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Editorial

This issue of the *Women in Fisheries Bulletin* looks at women's fishing participation in communities, and fisheries management and development issues in general. One of the biggest challenges in the region is how to reach a balance between development and management. Management means the closing-off of fishing grounds and the implementation of user and use controls on fisheries areas or certain species. The challenge for management practitioners is how to ensure that people manage their resources and at the same time have access to those resources to maintain their social and economic livelihoods, because for some it may be the only option available.

Thomas Malm contributes to the discussion on gender roles in Oceania by presenting some previously overlooked data on the division of labour in Tonga, with particular reference to agriculture and fisheries involvement of women and men. He has done this by comparing gender roles during the pre-contact period to current practices. Joeli Veitayaki, Alifereti Tawake, Sakiusa Fong and Semisi Meo's article looks at supporting communities that set up coastal management initiatives by assisting them with alternative sources of livelihood and income.

Mecki Kronen demonstrates how PICTs rely on subsistence and small-scale fisheries for food production, income and livelihood, and how these fisheries represent a resource critical to the economic health of coastal communities. With the growing awareness of the decline of reef fisheries in the region, she suggests that it is vital to identify and determine the values and benefits of the various methods of fishing in order to enable the implementation of sustainable management strategies and the identification of useful performance indicators. Her paper also illustrates the limitations of using simple economic tools to estimate approximate monetary values at the microeconomic level (households and rural communities).

Women's fishing participation in countries varies and in a second short article Mecki discusses the participation of women in crab fishing on Christmas Island.

The article on Nauru highlights the importance of fisheries in small island states and how fisheries will remain a fall-back option in some countries. Many PICTs are going through political instability, while some are undergoing reforms and other changes that may result in people losing their employment. For most of these countries, fishing becomes the main source of food and income. The diet trend that is common in countries of the Pacific – that is, moving from traditional food systems to imported foods – is being reversed in Nauru, where high reliance on imported food is changing to reliance on traditional farming and fishing for food. With the collapse in

Nauru's economy have come positive adaptive strategies, with family ties firming up and closer working relationships occurring in communities and in families.

The article on changes in women's fishing participation looks at how women are doing in the fisheries sector in general in PICTs. Women have taken on new fishing tasks and new areas of work in the last few years and are venturing out into male-defined work areas and fishing areas. In a lot of these cases, women use informal networks and mechanisms because of a lack of infrastructure and also because of a lack of awareness and information by women in rural areas that hinders their full participation in fisheries development, education and training. Despite all this, the roles of women are starting to change. While traditional roles persist in some areas, there are changes occurring in women's participation. New mechanisms of dialogue are beginning to emerge at the community level, with new measurements of women's status being used, such as education and employment. Women's roles and participation in fisheries and in their communities in general can be greatly enhanced by bridging the gap in information transfer, skills transfer and education opportunities that exists for women who live in rural coastal locations.

This bulletin includes a brief introduction to Etuati Ropeti, the new Coastal Fisheries Management Officer at SPC. Etuati worked as a senior fisheries officer in the Samoa Fisheries Department before joining SPC.

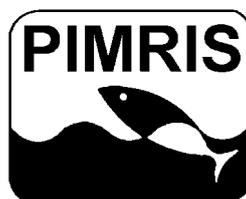
After editing this issue of the *Women in Fisheries Bulletin* I am pleased to introduce Dr Veikila Vuki who has accepted an invitation to become the new editor, starting with the next issue. Dr Vuki, who is currently based in Guam, has extensive experience working in women in fisheries and community fisheries issues in the region. You will find a brief introduction to Dr Vuki in the press release that we reproduce at the end of this issue. If you wish to submit an article for the next edition of this bulletin, please contact Dr Vuki at:

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PIMRIS is a joint project of five international organisations concerned with fisheries and marine resource development in the Pacific Islands region. The project is executed by the Secretariat of the Pacific Community (SPC), the South Pacific Forum Fisheries Agency (FFA), the University of the South Pacific (USP), the South Pacific Applied Geoscience Commission (SOPAC), and the Pacific Regional Environment Programme (SPREP). This bulletin is produced by SPC as part of its commitment to PIMRIS. The aim of PIMRIS is to improve



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the availability of information on marine resources to users in the region, so as to support their rational development and management. PIMRIS activities include: the active collection, cataloguing and archiving of technical documents, especially ephemera ("grey literature"); evaluation, repackaging and dissemination of information; provision of literature searches, question-and-answer services and bibliographic support; and assistance with the development of in-country reference collections and databases on marine resources.

