent staff and several overseas volunteers working in environmental law, education, pollution and coastal engineering.

### **Division of Sanitation**

The Division of Sanitation is involved in a wide range of areas covering environmental health and food safety. Staff inspect vegetable and fish markets, restaurants, imported and exported food for potential problems. Premises selling or serving food must follow health and safety regulations or face closure. Ciguatera is rare, although there have been cases of illness attributed to seafood. Staff also inspect foreign fishing and cargo vessels, check crew vaccination cards and clear crew for shore visits. The Division is involved with raising awareness on nutrition and health issues, working occasionally with the Family, Food Production and Nutrition Project (Department of Agriculture, Land and Fisheries).

### **National and State Women's Agencies**

The National Women's Interest Officer works within the Department of Health, Education and Social Affairs and is based in Pohnpei. This office provides coordination among and between the various women's organisations at national and state levels. At the state level, a coordinator for the Kosrae Women's Affairs Program works within the Community Development Division. The goal of the program is to promote greater participation of women in the economic and social affairs of Kosrae. The Kosrae Women's Advisory Council is a community group with two representatives from each village, one representative of the community groups under the Mayor's office and one representative from each of the church women's groups.

## Education and training

Presently little marine science is taught at the primary and high school level. High schools teach some marine science but with little practical content or direct application towards a job or career in marine science. The College of Micronesia (COM) has a campus in each state, with the main college based in Pohnpei. The College offers a two year Associate of Science degree in Marine Conservation but, because of the need for science laboratories and staff, this can only be done at the main campus. The programmes of the college go through an accreditation commission and are transferable to other educational institutions. Many graduates go on for further study, mainly to Fiji or the US, others are employed in FSM National and State Government positions.

The Kosrae campus of COM had around 160 students enrolled in 2000. Around five to ten of these a year go to Pohnpei to study marine science, with some of those later deciding to change study areas in order to remain in Kosrae. Kosrae COM is very interested in extending marine studies to its campus by introducing a certificate program in marine science and aquaculture. This, however, would need funding and staff.

## Financial assistance

The FSM Development Bank provides loans at nine per cent interest per annum. The Kosrae branch of the bank has implemented the Agricultural, Land and Fisheries Scheme to encourage small farming and fisheries development. Most loans, ranging from USD 500 to 5000, are for small-scale fishing projects, raising pigs and farming. Fisheries loans are used to buy canoes, nets, spearguns, diving gear, underwater torches or ice chests. A local canoe can be purchased for around USD 200. The bank has experienced problems with loan repayments and believes they must toughen the criteria used to approve loans and increase public understanding of the loan scheme.



*A new fish market built in Utwe by a local fisherman*

## Conservation organisations

The Utwe–Walung Conservation Area is a community-based conservation area located between Utwe and Walung villages. The area was established with technical assistance and funding provided by SPREP and includes marine, mangrove and forest environments as well as historic sites. Legally the conservation area has no exact boundaries and there are no official restrictions on activities within the area. A management plan is still in the process of being drafted — this will go through the proper legal channels after community consensus is reached. People still fish in the conservation area and the management plan will probably look at seasonal restrictions of fishing rather than total bans.

## 8 . PROBLEMS AND SUGGESTED AREAS OF ASSISTANCE

### **Overharvesting of inshore marine resources**

Increasing population, more efficient fishing gear and a preference for eating reef fish, as opposed to ocean fish, have contributed to the overharvesting of inshore fish species. The economic activities, involving men or women, which could be developed based on inshore marine resources are very limited due to the ease with which these species can be overharvested. Alternatives to unsustainable resource use should be explored, with development and training being directed to those alternatives.

At the instigation of the National Fisheries Section, the Kosrae Fisheries Development Division sought technical assistance and training from the SPC's Fisheries Development Section. FADs have been deployed outside the reef and workshops on fishing around FADs have been run. The aim is to reduce the pressure on inshore fish stocks by encouraging local fishermen to fish around the FADs for tuna and other pelagics.

If successful, FAD fishing may lead to an increase or even excess of tuna on the local market. Low prices and demand for tuna compared to reef fish may discourage fishermen from pursuing FAD fishing. In conjunction with the FAD fishing project, tuna and value-added tuna products could be promoted through training and education.

