

An Assessment

of the Role
of Women
within Fishing
Communities



in the
Republic
of Palau



Secretariat of the Pacific Community

**AN ASSESSMENT OF
THE ROLE OF WOMEN
WITHIN FISHING COMMUNITIES
IN THE
REPUBLIC OF PALAU**

COMMUNITY FISHERIES SECTION
Secretariat of the Pacific Community
Noumea, New Caledonia

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abbreviations and acronyms

BNRD	Bureau of Natural Resources and Development
BWI	Bureau of Women's Interest
CoPopChi	Palau National Committee on Population and Children
CRE	Cooperative Research and Extension
CRRF	The Coral Reef Research Foundation
DMR	Division of Marine Resources
EQPB	Environmental Quality Protection Board
FAD	Fish Aggregating Device
FAO	Food and Agricultural Organization of the United Nations
IESL	Informal Employment and Sustainable Livelihood
JICA	Japanese International Co-operation Agency
MRD	Ministry of Resources and Development
OFCF	Overseas Fisheries Cooperation Foundation
OSB	Overseas Service Bureau (Australia)
PCAA	Palau Community Action Agency
PCC	Palau Community College
PCS	Palau Conservation Society
PFFA	Palau Federation of Fishing Associations
PMA	Palau Maritime Authority
PMCI	Palau Modekngai Company Inc.
PMDC	Palau Mariculture Demonstration Centre
PCS	Palau Conservation Society
SPC	Secretariat of the Pacific Community
STD	Sexually Transmitted Disease
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
USDA	United States Department of Agriculture
UVC	Underwater Visual Census

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Palau is renowned for its spectacular diving and the beautiful Rock Islands.

1. executive summary

Objectives

The assessment of the role of women within fishing communities in the Republic of Palau was carried out from the 16 to 30 November 1998. The survey was conducted by Ms Lyn Lambeth (SPC Community Fisheries Officer), with the assistance of Ms Evelyn Oiterong (Division of Marine Resources) and Ms Roberta Louch (Bureau of Women's Interest). The assessment was requested by the Government of Palau in response to an identified need for more information on the participation of Palauan women in the fisheries sector.

The main objectives of the field survey were to:

- ♦ review the social and economic role played by women in the fisheries sector, including activities undertaken in the 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 fisheries sector;
- ♦ outline the problems faced by fishing communities and the constraints that inhibit the effective participation of women within the fisheries sector;
- ♦ identify changes in the situation for women in the fisheries sector since the 1991 report, *The Role of Women in the Fisheries of Palau* (Matthews and Oiterong, 1991).
- ♦ provide guidelines to assist the effective participation of women within the fisheries sector.

Major findings

- ♦ Fishing is an important activity for men and women in Palau, both for production of food for the family and community, and for small-scale income generation. The majority of women in the villages practise some form of fishing including handlining, spearing, netting, trapping and reef gleaning at low tide. Men are involved in spearfishing, netting, handlining and trolling using small motor boats. Marketing is done either directly to outlets in Koror or through village fishing cooperatives. An increasing number of women in and around Koror are fishing with small motor boats, by themselves and with other women. The women process and package their own catch and some of the men's catch for sale in Koror.
- ♦ Government fisheries development has focussed on projects that support the activities of fishermen rather than women. This has been due to the focus on income-generating, commercial fisheries development, which has mainly involved men.
- ♦ The main restrictions on fisheries activities for women are problems of transport (to fishing areas and to market) and the lack of a central market. Competition for reef resources and the effects of development have increased the distance women must travel in order to fish and harvest seafood. Men also identified the lack of a central market as a restriction to their fishing activities. There is a lack of incentive for Palauans studying marine science overseas to return to work in Palau upon completion of their studies.
- ♦ Since the previous report on the role of women in the fisheries of Palau (Matthews & Oiterong, 1991) the number of women in and around Koror using small motor boats to catch fish for sale has increased significantly. There are also more women marketing their produce than previously. Some of the transport problems identified in the 1991 report have been addressed by the Japanese-funded state boats in some villages, but many women feel their transport needs are still not considered.

2. recommendations

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

- ◆ **Both government and non-government organisations improve information services for women in the fisheries sector.**

The Division of Marine Resources (DMR) work with the Bureau of Women's Interest (BWI) to improve information and support services to women in the fisheries sector.

The DMR appoint a Community Fisheries Officer with expertise in women's fisheries issues to coordinate information and support services available. This appointment could be a new position (pending budget approval) or be made from within existing DMR staff.

Through the Community Fisheries Officer the DMR promote itself as a provider of technical assistance to both men and women in fishing communities on such issues as fisheries management, development, gear, fishing techniques, and training (local and regional).

The BWI work with the Community Fisheries Officer to provide women with an information service that draws together the work of numerous government and non-government support programmes that presently exist locally and in the region.

Government and non-government organisations involved in community development communicate regularly with the Community Fisheries Officer and DMR to ensure a coordinated delivery of services, expertise and information.

- ◆ **The Division of Marine Resources increase the involvement of women in their work.**

The DMR consider the needs of women when planning and implementing development and management programmes. The DMR bring this consideration to the attention of funding agencies when discussing the needs of the Palau fisheries sector.

The Community Fisheries Officer help the DMR ensure that all members of fishing communities are considered in the regular DMR fisheries extension work.

- ◆ **The Division of Marine Resources improve training services for women in the fisheries sector.**

The DMR and the BWI, following on from the SPC 1999 workshop respond to the training needs of fisherwomen throughout Palau who were not involved in the workshop.

The DMR training programme use local expertise from both government and non-government organisations to deliver workshops as requested, tailored to the needs of particular villages.

Other government and non-government organisations involved in community development should contact the Community Fisheries Officer when planning training to avoid duplication of services.

Regional assistance to support women in fishing communities be provided through the SPC Community Fisheries Project. The Community Fisheries Project can assist in organising and running a workshop for women on seafood quality, processing and preservation; marketing (including packaging, developing business skills); and seafood recipes (for marketing lunch packs).

♦ **Government examine the feasibility of a central market.**

The government look at the feasibility of establishing a central market to cater for the fisheries and agricultural sectors.

♦ **The number of students formally educated in marine science in Palau be increased.**

The Bureau of Natural Resources and Development consider providing conditions on some scholarships for higher education to encourage the study of marine science and to ensure the graduate returns to work in Palau for a set time.

The Education Department ensure the introduction of the popular two-year Marine Science programme at the Palau Community College.



The largest island of the Republic of Palau is Babeldaob, comprising almost 70% of the total land area.

3 . introduction

Pacific Island men and women have traditionally been involved in fishing, to provide seafood for family consumption and, more recently, for income generation. In many countries fishing offshore with boats has been the domain of men while women have concentrated their activities on the inshore areas, collecting or gleaning a number of species from the reef and inshore areas.

Pacific Island states have been keen to encourage the development of offshore fishing activities, in order to generate income and to reduce the pressure on inshore marine resources. This has targeted the people most involved in this type of fishing—men. Little has been done to document the activities of the women, to identify their potential in development or to assess problems such as overharvesting or the impact of development on their fishing areas.

Palau is relatively unique in that the status of women involved in fisheries activities is already recognised and highly regarded. However, despite this recognition, little has been done to assist the women in developing their potential or regulating their activities. A three-month survey undertaken in 1991 (Matthews & Oiterong) documented women's fisheries activities, identified problems they faced and made recommendations to address those problems.

In November 1998 a second survey was undertaken to examine fishing communities and the role of women in fisheries activities in Palau. The main purpose of this report is to examine women's role in the context of the fishing community, rather than looking at women's activities in isolation from the broader fishing scene in Palau. The report also seeks to identify changes since the 1991 report, identify recommendations from the report that have already been addressed and recommend areas for assistance and development in the future.

4 . methods

The survey entailed interviews with men and women involved in fisheries activities; government agencies (dealing with fisheries, women's development, education, health, the media, island development, and commerce); non-government agencies (including representatives from community development organisations and conservation groups); business; the media; and the banking sector.

Meetings were held with individuals and groups selling produce from outer villages at markets in Koror. Field trips were undertaken to speak to fishermen and women from villages on Koror, Babeldaob and Peleliu and to observe fishing techniques and fishing areas used by the villages.