Bendable facts: A note on the division of labour in Tonga

Thomas Malm¹

Introduction

Gender, which entails the sociocultural construction and interpretation of masculinity and femininity, is a fundamental aspect of relations of power, of individual and collective identity, and of the fabric of meaning and value in society (e.g. see Davies & Nadel-Klein 1992). It affects the life, life expectations and social relations of an individual in complex ways, and gender understandings, seen cross-culturally, vary widely. The connected roles often appear as startling or surprising to Western-based notions of what is “natural”.

This article is about an example of gender role patterns that have puzzled scholars for well over a century. It has been generally believed that by the early contact period, from the 17th to the early 19th century, all heavy work in the Tongan islands — such as agriculture, house-building, and deep-sea fishing — was the responsibility of the men, while the women were mainly restricted to physically lighter tasks such as marine gathering, making barkcloth and weaving mats. The most often quoted statement supporting this notion was made by William Mariner (in Martin 1991[1827]:370–371), and it referred to the period of 1806–1810:

The natives of Fiji, Hamoa [Samoa], and the Sandwich Islands [Hawai'i], who were resident at Tonga used to say that it was not a good practice of the people of the latter place to let their women lead such easy lives, the men, they said, had enough to do in matters of war, &c., and the women ought, therefore, to be made to work hard and till the ground. No, say the Tonga men, it is not *gnale* [*ngali*] *fafine* (consistent with the feminine character) to let them do hard work; women ought only to do what is feminine. Who loves a masculine woman? Besides, men are stronger, and, therefore, it is but proper that they should do the hard labour. It seems to be a peculiar trait in the character of the Tonga people [...] that they do not consign the heaviest cares and burdens of life to the charge of the weaker sex; but, from the most generous motives, take upon themselves all

those laborious or disagreeable tasks which they think inconsistent with the weakness and delicacy of the softer sex.

Mariner's statement contradicts Smith's (1977) argument that the need for maritime people to exploit terrestrial as well as marine resources would result in a greater role differentiation between women and men, and a greater dependency on *women* to control *land*-based food production. Such was, indeed, the case among many coastal peoples in Oceania, where the general pattern of gender roles in pre-European times was that men were bound to defence and war services, voyaging and deep sea fishing, whereas women took care of all household procurements, such as cooking, house furnishing and seafood gathering, and often all or most of the gardening. For human societies in general it has actually been suggested that women *everywhere* — because of their reproductive functions making them more closely associated than men with “nature” and the “domestic” (see Ortner 1974) — gather fuel and food, fetch water, prepare drinks and vegetable foods, and cook, activities which are performed close to the home and involve monotonous tasks that can be easily interrupted and resumed (Brown 1970:1074; Dahlberg 1981:13).

This was, however, as will be argued here, not a pattern that was found in Tonga during the contact period. Elsewhere often “feminine” tasks such as carrying water, getting firewood, cooking and gardening were here the *men's* responsibility. The gender roles in Tonga were, and are still, a complete contrast to the pattern which is generally found in rural Melanesia, where agricultural work is the women's responsibility (Hau'ofa 1979:87).

One of the first facts of life that Tongan children become aware of is that “boys go and girls stay”, and that there is a clear distinction between men's and women's tasks (Morton 1996:ch. 4–5). Generally speaking, boys and men are responsible for work in areas that are considered “outside” — the bush, the open sea, and outside the house — whereas girls and women are responsible for chores “inside” in the sense of being done at home,

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or in the village, the town or the sea area within the reef. What men do is conceptualized as requiring more strength, skill and mobility, while the women's tasks, which are not considered as "work" (*ngāue*) are characterized as light, simple, clean and requiring little or no mobility. Most remarkably, they do not include agriculture apart from, at times, weeding and harvesting.

The question is, however, *how old* this division of labour is. To what extent was Mariner's description correct? Was the whole pattern, in fact, a result of civil war and Christian impact during the first half of the 19th century?

As a contribution to the discussion on gender roles in Oceania, I will present some previously overlooked data on the division of labour in Tonga, with particular reference to agriculture and marine gathering, and argue that Mariner's statement actually *was* correct.