Aquaculture is another possible means of providing seafood alternatives for the local market. However, it is uncertain whether aquaculture development will lead to reduced fishing pressure — experience in other countries indicates that, generally, fishermen do not give up fishing to work at fish farming. For Kosrae, aquaculture could be used to provide a source of income and food for communities that do not have the same access to productive fishing areas as in other parts of Kosrae. Malem municipality would be a good area to pilot a fish farming project for a number of reasons: the area has a very small inshore area and no channels for boats to access the outer reef area; the people are accustomed to eating fish not generally eaten in other areas of Kosrae; there are rivers and streams for freshwater or brackish water farming needs; and there is interest and support from the community, including the Mayor of Malem and the Director of the Kosrae COM campus.

The work could be undertaken by students as part of a COM marine science course. Currently SPC is in the planning stages of an aquaculture programme that will eventually be able to provide support and information to governments and the private sector on economically and environmentally sustainable aquaculture activities. Until this programme is running, technical assistance on aquaculture would have to be sought from other organisations such as the International Center for Living Aquatic Resources Management (ICLARM), the Food and Agricultural Organization of the United Nations (to which FSM has yet to become a member) or the Overseas Fisheries Cooperation Foundation (OFCF). Rabbitfish and mullet have been suggested as potential species for farming, but little success has occurred with these in the region so far. Experience in other parts of the Pacific indicates that tilapia or milkfish would be more successful candidates, however introduced tilapia have become a pest in other areas and they are often not acceptable for local consumption. This leaves milkfish as the most likely candidate for a pilot aquaculture project.

## **Lack of controls over fishing methods or gear**

Apart from overfishing, some of the fishing methods and fishing gear used also contribute to problems in inshore areas. The use of small mesh and loosely hung gill nets from the Philippines is a common complaint from those concerned with declining inshore catches. Fishing with poisons, both traditional and modern, is also reportedly practised by a number of people. Government regulation and enforcement is difficult and will probably continue to be so unless there is widespread community involvement, awareness and motivation. Considering there is already some concern over these issues, increasing community-based control and enforcement over some of the more obviously destructive methods should be considered.

Under the new fisheries bill the Director of Agriculture, Land and Fisheries may adopt regulations for the conservation, management and development of the fishery waters under the State's jurisdiction. Municipal government powers in Kosrae prevent them from adopting an ordinance, or regulating or controlling an activity or subject which the State law regulates or controls. This means the mayors do not have the power to regulate fisheries activities, but could, with community consultation, draft regulations and submit them to the Director for approval and adoption. Public awareness on sustainable fisheries activities and existing fisheries regulations (and the reasons behind the regulations) needs to be further promoted. Support by government for greater community control over, and responsibility for, their marine resources should be encouraged.

## **Environmental practices**

Raising public awareness and education on the consequences of unsustainable environmental practices is presently undertaken by a number of government and non-government agencies. Poor waste management practices and overuse of mangroves for firewood and building are two areas of concern. In some areas it is reported that the collection of coral rocks and rubble piles has led to a decrease in sheltered areas for small fish. Environmental issues can also be addressed with community-based management practices and any fisheries related training should include awareness raising and training on these issues.

## **Assistance for women in the fisheries sector**

The involvement of Kosraean men and women in the fisheries sector is at the subsistence level (harvesting and preparation of seafood for the family), and artisanal level (small-scale commercial fishing, collecting and selling for the local market). Past training and other assistance has sought to increase local involvement in commercial fishing and has mainly targeted men.

Regional training activities have only recently started to provide opportunities for women involved in commercial fisheries activities and this has yet to be mirrored at the local level. SPC's Training Section selects men and women to attend courses aimed at assisting commercial fisheries development in the region. Two women from a commercial fisheries enterprise on Yap recently attended a regional course for managers in New Zealand. One woman from the Micronesian Longline Fishing Corporation (MLFC), Pohnpei, attended a course on seafood business operations for Pacific Island women. So far, no women from Kosrae have attended any training in fisheries-related activities.