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

5. background social and economic information

The role of men and women

In traditional Palauan society the roles of men and women were clearly defined. These roles and the traditional system of governance is, to a large extent, still retained in villages today. The village chief along with several elders is responsible for making decisions for the entire village. However, the old and respected women from each clan are the ones to decide who amongst the men in their clan will be chief (usually the son of the eldest and highest ranking woman is chosen).

Access to land is similarly through the relationship to the mother. Women are the food producers; farming the land for taro, preparing fish the men catch and, in bad weather, providing seafood from their reef-gleaning activities. A certain level of power accompanies the social and political position of women in Palauan society, but this is accompanied by large workload as women provide for their families and meet customary obligations.

Women are increasingly becoming involved in the formal employment sector, as opposed to informal and subsistence employment, although the informal sector continues to play an important role in Palau's economy and social structure. It is often now the older women who are the main subsistence farmers and producers, undertaking the labour-intensive work of taro cultivation and collecting invertebrates and fish from the inshore waters.

The Palauan family is changing at a rapid pace. In 1990 48% of the potential female labour force (females over 16 years old) were actually participating in the labour force. By 1995 this had increased to 60% (BWI & MCCA, 1997). The proportion of households headed by women has increased from 20% in 1990 to 25% in 1995 (CoPopChi, 1998).

Population

Population figures for 1998 for Palau show an estimated 18,500 inhabitants, an increase of 1275 since the 1995 estimate (SPC, 1998). In 1995 the 17,225 population estimate was comprised of 74% Palauans and 16% Filipinos, with the balance being other Micronesians, Japanese, Chinese, Taiwanese and other Asians (BWI & MCCA, 1997). Over 70% of the population reside in the adjacent states of Koror and Airai.

The female population in 1995 was 46.5% of the total population. The annual growth rate of

customary support and redistribution of wealth

Palauan families and clans provide for the security of their members through a custom of *ocheraol*. This takes place when close relatives, clan members and friends come together to contribute money to help one of their members to improve his (or, in some cases, her) standard of living. Under the traditional customs for the redistribution of wealth, the flow of money and land is always in one direction and the flow of food and services is in the opposite direction. The channel in the exchange is marriage.

The *ocheraol* may be held by a young married man wishing to build a house apart from his family. When he needs money for a particular purpose, such as the compensation of workmen who have built his house, he issues an invitation to both his relatives and those of his wife. The young man's wife and her relatives provide food for the occasion.

For the *ocheraol* to be successful the young man must have the support of his maternal relatives, especially his sisters. Generally the oldest sister is expected to contribute the largest sum of money with successive sisters contributing according to their place in the family lineage. Each sister in turn draws support from a network of relatives and in-laws who assist to 'make her purse heavy.' The system works not only to redistribute wealth but also puts women in a position of respect in the eyes of their brothers.

Source: Barnett (1949) & CoPopChi (1998).

the population, 2.6%, reflects the number of foreign workers recruited to work in Palau—if only Palauans are considered then the growth rate is only 0.2%. The ratio of dependants (people under 15 and over 64) to those in the economically productive ages (15–64) is low, 56 dependants per 100 working age people (compared to a high ratio of 124 dependants per 100 people of working age in the Marshall Islands). This reflects the decrease in women's fertility in Palau as well as the number of working-age foreigners coming to Palau.

The economy

The economy of Palau is heavily dependent on foreign assistance, in particular from the United States. In 1994 Palau became a sovereign nation under a Compact of Free Association with the USA. Under this Compact, Palau now manages its own domestic and foreign affairs while the USA retains control of defence and security matters. During the first 15 years of the Compact the USA will provide up to \$500 million in financial aid. However, this will be reduced over three five-year intervals (Rarick, 1997). This will severely affect the economy, with a huge budget deficit projected sometime after the year 2000.

The services sector is the leading area of economic activity, although the fisheries sector is the only sector showing a sizeable economic growth (Table 1).

Table 1: Gross domestic product (% shares)

Economic sector	1983	1990	1991	1992
Agriculture and Fishery				
Agriculture	9.9	3.0	3.0	2.9
Crops	NA	2.2	2.2	2.2
Poultry/livestock	NA	0.8	0.8	0.8
Fishery	7.2	23.0	25.2	25.9
Total Agr. & Fish.	17.1	25.9	28.2	28.8
Industry				
Manufacturing	0.4	0.7	0.8	0.9
Construction - Residential	NA	0.9	1.3	0.8
- Commercial	NA	2.0	1.8	2.6
- Government	NA	8.2	5.3	4.0
Government utilities	1.9	3.7	4.4	5.0
Total Industry	15.2	15.5	13.5	13.3
Wholesale/Retail trade	16.9	15.6	16.5	15.7
Hotel & Restaurant	1.7	8.1	8.1	9.7
Transport & Communication	2.4	4.4	4.1	4.6
Finance & Insurance	1.8	4.0	3.8	3.6
Real Estate & Business	0.8	4.3	4.5	4.1
Government services	37.6	18.5	17.9	16.0
Other services	6.5	3.6	3.6	4.1
Total Services	67.7	58.6	58.3	57.9

Source: Government of Palau: Economic Development Plan, 1994

Annual exports from Palau decreased over the 1991–1996 period, at the same time as imports were increasing. This resulted in a US\$58 million trade deficit in 1996, compared to a US\$15 million deficit in 1991 (BWI & MCCA, 1997). American aid has sustained the economy, but a large amount of the funds goes to imports of consumer goods and services. With the reduction of American aid in the future, the challenge for Palau will be to expand its productive base.

Tourism is one of the growth areas of the economy and increasing the size of the tourist industry remains one of the primary economic goals of the government. The recent economic crisis in Asia has affected the number of visitor arrivals to Palau, but the government remains optimistic that tourism will continue to play an important role in the economy. Potential problems include lack of infrastructure support to cope with an increase in visitors (water, power, sewage, communications) and the potential for environmental degradation caused by development and visitor impact on fragile environments.

Presently there is no code of practice for those involved in the tourist industry but concerns have been expressed over the social, cultural and environmental impacts of tourism. In 1997 a round table discussion came up with 25 issues, in order of priority, to be addressed and legislated if need be. These have so far not been acted on and the effect of the Asian economic crisis (too few tourists) has tended to overshadow the concerns over the impact of too many tourists.

Measuring the non-market output of subsistence activities is much more difficult. A survey undertaken by the Informal Employment and Sustainable Livelihood (IESL) programme in 1995 estimated that, out of the total yield of subsistence food production, around 75% of the value of the products is sold, 13% is consumed and 12% is given away to fulfil customary obligations (Rarick, 1997).

Tropical fruits, vegetables, livestock, poultry and fish are in demand by both locals and the tourist industry and this demand is not currently met by the local food producers. Ensuring regularity of supply, uniform quality of produce, access to a central selling area and competition with imported foods are just some of the difficulties facing the local food industry. Attempts to establish a central government market for agricultural produce have met with limited success. The farmers' produce market at the Agricultural Division has been operating for two years and is currently used by only two states. Despite this, the establishment of a Koror-based central market is one of the most popular requests by both agricultural and seafood producers.



Women from outer villages sell their produce from stalls in the capital, Koror.

promoting informal employment

Informal and subsistence employment have traditionally formed the bedrock for Palau's economy and social structure but have been neglected in recent years as attention has focussed on the formal economic sector. Yet, surveys show that the informal sector contributes at least US\$ five million per year to Palau's economy and possibly a great deal more.

The informal sector includes production, home consumption, trade, and marketing of surplus agriculture and marine products, handicrafts and services. An estimated 2,971 Palauans derive a significant portion of their livelihood from informal production. Forty-four per cent of these producers are women.

The population policy in Palau recognises the informal sector (commonly referred to as IESL) to be a viable option for future generations of Palauans worthy of preservation, support and expansion. To this end, the policy recommends: (1) labour statistics and national accounts be revised to better reflect the contributions of the informal sector; (2) land use and development policies ensure that women and youth producers retain access to land and sea resources necessary to sustain their livelihoods; and (3) assistance be provided in the form of entrepreneurial training, access to credit and markets, and introduction of selected labour-saving technologies to enhance productivity and incomes.