Gender roles during the pre-contact period

One could say that since Tonga and its neighbour groups of islands were the first to be settled in Polynesia (e.g. see Kirch 2000), it was there that Polynesian history began. From the initial settlement of the Tongan islands by the Lapita people over three millennia ago and through the different main eras —

including, of course, the period following contact with Europeans, particularly from the late 18th century — Tongan culture has always been dynamic, a continually changing complexity. It has been a way of life where perhaps the most basic antithesis of life and thought has been that between land and sea (see Malm 1999). Within the culture area of Fiji–Tonga–Samoa, one finds many interesting similarities as well as contrasts (e.g. see Kaeppler 1978). Among these are gender roles and tenure systems related to food production (Malm 1999, 2001).

How long, then, has gardening solely, or at least mainly, been the responsibility of the men in Tonga? Unfortunately, there is very little archaeological evidence available to allow for any conclusions regarding this issue. Spennemann (1986a-b, 1990) has concluded, though, that although there is no evidence for fishing during the formative period of Tonga — approximately A.D. 200 until 1200 — it can be inferred from a study (Pietrusewsky 1969) on skeletons from two burial mounds at 'Atele, Tongatapu, excavated in 1964 and dated to about A.D. 1200–1500 (Davidson 1969), and also from his own analysis of skeletal material from a Lapita site in Pea on the same island (Spennemann 1985).

In an analysis of the skeletons found at 'Atele, Pietrusewsky (1969:324–325) found that the vertebral columns in the necks of the males showed a

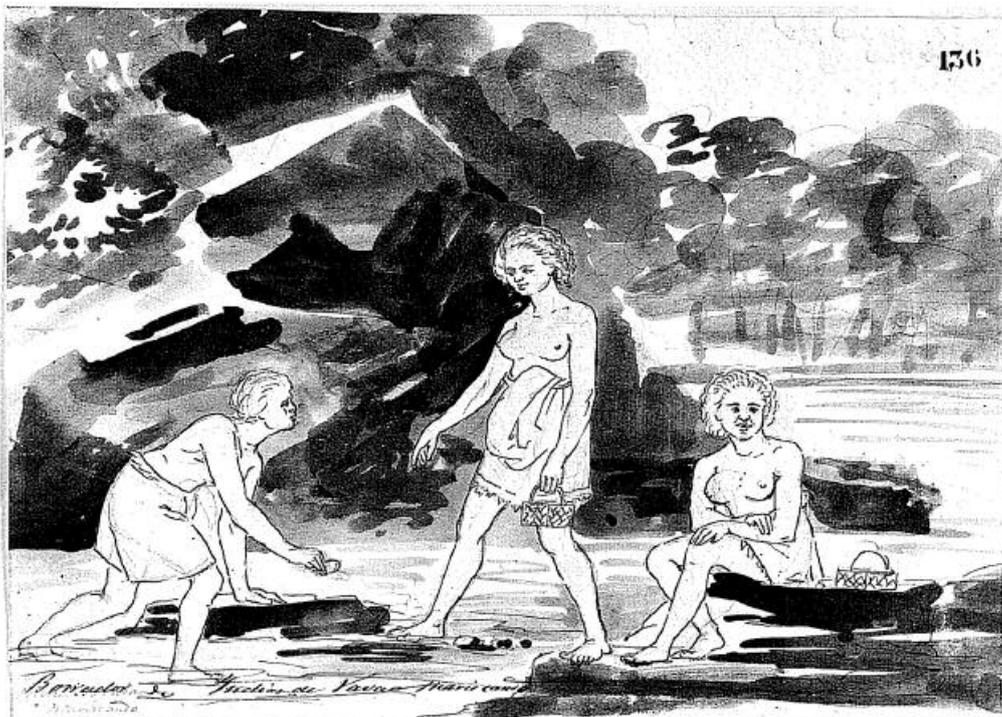


Figure 1. Women gathering mussels in a picture made in 1793 by Juan Ravenet, who came to Vava'u, Tonga, with Alejandro Malaspina's Spanish expedition. (Courtesy of Dixon Galleries, State Library of New South Wales, Sydney; ZDG D2 f10.)

high intensity of osteoarthritis, but that there was almost no arthritis in the lower spine sections. Conversely, the skeletons of the females showed a high percentage of arthritic vertebrae in the lower spine, but no none were found in the lower neck region. Spennemann (1985) was able to document an arthritis pattern in male Lapita skeletal material which was similar to the one documented by Pietrusewsky. He also refers to Houghton (1980), who found evidence in early New Zealand Maori male skeletons of an excessive use of the arm in a strong, forceful motion directed downward and backward. Together with a high percentage of osteoarthritis in the cranial vertebrae of the neck region, this would indicate that the men in question had spent a lot of their time paddling canoes, and Spennemann (1986a-b, 1990) makes the same conclusion for the Tongan male material.