The SPC Community Education Training Centre (CETC) has recently included a fisheries module in its seven-month course for Pacific women community workers. The module and an accompanying manual were produced by the SPC Community Fisheries Section in collaboration with the University of the South Pacific Post-harvest Programme. The module teaches participants skills that will enable them to assist and train others in sustainable fisheries for income generation and to teach participants how to work with fisheries departments, women's departments and other government and non-government groups to provide support to those in the fishing community. It is hoped that training of community workers will eventually translate into assistance given to women involved in fisheries at the grassroots level. To date, one participant from Kosrae has attended the CETC fisheries module.

Apart from this there has been little direct assistance or training given to women involved in subsistence or artisanal-level harvesting, processing or marketing of seafood. Provision of more training programmes at the State level for subsistence and artisanal fishers, particularly women, could ensure a more balanced development of the fisheries sector.

## Areas of Assistance

**Provision of more training programmes at the State level for subsistence and artisanal fishers, particularly women.**

**During the survey, the following training needs were identified: seafood quality and handling; promotion of tuna and tuna products for the local market; small-scale fish marketing; community-based management of marine resources; the role of fisheries regulations; and practical management measures for commonly harvested inshore resources.**

**Promotion of public awareness programmes on fisheries and the environment and support of community fisheries management measures.**

**Public awareness on sustainable fisheries activities and environmental practices needs to be further promoted. Increasing people's knowledge of existing fisheries regulations (and the reasons behind the regulations) is also important. Support by government for greater community control over, and responsibility for, their marine resources should be encouraged.**

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## APPENDIX: PERSONS CONSULTED

Robert Taulung, Administrator, Fisheries Development Division  
Rooston Abraham, Fisheries Specialist  
Tony Abraham, Administrator, Marine Surveillance Division  
Courtney Sears, Peace Corps Volunteer, Fisheries Division  
Ropina D. Aloka, Coordinator, Women's Affairs Program  
Helen Jonas, President, Kosrae Women's Advisory Council  
Nena Tolenoa, Director, Department of Community Affairs (Youth, Senior Citizens, Women, Culture)  
Rensley Sigrah, Governor, Kosrae State  
Robert Jackson, Acting Administrator, Development Review Commission  
Douglas Ramsay, Coastal Engineer, Development Review Commission  
Moses Noda, Acting Director, Department of Agriculture, Land and Fisheries  
Norlin Lipvaie, Division of Sanitation  
Kalwin L. Kephass, Campus Director, College of Micronesia, Kosrae Campus  
Ashley Jackson, Manager, FSM Development Bank, Kosrae Branch  
Mason Timothy, Director, National Aquaculture Centre  
Debra Blum, Assistant Attorney General  
Madison Nena, Conservation Area Support Officer  
Justin Rose, Environmental Lawyer, Development Review Commission

### **Tafunsak**

Julian Jonah, Mayor, Tafunsak  
Magrina & Reeton Kilafwakun, Walung  
Mer & Dotley Kilafwakun, Walung  
Hotisina Martin, Walung  
Penina Nena, Pres., Walung Women's Org.  
Pettylina Kenson, Walung  
Sepe Kilafwakun, Walung  
Solome & Marbe Martin, Malsu, Okat Marina  
Harry & Virguna Jackson, Yeitua  
Lori & Hamlet Jim, Walung  
Reverand Kun Celab, Yemak  
Sepe Heiney, Finsosa, Tafunsak  
Gloria Joshua, Wan, Tafunsak

## **Malem**

Maheta T. Kilafwasru, Mayor, Malem  
Nopuko L. Talley, fish market, Malem  
Merlina W. Talley, Malem  
Namiko Jack, Malem  
Notwe Alokoo, Malem  
Tulpe Moleince (Esaa), Malem  
Minner Milson, Malem

## **Lelu**

Joab P. Sigrah, Mayor, Lelu  
Henrietta R. Albert, Lelu  
Verna Mackwelung, Lelu  
Sepe & Paliksru Albert, Lelu

## **Utwe**

Clanry Kun Tilfs, (proposed fish market), Utwe  
Carmilina, Else, Sepe & Marciana R. Alik, Utwe  
Hansily R. Livae, Utwe  
Erida Nena, Utwe