Source: CoPopChi (1997).

Health

Palau has one hospital, ten village clinics and three super dispensaries (mini-hospitals). The main health problems are non-communicable diseases including diabetes, hypertension, cancer and nutrition-related renal disease. Economic data indicates a shift away from local foods towards a diet favouring imported foods such as frozen and tinned beef, pork and fish. Tuberculosis remains a concern with an increase in cases reported in 1997 (BWI & MCCA, 1997).

There is considerable evidence that Palauan children, especially those living in urban Koror, are adopting many harmful adult habits including diets high in salt, sugar and fat, early onset of overweight and early use of betel nut (often with tobacco). It is common now to see widespread use of betel nut in schools and amongst relatively young children. In the past chewing betel nut was something old people indulged in, it was unthinkable to see a young, strong man carrying around the bag containing the ingredients necessary for chewing betel nut (Oiterong, pers. comm.). The habit is now very widespread amongst old and young, men and women. The major health concern arising from betel-nut use is the increased risk of mouth cancer caused by the inclusion of tobacco in the chewing mixture.

Sexually transmitted diseases (STDs) appear to be on the increase although the information is sometimes contradictory. However, tables from the Bureau of Health and Preventative Services show STDs to be more prevalent amongst women and increasing amongst both sexes. There has been one reported case of HIV (Brown et al., 1998).

The birth rate in Palau has decreased and families are more likely to have 3–4 children compared to the 6–7 common in previous generations. Women are now more likely to pursue further education or paid employment, delaying marriage and parenthood. Teenage pregnancies have declined over recent years (except for an increase in 1995) and the Ministry of Health intends to reduce this further (BWI & MCCA, 1997). Women have a higher life expectancy than men (69 years compared to 65 years for men).

Traditional medicine is still in widespread use with most families having some knowledge passed down through the generations, especially regarding the special herbs to use after childbirth. Abortion medicine used to be common but is rarely encountered by health workers today (Polloi, pers. comm.).

Education

Schooling in Palau is compulsory with a mixture of public and private elementary and high schools providing a curriculum adapted from the American system. There is no University and most students go to the United States (Hawaii, Guam and mainland USA) to continue their tertiary education. Palauans see education as very important with the 1995 census showing that only 3.5% of the population over 25 years of age did not have any schooling at all.

In general, the gender distribution in the different levels of schools is not uniform: in pre-primary and primary levels there are more boys than girls (4% more boys). However in high schools (and more so in colleges) females outnumber males by almost 10% (BWI & MCCA, 1997). This could be due to males leaving school earlier in order to take paid employment.

The Palau Community College (PCC) offers Certificate and Diploma studies, with most students undertaking two years study at PCC before going on to higher education in the USA. The college emphasises vocational education with such subjects as agricultural science, air conditioning and refrigeration, small-engine and outboard-motor repair, and business accounting.

The Palau National Congress has US\$ two million per year for scholarships for overseas study. Females outnumber males in scholarships with 64% of the scholarships in 1997 going to females (BWI & MCCA, 1997). Most scholarship students undertake their studies in Guam, Hawaii and mainland USA but some students are now starting to take up scholarships in Fiji, New Zealand and Australia. This has been uncommon until now due to a lack of familiarity with those countries.

There is a tendency for students studying abroad to remain and work there once the study has finished. The Palau National Committee on Population and Children (CoPopChi) recognises this in their recommendations for a National Policy on Population and Development submitted to President Nakamura in 1997. Goal 3 of the recommendations includes a requirement that "recipients of publicly financed education grants and loans return to Palau following their studies" (CoPopChi, 1997). For this to be workable the returning students would need to be assured of a job on their return.

The Division of National Youth Affairs runs training programmes for those who are having trouble with their schooling. They assist graduate students as well as those who have dropped out of school. The Division offers alternative education to help students obtain their high school diploma. Most of the youths they work with are males who have not been interested in studying. The few females the Division assists are those who have had to leave school after falling pregnant. Assistance in getting jobs is also available, with most jobs being in the office and business fields.

Religion

The Catholic religion is the dominant religion in Palau (44% of the population) followed by Evangelical Protestant (25%), Modekngai (11%), Seventh Day Adventist (5%) and others (15%). The United Sect or Ngara Modekngai, founded in 1915, is one of the only indigenous religious movements remaining in Micronesia (Levy, 1997). Barnett (1949) describes it as "an amalgamation of Christian and native beliefs, one of many such phenomena that have occurred repeatedly in all parts of the world where Christianity has impinged on native religious systems."

RELIGION AND SEAFOOD TABOOS

The most striking and well remembered of the innovations advocated by Temudad, the founder of Ngara Modekngai, was his condemnation of the food taboos of totem plants and animals. He called assemblies in villages and was able to get a few villagers to follow his example in publicly flouting the prohibitions. At a meeting in Elab, a few individuals were finally induced to overcome their horror and eat a few bites of coconut crab (a taboo animal in the village) with the assurance that the god Ngiramukul would protect them.

While urging the people to abandon their old taboos, Temudad imposed certain others upon them. He said that no one should eat the sting ray or the giant clam. Whether this was supposed to be a temporary restraint remains undetermined; but it is said that practically everybody in Ngaraard observed the prohibition for three or four years, and as a result the lagoon teemed with these animals. Temudad also prohibited the dynamiting of fish.

Source: Barnett (1949).

6. the fisheries sector

Fishing roles: traditional and modern

Fishing has always played an important role in Palauan society. Traditionally in Palau the main food-producing activity of women was the cultivation of taro, while fishing remained the major activity of men. In fact, Palauan men have been renowned throughout the region for their fishing prowess and understanding of the marine environment of Palau. Their fishing techniques and extensive knowledge of species behaviour and marine systems have been well studied and documented by Johannes (1981).

Palauan women have also played an important part in harvesting marine resources through their reef-gleaning activities, especially in bad weather when the men were unable to catch fish. This has been examined in a survey documenting the various fishing, collecting, marketing and processing activities of women in Palau (Matthews and Oiterong, 1991). Today, women are broadening the scope of their fisheries activities, with an increase in the marketing of their produce and the use of small motor boats for fishing, especially in and around Koror.



The collection of invertebrates at low tide remains an important activity for women.

The majority of households in rural Palau today practise subsistence farming and fishing; any excess food remaining after meeting the demands of family and customary obligations is sold.

Traditional aspects of Palauan fishing rights

The Constitution of Palau, Article I, states that each of the 16 states in Palau shall have exclusive ownership of all living and non-living resources, except highly migratory fish, from the land to 12 nautical miles seaward from the traditional baselines; provided that traditional fishing rights and practices are not impaired.

shark fishing

Rich and extensive reefs and lagoons provided Palauans with more than enough seafood. Traditionally, therefore, fishermen seldom ventured much beyond the outer reef slope. But one type of offshore fishing, *oungewaol*, was practised by a few prestigious specialists. On special occasions at the request of the chiefs these men fished the open ocean for several species of shark.

During the season of the northeast trades, *oungewaol* fishermen sailed up to ten miles off the east coast of Babeldaob looking for floating driftwood around which they knew sharks often congregated. Flying fish were caught and used to lure the sharks close to the canoe where they were caught with a noose made from hibiscus fibre. This was devised in response to the fact that sharks are liable to cut through a conventional bait-fishing line with their teeth.

Whereas sharks used to be esteemed as food by Palauans, they are not popular today. Their prestige was related not to their flavour, but to the romance and danger associated with their capture. The *oungewaol* fisherman had a special tattoo on his wrist. When holding out a flying fish to entice a shark to swim through the noose, he was not supposed to let go of the bait until the shark's snout reached the tattoo.

Source: Johannes (1981).

Under Article V of the Constitution, statutes and traditional law are to be equally authoritative. In case of a conflict between a statute and a traditional law, the statute shall prevail only to the extent that it is not in conflict with the underlying principles of the traditional law. This implies that in some circumstances traditional law could rank more highly than statutory law (Pulea, 1994).