As fishing and canoeing to this very day are mainly masculine activities all over Polynesia, the conclusion regarding the male skeletons is hardly surprising. But how could the women develop arthritis in the lower spine? Frequent bending down when picking seafood and turning over coral rocks in the search could be one answer. This is what we see on the very first drawings made of Tongan women gathering molluscs (Fig. 1 and 2). Spennemann (1990:105) writes that this is something which is mainly being done on the mudflats and

reefs, though, and since the population in question must have lived close to the burial place, situated close to the inner lagoon area (Fanga'uta) but far from the reef, and since 90 per cent of shells found in the vicinity were of lagoonal habitat, it does not seem likely that these people exploited reef resources to any major extent. Gathering in the lagoon and on the mudflats is mainly conducted by searching the ground with the toes while standing up or sitting down in the shallow water and digging with the hands and would not thus result in any arthritic vertebrae, he argues.

For the past 22 years, I have observed — and also participated in — marine gathering in many different parts of Oceania, and I have described the gathering/capture techniques used in Tonga (Malm 1999:166–170). It is, in fact, common to see women squatting or bending down while gathering seaweed or marine invertebrates in the lagoon as well as on the reefs. I have also found old photographs that show this, such as one from the last decades of the 19th century (Fig. 3) — at least four among the seafood-gathering women in the lagoon are seen bending down in that one. If the women whose skeletons were described and discussed by Pietruswesky and Spennemann spent a lot of their time picking *non-mollusc* resources, such as seaweed, sea cucumbers or jellyfish — something which we cannot tell from the archaeological evi-



Figure 2. A sketch by Juan Ravenet in 1793, showing women of Vava'u bending down to pick molluscs. (Courtesy of Dixon Galleries, State Library of New South Wales, Sydney; ZDG D2 f8.)

dence — I would expect this to have put some strain on their backs, because while women are doing this they frequently bend down.

On the other hand, Spennemann (1990:15) concludes that “it was part of the women’s role to work in the garden and to bring the crops home, whereas it was part of the men’s role to go fishing and to engage in long and medium distance trading and war, i.e. in canoeing in general.”

Now, the sample of skeletal material is fairly small, and we do not know how representative it is for the whole Tongan population at the time — and neither can we know, for certain, if the gender role pattern was uniform all over Tonga. In any case, it could be argued that a population living by an *inner* lagoon would hardly be representative of coastal people living along the waterfront with access to the lagoon as well as reef areas. Spennemann’s interpretation would be plausible in the light of the general pattern of Melanesia, though, and that was where the Lapita people had lived before colonizing Western Polynesia.

There is, however, also ethnohistoric evidence that is valuable for understanding how the gender roles might have evolved. Helu (1995:195–196) has argued that the Tongan islands around the 10th century A.D. became centralised and tightly organised under the high chiefs so that there would be less inter-tribal warfare, and he suggests that the Tongan men would then have been “freed up for fresh roles” and the division of labour was thus ready for restructuring. He concludes that in this more peaceful society there was an increasing agricultural emphasis, and all heavy work — including gardening — became the men’s domain of specialised labour, whereas the women were restricted mainly to household chores and to the

production of barkcloth, plaited mats and other items that could be used as wealth objects as well as in daily life.

The restructuring of gender roles, I would add, could then have happened at a time when French Polynesia and the Cook Islands — the eastern dispersal area for Hawai’i, New Zealand and Easter Island — had been settled for at least a few hundred years. That the women on some, but certainly not all, islands there were more involved in agriculture could therefore be interpreted as mirroring the pattern in Tonga before it changed (for comparisons of agricultural systems in Western and Eastern Polynesia, see Barrau 1961; Kirch 1984:ch. 7, 1994).

The fact that a gender role pattern similar to the one in later Tonga is found among some other peoples in or close to Western Polynesia could then, perhaps, be explained by Tongan influence. For example, in the Ono-i-Lau group, a part of Fiji closer to Tongatapu than to the main Fijian islands, there was a considerable Tongan influence. The men there are always praised for the size of their gardens and the women do not get involved in the gardening although (as in Tonga) they do visit the gardens to fetch vegetables (Vuki 1992:47). In Moala, the pattern is also similar to the one in Tonga. Whereas the women there weave mats and make barkcloth, the cultivation of food crops is men’s work (Sahlins 1962). Also, although Samoans were among those who told Mariner that the Tongan women “ought to work hard and till the ground”, it has been stated that agriculture in Samoa was the sole responsibility of the men (e.g., see Hjarnø 1979-1980:82).