The management of fisheries resources is regulated by a mix of traditional conservation practices, statutes and treaties. Villages theoretically retain traditional control over fishing grounds adjacent to the village. In practice, many villages now feel this traditional control is no longer secure and that they do not have the power to exclude outsiders from their fishing grounds. Customary marine tenure has not been observed in Koror state for decades. This is due to the difficulty of retaining traditional marine tenure laws in a place which now contains so many people from other states and countries (Johannes, 1991).

Traditionally, Palauans took various steps to conserve the marine resources within their village fishing boundaries. The Palauan term, *bul*, refers to a form of conservation regulation declared and enforced on fishing grounds. For example, after World War II fish stocks were severely depleted due to marine resources being overexploited to feed Japanese troops. A number of new *bul* were therefore introduced, including a ban on fishing for *temekai* and *tiau* (groupers, *Epinephelus* sp. and *Plectropomus* sp.) on their spawning grounds (Johannes, 1991). Today, the enforcement of traditional conservation regulations is difficult, particularly in areas close to Koror.

Harvesting

Most fishing in Palau is done within the lagoons and on the outer reef slopes using a number of different fishing methods and taking a variety of species. Fisherwomen collect numerous invertebrate species at low tide including:

- sea cucumbers
(*Holothuria* sp., *Actinopyga* sp., *Bohadschia argus*, *Stichopus variegatus*, *Thelenota ananas*)

- sea urchins
(*Diadema setosum*, *Tripneustes gratilla*, *Hemicentrotus pulcherrimus*, *Strongylocentrotus pileolus*)

- bivalves
(*Tridacna* sp., *Hippopus hippopus*, *Anodontia* sp., *Anadara* sp.)

- gastropods
(*Nerita* sp., *Dolabella* sp., *Trochus niloticus*, *Lambis lambis*, *Cypraea tigris*)

- cephalopods
(*Loligo* sp., *Polypus* sp., *Sepia latimanus*)

- crustaceans
(*Scylla serrata*, *Panulirus* sp., *Birgus latro*, *Cardisoma* sp.)



Searching for sea cucumbers, ngime, during the morning low tide.

oLengimes: sea cucumber collection

The Palauan name, *ngimes*, for the sea cucumber *Stichopus variegatus*, means "to stretch" which is exactly what this sea cucumber does if it is held too long. *Ngimes* are usually collected during the morning low tide called *bor*. Since the intestines are the parts used, *ngimes* are collected before they have eaten, when the intestines are clean and free of sand. The sea cucumber is cut open or cut in two, intestines are removed and the body is thrown back in the water, allowing a regeneration process.

Ngimes are found in seagrass beds within the inshore areas. The intestines are sold in markets in bottles, jars or plastic ziplock bags. Usually the intestines of around 20 animals are needed to fill a half-litre bottle.

It is believed that both halves of the cut sea cucumber will regenerate into a complete organism. There are many small individuals in areas where they are often collected. Some women prefer to obtain the intestines by just making a small slit in the underside of the animal rather than cutting them in two—they believe that cutting the animal in two makes it slower for it to regenerate and results in too many small *ngimes*. Other women believe that *ngimes* taste better if they come from animals recently cut in half. If the *ngimes* from an area have never been collected by this method, some people said they have a bad aftertaste. If this is the case, collecting this species on a regular basis is practically a farming operation.



Cutting the ngime, Stichopus variegatus, to remove the intestines.

Source: Matthews & Oiterong (1991); Oiterong & Ngirausui, pers. comm.

Surprisingly, little research has been undertaken on this process of regeneration after the removal of intestines for food in the Pacific (also practised in Samoa and the Cook Islands). Women in Palau believe the animal regenerates its intestines within a few days; scientific literature suggests it takes from 15 to 120 days for different species to regenerate (Byrne, 1985; Bai, 1994; Reichenbach et al., 1996).



Women use their feet to search for and collect nguul, the mangrove clam *Anodonita edulenta*.

Women also use torches and spears to catch fish at night, mainly rabbitfish (*Siganus* sp.). Numerous other fish species are caught using hook and line in pools at low tide or using bamboo rafts. An increasing number of women in and around Koror have purchased small motor boats and fish regularly for the local market. Other women go fishing in boats with father, husbands or other male family members who have access to boats.

Men and women sometimes work together in the use of stationary barrier nets, *kesokes*, used on a falling tide to trap fish leaving the reef. The net is set in a V shape on a falling spring tide with the apex of the V lying in the deepest water in the area. As the tide falls, the fish move toward the deeper water. Once the tide has dropped so far that the reef flat at the mouth of the net is dry, the fish are trapped and are then speared (Johannes, 1981).

Inshore fish species caught by both men and women include snappers (Lutjanidae), emperors (Lethrinidae), groupers (Serranidae), parrotfish (Scaridae), wrasses (Labridae), rabbitfish (Siganidae), surgeonfish (Acanthuridae), trevallies (Carangidae) and herrings (Clupeidae). Mangrove crabs, *Scylla serrata* and rock lobsters (*Panulirus* sp.) are also important commercial species (Otobed & Maiava, 1994). The combination of spear fishing and SCUBA gear is believed to have caused the large-scale population decline of the bump-headed parrotfish (*Bolbometopon muricatum*) and the Napoleon wrasse (*Cheilinus undulatus*) in Guam and Palau (Dalzell et al., 1996).

The mean annual commercial fisheries production in Palau between 1989 and 1994 was estimated at 736t with a value of US\$2.4 million, while the mean annual subsistence production for the same period was estimated at 750t with a value of US\$1.8 million (Dalzell et al., 1996). It is unknown how much women contribute to this production. Kitalong & Dalzell (1994) conclude that Palau's reef fish stocks appear to be moderately to optimally exploited, although fishermen perceive declines in the abundance of key species and are concerned about overfishing.

Fishermen use nets, hook and line, trolling and underwater spear fishing for subsistence and small-scale commercial fishing. An estimated 25% of households own fishing boats, mostly small, outboard-powered boats from 4.5–7.5 m in length. Most people have access to these boats through the extended family system (FAO, 1998).

Improvements in air and shipping networks have allowed fish export activities to develop. *Trochus (Trochus niloticus)* are harvested during government-declared open seasons for export to markets in Asia and Europe. Ornamental fish species are collected and exported for the aquarium trade.

An offshore fishing industry for tuna is conducted primarily by foreign fishing vessels or domestic joint venture companies. There is one locally owned pole-and-line vessel supplying tuna to the local market (FAO, 1998). No processing of tuna is done in Palau. Approximately 44% of the catch from Palau's EEZ is air-freighted fresh to Japan for the sashimi market. The remainder is frozen and shipped to Taiwan for canning (Otobed & Maiava, 1994).

Tuna species harvested in Palauan waters include yellowfin (*Thunnus albacares*), albacore (*T. alalunga*), big-eye (*T. obesus*) and skipjack (*Katsuwonus pelamis*).

Processing

Women undertake most of the primary and secondary processing of fish and seafood products for home use and sale in the markets. Excess fish or poorer-quality fish is often cleaned and smoked by the women for sale with their other produce at markets in Koror. Fish is also fried, salted, pickled and dried. Popular sale items of the women are pre-cooked lunch packs for sale in markets. These consist of smoked or fried fish, cooked crab and combination plates (e.g. rice, fried chicken, fish, vegetable patties and egg) arranged on a polystyrene tray and covered with plastic shrink wrap.

Sea cucumbers are bottled and sometimes salted, depending on the species and the time delay before getting them to market. Some species can be kept unrefrigerated for two to three days after salting. Mangrove clams, ark shells and other bivalves can be kept alive in seawater and sold fresh. Crabs can also be kept alive until they are sold. Giant clams are preserved in vinegar, salt and water or lightly cooked and sold in plastic bags.

Some fish markets fillet fish for sale in their shops, but most often the fresh fish is sold whole, on ice.

Marketing

Fresh and processed fish/shellfish are sold at local fish shops, supermarkets, restaurants, hotels and at various locations around Koror. Some states have a small hut somewhere in town that women use to sell fresh and packaged produce, including bags of mangrove clams, bottled sea cucumber and pre-cooked lunch packs. These are sold along with steamed packets of tapioca, cooked taro and some fresh agricultural produce. Smoked fish is sold at around US\$2.50/lb, fried fish is US\$2.75 per lunch tray, while a lunch plate of cooked crab is US\$2.50 a plate. Mangrove clams are 25–50 cents each, depending on where they are sold (restaurants and hotels provide the best price to the women).



Women sell seafood and other produce from state booths originally built for the 1998 Micronesian Games.

Women's groups from two states are presently using their state booths at the cultural village, which was built for the Micronesian Games in August 1998. There is no main market area for seafood or other produce. Women from other states sell to the fish shops, usually coming into town one or two days a week by road or boat. Sometimes women get special requests from restaurants or hotels for their products and collect and process accordingly.

The men's catch is also sold in Koror, with the fishermen either taking it directly to the fish markets there, or selling it to a fishermen's cooperative in the village, which then sells it to a market in Koror. The fish is not generally sold directly to the public by the fishermen but goes through one or two channels before reaching the retail market. Fishermen will generally get between US\$1.00 to US\$1.35/lb for fresh, whole fish while the fish shops sell to the public for between US\$1.75 to US\$2.00/lb, depending on the shop rather than the species.

ngeremlengui fishing cooperative

About 12 men in the village of Ngeremlengui fish regularly for a living; most other men in the village fish occasionally for family consumption. The village has 10 small motor boats and one state boat (around 35ft) which was obtained with Japanese funding. This boat goes to Koror generally twice a week, sometimes more often.

It costs nothing to belong to the Ngeremlengui Fishing Cooperative. The Coop has two Japanese-funded ice-making machines (3-tonne and 1/2-tonne capacity) which provide ice to the fishermen and women for US\$1.00 a bag or US\$3.00 a basket. The Coop buys fish from the fishermen at US\$1.00/lb, transports it by boat to Koror, and sells it to the Palau Federation of Fishing Association (PFFA) for US\$1.10/lb. The Coop also gets occasional orders from hotels and restaurants.



The Japanese-funded boat used by the Ngeremlengui Fishing Cooperative.

Most women in the village who are able to, fish and collect seafood for family use and try to market the excess. They also process some of the men's catch that is not suitable for sale fresh to PFFA. Fisherwomen do not belong to the Ngeremlengui Fishing Cooperative although they buy ice from there and sometimes transport produce to Koror on the Coop boat. The problem with this is that often there is limited space for their produce. They must also use a portion of their profits to pay for fuel.

The women are presently using the state booth in the cultural village to sell their produce direct to the public, but this is not a secure arrangement. There are also no facilities—no bathrooms or running water. The women often have difficulty marketing their produce—they have to sit all day at the state booth and this leaves them unable to carry out their work at home. The women would ideally like to be able to process and package their produce and have a buyer collect it and take it to Koror, leaving them free to work on other tasks.

The men of the Ngeremlengui Fishing Cooperative would also like to see a central market that would buy their fish as well as the women's produce. The PFFA only buys fish from seven states and doesn't buy the women's produce. Many people in Koror consider the PFFA fish shop to be too expensive (selling for around US\$1.95/lb compared to US\$1.75/lb at other places) and will only go there when other shops have no fish. As a consequence of this the PFFA is often overstocked and has to refuse the fish the Ngeremlengui Fishing Cooperative brings them.

Source: Ngeremlengui village member, pers. comm.

Fish buyers travel to Palau from Guam and the Northern Mariana Islands to buy fish to sell at home. The fish is transported in ice boxes as luggage and is therefore not included in the statistics of the Division of Marine Resources (Adams, 1993).

7. national services for support and assistance with marine resources

Government agencies

THE DIVISION OF MARINE RESOURCES

The Division of Marine Resources (DMR) is responsible to the Bureau of Natural Resources and Development, under the Ministry of Resources and Development. The main role of the DMR is to manage and develop the inshore marine resources. A separate body, the Palau Maritime Authority is responsible for the development and management of offshore fisheries, including the negotiation of foreign fishing agreements and the issuance of foreign fishing permits. However, the DMR has also initiated incentives to develop offshore fisheries in order to reduce the pressure on overexploited inshore resources (Isamu, 1995).

Out of a staff of 20 at DMR there are four women: one secretary, one fisheries officer and two fisheries specialists. The fisheries officer and the specialists are currently working on a backlog of statistical work, entering and analysing fisheries landings and export data.

The work of the DMR includes:

- promoting and developing the commercialisation of fisheries and fisheries products
- aquaculture and mariculture research on certain species
- assessing the commercial potential of reef and deepwater species
- laws, guidelines and conservation measures to safeguard against over-exploitation
- technical advice to local fishing cooperatives

The fisheries extension programme of the DMR extends technical advice and services to interested individuals, fishermen, cooperatives and state governments. Services are provided on request using resources from within DMR or from donor agencies with whom cooperative relations have been developed (Isamu, 1995).

A bilateral agreement in 1990 between the Government of Palau and the Overseas Fisheries Cooperation Foundation (OFCF) has led to the Japanese-funded installation of six fishing ports at Ngerchelong, Ngaraard, Angaur, Melekeok, Ngatpang and Ngardmau as well as the provision of numerous boats and ice-making machines in those and other villages around Palau. The ports serve as facilities for the community to unload and store products while awaiting transportation to markets in Koror and can also facilitate tourism development.

The aim is to develop fisheries in these states, including offshore fishing, upgrading of shore-based facilities, development of FAD fisheries, identification of new fishing grounds, improving marketing, gear, refrigeration and diesel technology, and improving training. Fishermen have been trained in fishing gear technology, practical fishing methods and fish quality control.

The Palau Mariculture Demonstration Centre (PMDC, previously the Micronesian Mariculture Centre) has been involved in aquaculture for over 20 years and has been a world leader in giant clam culture. Clams are now successfully cultured for the aquarium and sashimi trade. The research stage of the giant clam work is now finished and PMDC would like to see private enterprise move into this field, but there has been little interest shown due to the length of time before a return on investment would be realised.

The PMDC is now involved in research on trochus, soft coral, mud crabs and coral trout. The facility is starting to have a few problems with leaking tanks due to its age. Increased water temperatures due to El Niño (up to 34° C from a normal of 27–28°) in 1998 resulted in bleached clams and corals, both at the PMDC and in the waters around Palau.



The Division of Marine Resources and the Palau Mariculture Demonstration Centre.

THE BUREAU OF WOMEN'S INTERESTS

In 1994 the Government set up a Bureau of Women's Interests under the Ministry of Community and Cultural Affairs. The function of the Bureau is to organise, promote and advise the government on all issues related to women in Palau (BWI & MCCA, 1997). The Bureau has three staff and works to a three-year plan based on the Pacific Platform for Action (SPC, 1995a). The Bureau also responds to requests and observed needs by organising workshops, formulating plans and strategies and attending meetings. Workshops have been held for village women on book-keeping. These were aimed at assisting women to keep records when selling the produce in Koror for a number of women from their village.

The Bureau is currently limited in the work it can undertake because of a lack of resources and funding. In 1997 the funding received was just enough to cover the staff salaries. It is difficult to see how the Bureau in its present form would be able to achieve the long list of often broad goals given in the mandate of the Bureau of Women's Interests (SPC, 1995b).

the mandate of the bureau of women's interests of palau

'The Bureau of Women's Interests shall be headed by a director who, with the assistance of an administrative officer, researcher/clerk, social worker/counselor and such other staff as may be necessary, shall be responsible for the supervision and performance of the following duties and functions:

1. Developing, formulating, identifying and establishing short-term and long-term goals, objectives and guidelines for women's concerns, activities and programs;
2. Planning, evaluating, monitoring and implementing specific and appropriate programs, projects and activities to meet the economic, educational, health and political needs and requirements of women in Palau;
3. Coordinating networking relationships with international or regional women's organisations, groups or individuals and establishing bilateral contacts with women's associations in foreign nations;
4. Facilitating the process of community awareness and education of any identifiable audience or target group in relation to women's role in society and other related issues;
5. Conducting, on a regular basis, women's related needs assessment surveys, recording and compiling findings regarding same and making recommendations for appropriate action based on the information received;
6. Creating a database on women's informational services, activities and organizations, either outside or inside Palau, including traditional and non-traditional organizations, associations or groups;
7. Being responsible for proposal writing, project formulation, and report writing for grant aids or funding assistance to women's programs, projects or activities;
8. Collecting, disseminating and otherwise providing relevant and timely information about women's interests or newsworthy items in the Palauan and English languages through a newsletter, radio programs and other types of media;
9. Developing, promoting and advancing educational programs and activities and general awareness relating to child and spouse abuse and neglect; and
10. Assisting in developing a 24-hour networking system for reporting, identifying or otherwise making known to proper authorities incidence of spouse or child abuse or neglect while protecting their identities or the privacy of the victims.'