It is possible, however, that the supposedly restructured Tongan pattern actually already existed when Eastern Polynesia was colonized.



Figure 3. Women and children gathering seafood in a Samoan lagoon.
This photo was taken by Thomas Andrew, Apia, during the last decades of the 19th century. (From Krämer 1897.)

For example, referring to historical accounts from the 18th and 19th centuries where it is stated that the women in Hawai'i never worked outdoors until they got old but spent most of their time making barkcloth, ornaments and taking care of domestic tasks, Valeri (1985:123) writes:

What holds for the appropriation of taro and fish also holds for the appropriation of other important food. Women are excluded from the production and cooking of these foods, even though at times they may play an indirect role [...] At most, they are given the task of appropriating some secondary foods — which in a way are “residual”, like the women themselves: shellfish, molluscs, seaweed, small crustaceans, and so on. Sometimes they are able to grow sweet potatoes (*'uala*), a little-prized tuber reserved for marginal land [...].

Thus, contrary to what the Hawaiians told Mariner, it appears as if the subsistence gender roles in old Hawai'i were in fact quite similar to those described by him for Tonga.

Gender roles in the 19th century

Spennemann (1990:107–108) has suggested that the pattern described by Mariner might have been a result of the situation during the civil wars in 1799–1852. During this period a dispersed homestead pattern where people had lived close to their gardens changed into a more nucleated pattern (Kennedy 1958:162–165), and it was also a period of very intense missionary efforts (e.g. see Lätūkefu 1974). Spennemann argues that the responsibility for gardening shifted to the men because they were more able to defend themselves against enemies. That Tongans today see this pattern as the traditional one may also, he writes, be a result of a long Christian impact. The church, basing its teaching on paternalistic European ideals, should thus have encouraged and firmly established an emergent pattern which was correct from its own point of view.

There is actually very scanty early historic evidence to support Spennemann's argument, although the civil war and Christianity certainly had a strong impact in many other ways. According to Spennemann (1990:106), Mariner was the *only* early European visitor to Tonga who gave any details on who did the work in the gardens. This is not correct. First of all, we have a statement by James Cook (in Beaglehole 1967,I:176–177) that a high chief had the plantations inspected in order to see “that every *man* cultivated and planted his quota” (emphasis added). More important, though, is the following, which William Anderson

(1967[1777]:932–933), who was surgeon's mate on Cook's third voyage and a keen observer, wrote 12 years before the civil war began and almost 30 years before Mariner arrived in the islands:

The employment of the women is of the easy kind and for the most part such as may be done in the house. The manufacturing [of] their cloth [...] is wholly consign'd to their care, and next to that fabricating their matts seems to be of the greatest consequence [...] There are many other articles of less note that employ their spare time, as combs of which they make vast numbers, little baskets made of the same substance as the matts and others of the fibrous Cocoa nut husk, either plain or interwoven with small beads [...] The province allotted to the men is as might be expected far more laborious and extensive than that of the women. Agriculture, Architecture, Boat building, Fishing and other things that relate to Navigation are the objects of their care.

Anderson's comment (in a journal which was unknown by Mariner and his editor Martin, as it was not published until 1967) that this pattern was what “might be expected” could be taken to reveal that it conformed to his own cultural background. If so, he must have had upper-class women in mind, because ordinary countryside women hardly led such a comfortable life in Europe, but this does not necessarily mean that his statement was erroneous. He goes on to compare the Tongans with peoples living in other places he had been in the Pacific, and who were “in a very barbarious state”. It is here apparent that he had noticed a pattern which was rather different in Tonga. He writes about the Tongan women that “we find them not only eas'd of those laborious employments which their natural delicacy of frame requires, but treated with that respect to which they are often more justly entitled than their lordly masters, and have even a great sway in the management of affairs” (*ibid.*:933).

To contradict Anderson's words about the women's “natural delicacy of frame”, just as when Mariner/Martin used the expression “the weakness and delicacy of the softer sex”, one could add that Tongan women were not believed to be innately weak or in need of being constantly protected by the males, and during the civil war there were even instances of women fighting beside their male relatives and defending forts (Ralston 1990a:111–112, 1990b:76). Anyhow, it is clear that Anderson and Mariner here are reflecting upon what they had observed, and their comments — Eurocentric and androcentric as they may be — do not necessarily make their observations less correct.

Spennemann (1990:107) writes that it is not clear whether the statement made by Mariner, who spent a lot of his time among people of the upper strata, only applied to women of rank. With Anderson we do not have such a problem, because like the other participants in Cook's expedition he did spend time with commoners. A few pages after his just quoted statement, he writes the following, which certainly does not describe an activity in which women of rank can be expected to have participated:

They have also great numbers of pretty small seines, some of which are of a very delicate texture, that they use to catch fish with in the holes on the reefs when the tide ebbs, besides barb'd gigs which they strike some with, each of which are so numerous that shows much of their time is employ'd in that business; *and it is the only thing that can be reckon'd laborious where we find the women are sometimes engag'd*, and where they handle the paddle as dexterously as the men. (Anderson 1967[1777]:940; emphasis added)

We do have a statement from a missionary's wife who wrote in her diary in 1823 that "the most important women will often be the most gifted artists because they don't have to spend so much time in the gardens" (Mary Lawry, in Reeson 1985:180; also quoted by Spennemann 1990:106). Unfortunately, she did not mention *how* much time the other women spent there or what they did. Her statement can therefore hardly be used to contradict the well-founded argument that the men at least had the main responsibility for the agriculture and that the women's involvement in food production was limited to lighter agricultural tasks (if any) and to the marine gathering conducted in what most properly could be called the "coral gardens".

Conclusion

A remarkable aspect of labour division in Tonga is that men's work includes what is often, especially in Melanesia but also elsewhere in Oceania, a typically feminine task: agriculture. A major question has been how long this has been the case. Pre-contact skeletal material has been interpreted as indicating that it was part of the women's role to work in the gardens and bring home the crops, and that the men were fishing and paddling canoes. According to one hypothesis, the division of labour was restructured when the Tongan islands became centralised and tightly organised under the high chiefs so that inter-tribal strife could be more easily managed. This is quite possible, although a comparative ethnographic perspective and the limited archaeological evidence make it far from certain. The argument that the general pattern now found in Tonga did not emerge until during the 19th century, as a

result of missionary efforts and necessary precautions during the civil war (when it would have been dangerous for women to be out working in the gardens), could however be clearly refuted with reference to accounts from the earlier period of the 18th and 19th centuries that gave a picture all in line with later ones.

My conclusion is that the gender role pattern in Tonga can be traced at least to the early contact period, and that it is quite possible it is even more ancient. As I have argued elsewhere (Malm 1999), explanations related to mythology and various customs can be important for understanding how the gender role pattern has been reproduced, but hardly how it originated. Only further comparative ethnographic and archaeological research can throw more light on this issue.

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Assisting coastal communities in the Pacific Islands with alternative sources of livelihood and income

Joeli Veitayaki^{1*}, Alifereti Tawake¹, Sakiusa Fong¹ and Semisi Meo¹

Introduction

Over the last two years, the International Ocean Institute's Pacific Islands Operational Centre (IOI-PI) and the Marine Studies Programme (MSP) at the University of the South Pacific (USP) in Suva, Fiji, have been supporting integrated rural development in areas where the communities are undertaking resource management activities. IOI-PI and MSP are engaging the communities in the pursuit of alternative sources of livelihood and income. The results are encouraging and worthy of support.

The fact that the communities have demonstrated a commitment to resource management alleviates some of the concern surrounding the nature of engaging partners and collaborators in rural areas. These communities have decided to adopt an integrated and adaptive approach to complement the recovery and rehabilitation of resources taking place in their locally managed marine areas. In addition, the search for alternative sources of livelihood complements the management activities and ensures that the people are improving their living conditions without being tempted to break their management activities.

Women and youth have been specifically targeted in these initiatives because of their potential as community members who can contribute more to upgrading conditions in their areas. In this initiative, support from IOI's Women and the Sea project and from MSP has provided welcome opportunities. The results augur well for the communities and the Pacific Islands in general.

Alternative sources of livelihood

Young people in Malawai, in the tikina (district) of Vanuaso, Gau, in Fiji were the first to undertake the initiative. The villagers expressed their desire to have a cattle farm to ensure a reliable source of cattle. The animals were required during social ceremonies but up to that time had been obtained externally.

The young people were subsistence farmers who relied on the sale of *yaqona* (*Piper methysticum*) and

copra as their main sources of income. The people had a lot of land in the village and wanted an economic activity that would not increase the use of their fisheries resources. In addition, the cattle project would open up new opportunities for food and income. The project would also attempt to protect farmland and the river the people used.

The cattle were put together in a suitable area away from the river and the village. The people provided the land, labour and fence posts, the last of which was the most costly of the required items. The French Embassy provided financial assistance to purchase wire and the stock. On 30 December 2003, the young people took control of the project after the handing-over ceremony, which was officiated by the outgoing French Ambassador, Mr Vidon.