Source: SPC (1995b).

Information and educational institutions

PALAU COMMUNITY COLLEGE AND COOPERATIVE RESEARCH AND EXTENSION

The Palau Community College (PCC) has three departments:

- Administration
- Education and Training
- Cooperative Research and Extension

As part of its Education and Training department the PCC currently provides some basic science courses including Natural History and Environmental Issues and intends introducing a two-year marine science programme in the future. The college has been running a summer marine science programme for the past six years. This is an intensive course run over three weeks and is equivalent to one year's high school study. Participants from this course have done very well and many have gone on to study science overseas.

The Palau Community College library has a small marine science section and an excellent collection of scientific magazines and journals (old and current issues).

The Cooperative Research and Extension (CRE) department is involved in research and community development in three key areas:

- entomology (community education on pests and diseases)
- agronomy (agricultural research and extension)
- aquatics (sponges and corals for the aquarium trade)

CRE is presently establishing a research and development station at Ngeremlengui. This will mainly deal with agricultural research, including tissue culture, but CRE hopes for it to eventually include marine research. Funding for the building has come from USDA, the College of Micronesia and the Government of Palau. Work on the station is currently halted until the courts determine who the legitimate land owners are.

Aquatic research and extension includes the mariculture of corals for the aquarium trade, research into sponge and ascidian survival in aquariums and assistance for people to set up sponge farms. So far four sponge farms have been set up by individuals in Palau. The sponges are sold in the United States and to a large drug store in England. There is a potential local market to explore selling sponges to tourists. The CRE aquatic researcher has run workshops and given technical advice on setting up new farms and continues to assist those already set up. Workshops have been run for interested people; participation has been by invitation. Equal numbers of men and women have attended, although so far only men have gone on to establish farms.

Initially CRE faced a problem in finding wild stock, but with the assistance of one of the keen farmers, they have now located a good wild stock area. The wild stock is harvested by cutting the sponge in half, leaving half to regenerate. It is then cultured and the fastest growing, larger specimens are kept for broodstock, thus ensuring that the wild stock is not depleted.

PALAU NATIONAL MUSEUM AND RESEARCH LIBRARY

The Palau National Museum has educational marine and environmental displays including exhibits on coral bleaching, silting, nutrient overload and destructive fishing. There are displays by the Palau Conservation Society (PCS), Palau Community College, Bureau of Natural Resources and Development and the Environmental Quality Protection Board (EQPB).

There are displays of traditional fishing methods and gear, and information on traditional conservation restrictions. The museum is a good educational facility for students and tourists.

The Research Library works with the Education Department and also directly with students and the public, giving talks on culture and nature issues. The library is used by upper elementary students, teachers and visiting researchers. The Palau Public Library was being rebuilt at the time of the survey.

Community development and non-government organisations

THE INFORMAL EMPLOYMENT AND SUSTAINABLE LIVELIHOOD PROJECT

The Informal Employment and Sustainable Livelihood Project (IESL) is a rural development project started in 1995 by the Government through the Rural Working Group and the Palau Community Action Agency (PCAA). The project is funded by UNDP, UNICEF and the Palau Government. IESL work in Palau consists mainly of support for small-scale agricultural activities including production, marketing and small-business skills. The project has also assisted villages in obtaining tillers. IESL works with CRE on multi-cropping and has worked with the SPC on household food security, rural development, agriculture and health.



Cleaning the mangrove clam catch.

From 1995 IESL began collecting data on subsistence activities using state-by-state surveys of informal employment activities, including fishing and seafood collection. The information collected is useful in estimating the extent to which informal employment activities are meeting home food consumption and customary needs. According to the survey, around 75% of the products is sold, 13% is consumed and 12% is given away to fulfil customary obligations (Rarick, 1997).

PALAU COMMUNITY ACTION AGENCY

The Palau Community Action Agency (PCAA) is a community-based non-governmental organisation that works on numerous development projects throughout Palau including IESL's Family Food Production and Nutrition; the Village Improvement Project; pre-school projects; child care; and small business advice.

PALAU CONSERVATION SOCIETY

The Palau Conservation Society (PCS) was established in 1994 to look at marine conservation issues. This has since broadened to include land issues. The society works in partnership on some issues with the U.S. conservation organisation, the Nature Conservancy. It responds to requests for assistance and has helped several states in the establishment of conservation areas, helped villages draft management plans for their resources and undertaken resource surveys. The first two conservation areas to be established, Ngerukewid Islands and Ngerumekaol Spawning Area, are regulated at the national level. Between 1994 and 1997 five new conservation areas were established by local authorities and communities. Two of the reserves are monitored once a year with Underwater Visual Census (UVC) and the collection of fish and invertebrate data.

The society also works with the Palau Community College on their research and extension work (CRE). PCS works with the Division of Marine Resources on research into the timing and behaviour of grouper spawning and is promoting the development of an inshore tourist-based sport fishery. A public awareness campaign is facilitated by the publication of fact sheets, brochures and a newsletter highlighting conservation issues in Palau.

IESL CONTRIBUTION TO PALAU'S ECONOMY AND WAY OF LIFE

IESL activities in Palau can be categorised as follows:

- ◆ Small-scale, food-production activities carried out as subsistence or traditional means of livelihood for home consumption and/or clan-based traditional activities (feasts, "house parties," etc.) done mostly by women's groups;
- ◆ Marketing of surplus food produce and, minimally, other items (including hand-crafts and spear guns);
- ◆ Expanded production and marketing of goods involving more individuals and families or groups but also carried out as unlicensed and unregulated operations;
- ◆ Provision of services (including food catering and farm clearing).

Specific activities, carried out as unlicensed or unorganised commercial operations, include the selling of betel nuts, raising pigs, gathering coconuts, collecting and selling seafoods, production of coconut oil, weaving (bags, mats, hats, hand fans, grass skirts, *kebui* case), selling smoked fish and wood carving ("story boards").

Source: Putting People First. IESL Newsletter, 1996.

THE CORAL REEF RESEARCH FOUNDATION

The Coral Reef Research Foundation (CRRF) is a non-profit organisation from the United States with its main base in Palau. Its main purposes are research and education on coral reefs and other tropical marine environments. One major activity of CRRF is the collection and identification of marine organisms for anti-cancer and anti-AIDS screening tests by the U.S. National Cancer Institute. In 1994 CRRF began a survey of the marine invertebrate fauna of the marine lakes of Palau and they are currently undertaking a complete marine faunal survey of all Palau marine environments.

CRRF currently assists the Palau Community College with their summer marine science workshop and an education programme being developed will involve direct interaction with students. Technical and scientific assistance is offered to government or private agencies in Palau. The facility in Koror has a new laboratory building with accommodation for visiting researchers, a covered outside area with holding tanks, three boats and diving gear.

JICA, PEACE CORPS AND OSB VOLUNTEERS

Both the Japan International Cooperation Agency (JICA) and the United States Peace Corps have offices in Koror. JICA has volunteers involved in three main areas in Palau: administration, health (mainly nurses) and cultural affairs (youth sports). One JICA Aquaculture Adviser is working with the Division of Marine Resources. He advises on development, surveys suitable sites for aquaculture and makes recommendations based on these surveys. The aim is to pursue small-scale aquacultural development for communities rather than large-scale commercial operations.

The United States Peace Corps has ten volunteers presently in Palau, working in small business, education, agriculture and with IESL. The Overseas Service Bureau (OSB) of Australia also has four volunteers working in health, conservation and education.

Cooperatives, groups and associations

The Palau Federation of Fishing Associations (PFFA) operates under the Division of Marine Resources and provides shoreside facilities and services to local fishermen. The PFFA buys fresh and frozen fish from Association members and individual fishermen. The produce is then sold to the public, hotels and restaurants from their fish shop. PFFA also has a 100 tonne cold-storage facility and three ice-making machines. While a few women sell fish to PFFA, the bulk of the produce comes from fishermen.

Many villages have fishing cooperatives which buy fish from the fishermen and sell to PFFA or other outlets in Koror. Women's produce tends not to be involved in these cooperatives because of the low value and irregular supplies involved with many invertebrate products.



The Ngeremlengui Fishing Cooperative.

Traditionally groups of women met to prepare food for customs, to practise dances and to socialise (Matthews & Oiterong, 1991). Some women have now formed fishing groups and some have received funding to purchase small fishing boats. Much of the marketing of women's produce is done as a group, rather than an individual activity. Often, representatives of a village women's group will make the journey to Koror to sell the produce of a wider number of women from their group.

Financial institutions

Credit is available through both government and commercial banks in Palau. Interest rates of the commercial banks range from 11.3% (Guam Savings and Loan Association), 12 % (Bank of Hawaii), 12.25% (Bank of Guam), 18% (Pacific Savings Bank).

The Palau National Development Bank has a small-loan programme for rural women for loans of \$5,000–\$10,000. The interest rate on these loans is around 6%. At the time of the survey there was a freeze on all loans while the new President of the bank fixed past problems caused by lack of policy and procedure in the loaning process. According to the new President, direct loans will probably not be available until March/April 1999 and will be more difficult to get than in the past.

In 1997 there were more men than women making loans from the Palau National Development Bank. Most of the men's loans were for fishing, boat-tour businesses and taxi services (BWI & MCCA, 1997) while the women's loans were for computer services, motels and apartments. It can be difficult for a woman to obtain a loan for a fishing business involving invertebrates as the return is often quite small (as with sea cucumbers for example). Line fishing with a boat is still considered to be a man's domain by the people approving the loans. Some women have applied for loans for a boat for a tourist venture and then used this boat to go fishing (Bishop, pers. comm.). Women also face problems of having to give away fish to meet customary obligations and can therefore have difficulties with making loan repayments.

Business

The Palau business sector is dominated by service industries such as construction; tourism; and retail and wholesale trade. The 1996 Taxation Register showed a total number of 1432 business with 268 (19%) being owned or managed by women (BWI & MCCA, 1997). The Chamber of Commerce is an association of local business people and mainly represents the service industry.

There are a number of fish and seafood retail outlets which buy directly from fishermen and women or fishing groups, associations and cooperatives. The marketing outlets include Happy Fish Market; Palau Modekngel Company Inc. (PMCI); the Blue House; and Yanos and Sons. A number of restaurants and hotels including Pirate's Cove and the Palau Pacific Resort also buy fish and seafood directly from fishermen and women. Many of the supermarkets and smaller shops sell pre-cooked lunch packs prepared by village women.

Media

Island Cable Television is received in Airai and Koror. The channel has a strong American content but there are some locally produced shows. Some SPC videos have been shown, including *Shellcraft: an income-generating venture*.

There are two local, privately-owned newspapers, *Tia Belau* and *Palau Horizon*. Both newspapers feature local regional and world news, with local content including community activities, health, education, tourism and environment issues. The bilingual *Tia Belau* includes government job announcements, messages from members of government and state legislature announcements. A number of regional Micronesian newspapers are also widely available.

Palau has two government and two private radio stations. The radio is the most effective method of media promotion and is therefore used by the Division of Marine Resources to advertise workshops or other items of interest to the fishing public.

0 . constraints to participation in the fisheries sector

Social and cultural roles

Within traditional Palau society, there was a strict division of labour between men and women. Fishing was seen as the capture of fish and solely the domain of men. Reef gleaning, or the collection of seafood at low tide by women and children, provided important protein for the community, especially when the weather was too bad for men to go fishing, though it was not considered to be a fishing activity. The division of labour is rapidly changing in Koror though it still exists to a large extent in the villages. Collecting invertebrates, as well as the preparation and sale of fish/shellfish still tends to be overlooked as “fisheries activities”, not by the women themselves, but by many of the government and non-government agencies that assist fishing activities in Palau.

Access to resources

MARKETING CONSTRAINTS

The issue that was raised most frequently, by both women and men, was the lack of a central market in Koror. There is presently no central market for seafood or agricultural produce. Fishermen and women sell their catch at a number of outlets around town, including fish shops, their own market booths (some states have selling booths around Koror; these are not in one place), general stores and restaurants.

One issue, which was brought up by all village women attempting to market their produce in Koror, was the difficulty of transporting produce and people to markets in the capital. A further transportation problem is faced when trying to reach fishing areas; most women in the villages of Babeldaob travel by bamboo raft to fishing areas.

DEVELOPMENT

Dredging and the destruction of mangroves was identified by village women as having a negative impact on their activities. This has contributed to the disappearance of some species in particular areas and has caused the women to move further afield to harvest seafood. Ngchesar has experienced this loss of species due to dredging activity in Ngerngesang. It is said that silt piled up in this area so that sea cucumbers are burned by the heat of the sun in the shallower water. The incoming tide takes longer to reach and cover the area where the animals are being baked in the sun due to the elevated seabed (Isamu, pers. comm.).

Siltation resulting from road building was another development identified as having an adverse effect on women's fishing areas. Some women identified damage caused by large boats travelling at speed over their fishing areas at high tide as affecting their fishing activities.

COMPETITION FOR RESOURCES AND THE EROSION OF TRADITIONAL FISHING CONTROLS

Many people, especially around Koror, compete for collection of marine resources with people from Koror, other villagers and immigrant workers. Women of Ngermid, close to Koror, expressed concern over immigrant workers collecting mangrove clams using shovels. The village women feel they have no control over traditional fishing grounds that were protected in the past with customary rules, and feel powerless to control the numbers of people fishing there, or the methods used.

Palauan harvesting tradition for some invertebrate species is to only collect during *bor* time, or during morning low tides. This is only eight days in each lunar month and restricts harvesting to a sustainable

level. In Melekeok there are reports of immigrants (brought in to do construction work) overharvesting invertebrates by using mask and snorkel at high tide. However, it should be noted that this information is anecdotal and may reflect wider social concerns over the ratio of Palauans to non-Palauans (the ratio of Palauans to non-Palauans in 1995 was 76:24). The real impact of immigrant workers on Palau's marine resources needs to be studied separately before it could be stated with certainty that the depletion of marine resources was due more to the activities of one particular group than another.

Most of the women spoken to during the survey claimed to still observe their traditional conservation practices. The chiefs of Ngeremlengui have placed bans on collecting in certain areas, causing the women to travel further afield to collect. The women are in agreement with the bans and see them as a viable way to control overharvesting.

Access to opportunities

COMMERCIAL VERSUS SUBSISTENCE FISHERIES

The involvement of women in the fisheries sector tends to be at the small-scale commercial level (artisanal), harvesting and preparing for the family as well as for the market. From harvesting, to processing and marketing, the activities are small-scale, requiring limited materials. An increasing number of women in and around Koror have purchased small motor boats and fish regularly for the local market.

A look at past and present government fisheries development programmes shows that they target the promotion of commercial fisheries, with men as the main target group. Projects focus on supporting the development of offshore fisheries by providing modern fishing techniques and gear for Palauan fishermen. Government aquaculture projects are operated by men while past aquaculture projects and training have targeted men.

There has been little direct assistance or training given to village fisherwomen. Benefits to women tend to be by-products of development aimed at assisting men—the ability to transport produce to Koror on a Japanese-funded state boat is one example. However, many women expressed concern that their needs were of a very low priority to the men who control the use of these boats.



Some villages have access to Japanese-funded boats to transport fresh fish to Koror.

LACK OF INFORMATION ON SUPPORT SERVICES

Although there are a number of government, non-government and private agencies providing technical information, training, equipment or credit, many of the village women are unaware of these opportunities, don't know how to seek their help, or are not convinced of the effectiveness of the help available. Information tends to come from direct experience with a programme working in the village (e.g. the Cooperative Research and Extension programme of the Palau Community College). The Informal Employment and Sustainable Livelihood (IESL) project is now well known and receives many requests for assistance – including requests from women and women's clubs wanting boats.