The search for alternative sources of livelihood in coastal communities has been boosted by financial assistance received from IOI's Women and the Sea project. The fund, although small, has allowed communities to get capital they would not otherwise have been able to access because they cannot meet the required conditions. Assistance is given directly to women and youth groups who require a little capital to realise their hope of making a difference. Assistance has been given for a range of activities that attempt to meet the needs of people in different areas. The activities that have been supported include the organisation of gender workshops in the Coral Coast area of Fiji and in Upolu, Samoa; the opening of a women's souvenir shop in Rennell and Bellona, Solomon Islands; the setting-up of a mat-buying venture in Vanuaso, Gau, Fiji; the establishment of a honey-making venture by women and youth in Daku, Kadavu, Fiji; and the recording and sale of CDs and tapes by youth in Naboutini, Cakaudrove and Malawai, Gau in Fiji.

The disbursement of the fund is dependent on the partners who work at the different sites. The partners submit simple proposals, which are taken as requests from the people. Women and youth have been particularly targeted, although the expectation is that whole communities will benefit from the assistance.

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The organisations that have been given support for income-generating activities are being asked to repay the funds they are given. This condition is to allow assessment of the performance of these income-generating activities and to contribute to a revolving fund that can be used to assist other communities.

Future support

Discussions are in progress with other potential local partners in Kiribati, Tuvalu and Vanuatu. The hope is that the Women and the Sea fund can be

made available to coastal groups in these countries. IOI-PI and MSP look forward to receiving proposals from interested local partners.

The partnership seems to be working well. Some of the income-generating projects are beginning to make repayments – which is the real measure of success. These communities have the opportunity to show how well community groups can do with a little financial support and to enjoy the benefits of self-determined development. IOI-PI and MSP are committed to supporting effective community activities that allow local communities to improve their lives.

Cattle project in Malawai, Vanuaso, Gau, Fiji



Left: Mats for sale from Vanuaso women, Gau, Fiji



Right: Printed design from Matangi, Rennell and Bellona, Solomon Islands



Women from Rennell and Bellona with their tie-dyed sulu (lavalava)



Women from Daku Village, Fiji, with their screenprints and pot plants



Monetary and non-monetary values of small-scale fisheries in Pacific Island countries

Dr Mecki Kronen¹

Introduction

Many coastal communities in Pacific Island countries (PICs) are highly dependent on coral reefs, which sustain their subsistence and small-scale fisheries (SSFs).¹ PICs rely on subsistence and SSFs for food production, income and livelihood, and the fisheries represent a resource critical to the economic health of coastal communities.

There is a growing awareness that the region's reef resources are under stress and that fishery production is drastically declining. This is impacting the major stakeholders – those people whose livelihoods depend directly on the harvesting, processing and sale of reef resources (Whittingham et al. 2003) – but may also have far-reaching regional and international consequences (Burke et al. 2002). SSFs in the Pacific involve a large number of stakeholders and, thus, there is a range of values and benefits to consider. Identification and determination of values and benefits at the various scales involved are crucial to the development of much-needed equitable and sustainable management strategies and in the identification of useful performance indicators (Ahmed et al. 2004).

In determining the overall value of subsistence fisheries and SSFs, the range and scale of associated benefits must be considered, as well as the fact that many benefits accrue outside the market economy. Value is a pluralistic concept (Moran and Pearce 1999; Korovulavula 2005) with a wide range of interpretations. Social and cultural values are often non-market values (i.e. unpriced), and may vary substantially depending on the perceptions of different stakeholders. Because subsistence fisheries and SSFs in the Pacific fall mostly under the informal sector, the monetary values of many activ-

ities and transactions may not be incorporated into national cash economy accounts.

SSFs suffer from a lack of political attention, which is typical for informal sectors. The absence of detailed records on volumes landed, the lack of or incomplete knowledge regarding costs, prices and benefits, and the absence of mechanisms to take into account unpriced (non-monetary) benefits make it difficult to gain political momentum and support for fisheries management. Policies are often economically driven, and where SSFs are insignificant contributors to GDP, they are largely overlooked.

Some of these constraints are reflected in PICs' projected fisheries production figures from the late 1990s (Table 1). According to these calculations, SSFs play only a minor role. From a total annual fisheries production of 731,641mt, 12.5% and 5.3% were accounted for by subsistence and coastal commercial landings, respectively. Figures also highlight that the value accounted for by SSFs is usually considered much lower than that of larger-scale commercial fishing operations.