IESL concentrates on agriculture, small-business management and advice on where to go for funding, and is not directly involved in fisheries-related assistance. However, IESL's project document for the next two years calls for them to undertake train-the-trainer workshops on sustainable marine resource management for project staff and community organisers, and to assist in determining the viability of alternative, sustainable marine resources. This is to be done in conjunction with DMR, CRE and PCS.

9 . changes since the 1991 report on the role of women in the fisheries of Palau

The time available for the present survey was two weeks compared to the three months taken for the Matthews & Oiterong (1991) survey and therefore the results can only be compared in a general way. The objectives of the present survey were also slightly different in that it aimed to examine women's role in the context of the broader fishing community of Palau. Nevertheless some useful observations can be made in reference to the 1991 survey.

The major change in the harvesting activities has been the increase in the number of women around Koror who are now using motor boats for fishing. The 1991 report did not give details on processing methods but most women indicated that processing methods have not changed much over the past eight years and there has been little increase in the use of secondary processing methods such as smoking.

The number of women marketing their produce has increased significantly. The marketing activities themselves remain similar to those described in the 1991 report with the women selling fresh and processed produce from a number of different outlets. Problems still exist with transport and storage, varied packaging and no labelling of produce. Prices obtained for most of the women's products have not increased significantly. The price of fresh fish has however, increased from around US\$1.00/pound to US\$1.75 – \$1.95/pound.

The transportation problems reported by women in 1991 have been met to some extent by the Japanese-funded state boats. However most women still see transportation as a major problem. The building of the new road around Babeldaob will go some way towards easing transport problems of villages on that island. There are concerns that the building of the road and the quarrying of rock needed for this will lead to environmental problems and have an adverse impact on the women's fishing areas.

The continued high cost of transportation compared to the relatively low cost of the seafood products marketed by the women continues to be a problem. The lack of a central market is not something that was reported as a problem in the 1991 report. The fact that it is such a popular concept now can be related to the transportation problem. Most people envisage a central market run by the government with a regular collection of produce from the villages. This way the women would not have to spend all day at the market selling their own produce.

It may be some time before the supply and demand of seafood products is sufficient and regular enough to support such a market. Some people have also expressed concern over the impact this situation could have on the marine resources. Will an easing of transportation problems and the establishment of a central market lead to an increase in the overharvesting of marine resources?

10. areas requiring assistance

Improvement of support services

The role of women in the fisheries sector needs to be more actively supported by the Division of Marine Resources and the Bureau of Women's Interests. This could be done by the DMR providing technical expertise and support to existing agencies with village extension programmes, such as IESL and CRE. It could also be done by the DMR including women in its regular extension. The DMR has expressed interest in employing a Community Fisheries Officer. Problems of funding for the position would need to be addressed. The Bureau of Women's Interests could also draw upon DMR expertise in developing programmes for village women.

INFORMATION

Public awareness on village fisheries activities needs to be promoted. The importance of women in fisheries development and management needs to be considered and promoted in all projects undertaken by the Division of Marine Resources. The DMR should promote itself as a provider of technical assistance to women on such issues as fisheries management, development, gear, fishing techniques as well as a source of information on training possibilities (local and overseas) and where to go for credit. The DMR could play a role in providing women with a service that draws together the work of numerous support programmes that presently exist in Palau.

Both government (Division of Marine Resources, Bureau of Women's Interests, CRE, Palau National Development Bank) and non-government agencies (women's village groups, IESL, Palau Conservation Society) can provide information at the national level, while SPC can provide information at the regional level.

TRAINING

In developing national workshops, the Division of Marine Resources could work with the Bureau of Women's Interests. Local expertise such as representatives from both government (Division of Conservation and Entomology, Palau Federation of Fishing Association, PCC, Museum etc.) and non-government organisations (IESL, PCS, women's groups) could be used for technical expertise.

Assistance in carrying out the above can be provided by the SPC Community Fisheries Section. Fisherwomen have requested training in the following areas:

- seafood quality, processing and preservation
- marketing (packaging, developing business skills etc.)
- new recipes (for marketing lunch packs)
- aquaculture

In developing non-formal courses specifically targeting women, DMR, BWI, PCC, IESL, PCS and fishermen and women can collaborate to design and implement community training programmes.

CENTRAL MARKET AND TRANSPORTATION

Most of the fishermen and women interviewed for this survey expressed a need for a central market and improved transportation facilities. The building of the new road around Babeldaob will go some way towards easing transport problems of villages on that island. This should not be at the cost of the marine environment the people depend on for their produce in the first place. Environmental concerns over the construction of the new road need to be carefully considered.

The improvement of transportation facilities is an internal issue in Palau that needs to be addressed by village groups and cooperatives as well as state and federal government.

This report acknowledges the need for a central market. Its establishment should be combined with training in marketing skills and sustainable harvesting. The market could be one where the villagers sell their produce to the DMR to sell for them or they could sell directly themselves from the market. It should be possible to support both methods of marketing. Some villagers expressed an interest in being able to offload produce without spending all day at the market, others preferred being able to sell directly, not only because of the higher price obtained but also because they are able to take unsold produce home for family use.

Both the Director of the Bureau of Women's Interests and the Director of the Bureau of Natural Resources and Development identified several problems with the central market idea. These include problems of ensuring supply, lack of training in marketing processes, hygiene, grading, packaging and pricing. However, the Director of BRND recognised the benefit of working towards the establishment of a central market once the groundwork has been done.

The SPC could provide support in making recommendations to government and potential funding agencies in the establishment of a market. It could further assist with training in processing, quality control, and market management techniques as required.

Promoting income-generating activities

Presently, income-generating activities include the sale of fresh and processed seafoods to local markets. The government is interested in privatising its clam project. This is an area where women could be involved. However, at present there is little interest from private enterprise due to the length of time before a return on investment could be realised.

Caulerpa, or seagrapes is a potential resource that could be utilised for a small-business enterprise. This seaweed is not used by Palauans but the large Filipino population and visiting Asian tourists could provide a market. Any assistance given to such a project should be preceded by an assessment of the resource and training in sustainable harvesting techniques would be necessary. *Caulerpa* is harvested in Fiji and Samoa by women and sold daily at the local markets. It is usually eaten raw with fermented coconut meat or coconut milk. The export market for *Caulerpa* is limited by quality losses during storage and transport and it is advisable that any development of this resource initially concentrate on the local market. In Fiji, women practise the sustainable harvesting of *Caulerpa* by leaving part of the seaweed behind when harvesting and often replanting small sections of the algae in the seabed.

Milkfish aquaculture is another potential income-generating activity with a ready local market. Milkfish are successfully farmed throughout Asia, providing an important economic resource and food source for many communities. The Philippines, Palau's neighbour to the west exports frozen milkfish for food as well as juvenile milkfish and fry for farming operations. Milkfish can be grown in shallow brackish or saline water pond systems. Food for the milkfish is provided by adding organic fertiliser to the ponds to enhance benthic algal growth (Liao, et al., 1992).

Milkfish have been cultured in a number of countries in the Pacific including Fiji and Kiribati. A fish farm operated by the Kiribati Fisheries Division provides fish for local and overseas consumption; fresh and frozen bait for local fishermen; and live milkfish fry and fingerlings for the Nauru Fisheries Department. In Nauru a number of families have dug out backyard ponds for breeding milkfish. Milkfish larvae to stock the ponds are collected from the coast using scoop nets, or are imported from Kiribati. Both Kiribati and Nauru have had problems with tilapia in the ponds competing with milkfish for food and space, and pre-dating on milkfish fry. Tilapia were introduced in the early 1960s to provide cheap protein but, as in many places, were not accepted as a food fish by the local population. The development of milkfish farming in Palau should endeavour to prevent any introduction of tilapia into the ponds.

Palau currently has a JICA-funded Aquaculture Adviser surveying suitable species and sites for aquaculture development. Milkfish, shrimp and mangrove crabs are all being considered for farming in the future. It is important that women be included in any small-scale aquaculture projects and related training. Past aquaculture developments (milkfish, rabbitfish and shrimp) were aimed only at men and this may have partially contributed to their failure. Women's main role in both traditional and present day village life in Palau is to tend the crops, and aquaculture has more similarities with farming than with fishing.

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