This paper is not exhaustive, nor does it offer solutions for how to measure all economic contributions possibly made by SSFs. However, it does show possible variations in the prevalence and interaction of non-monetary and monetary values of SSFs in PICs at different scales in order to highlight the economic significance of SSFs. It also illustrates the limitations of using simple economic tools to approximate monetary values at the microeconomic level (households and rural communities). The case studies presented are based on observations made and data collected in the framework of an ongoing European Union (EU) funded regional project (PROCFish-C).²

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2. The term 'small-scale fisheries' is used in this paper to include (mostly) traditional fisheries involving fishing households (as opposed to commercial companies), relatively small amounts of capital and energy, relatively small fishing vessels (if any), short fishing trips close to shore, fishing mainly for local consumption or the next larger market (Garcia; FAO Fisheries Glossary).

3. The coastal component of the EU-funded Pacific Islands Regional Oceanic and Coastal Fisheries Development Programme (PROCFish-C) is implemented (beginning in mid-2002) by SPC's Coastal Fisheries Programme. Its major objectives are to i) contribute to improving coastal fisheries management in Pacific Island countries through the provision of a database on the current status of resources and their user level, ii) assess possible relationships and dynamics between resources and users, and iii) identify proxies or indicators as fisheries management tools.

Table 1. Summary of annual catch volume of subsistence fisheries, and its proportion of total annual catch by weight and monetary value

Country	Annual catch volume (t) of subsistence fisheries	Proportion (%) of total annual catch by weight ¹	Proportion (%) of estimated total annual monetary value
Cook Islands	795	63.6	9.5
Fiji Islands	21,600	57.9	37.3
FSM	5,000	3.6	5.5
Kiribati	10,000	6.8	5.4
Marshall Islands	2,800	7.7	7.0
Nauru	110	0.3	0.9
Niue	194	93.3	75.2
Palau	1,250	26.4	14.0
PNG	26,000	15.6	12.6
Samoa	4,293	34.0	30.2
Solomon Islands	13,000	14.4	10.1
Tonga	2,863	36.3	21.4
Tuvalu	880	2.1	2.4
Vanuatu	2,700	88.6	81.0
Total	91,485	12.5	11.2

¹ Includes coastal commercial, offshore locally based, and offshore foreign-based fishing (source: Gillett and Lightfoot 2001)

Monetary value – the Niue case study

Niuean people have widely adopted a Westernised cash economy. Cost of living is comparatively high by PIC standards. To date, reef and pelagic fishing in Niue is mainly non-commercial. A commercial SSF does serve the local market, but generally combines lifestyle and commercial objectives. Major fishing gear and techniques include local bamboo or sport rods (targeting reef fish), sink lines, trolling, and to a lesser extent longlines (for deep-bottom and pelagic fishing). Transport includes walking on the reef, non-motorised canoes and motorised boats.

Although fish remain a preferred food, fishing is not a major source of income for Niueans. Fishing strategies are not meant to maximise catch volume, and fishing is often restricted by unfavourable weather and sea conditions. Although fish are still widely distributed on a non-monetary basis, people feel that the market demand exceeds supply, in particular for certain reef and deep-bottom fish. The high local fish prices are not surprising in light of the high labour costs and high cost of living. The question of which factors determine the value of SSF products remains, however. That is, to what degree are high production costs, low productivity and market forces (i.e. mea-

asurable monetary costs) responsible, and do perceived values also play a role?

Three major types of fishing were identified during a questionnaire survey conducted in Niue in May–June 2005. Average data were used to model:

- fishing with rods from the reef top by walking only ('Walking' in Table 2);
- deep-bottom fishing and/or the use of fishing rods and handlines from non-motorised canoes ('Canoe 1a' and '1b'); and
- using motorised boat transport for deep-water and pelagic fishing ('Motorised boat transport 2a' and '2b').

Two options have been modelled for both canoe and motorised fishing so as to take into account variations in labour costs (duration of fishing trips), productivity (average catch) and investment costs (mainly determined by boat length and out-board engine) in the case of motorised fishing.

Annual costs (Table 2) were calculated using the annuity method for the three fishing operations, each performing 96 fishing trips per year. All costs have been converted from NZ dollars into US dollars (USD: exchange rate 0.688634). A discount rate of 15% has been applied to all costs.

Table 2. Cost of catch (USD/kg) for different coastal fishing methods typically practised in Niue, using the annuity methodological method

	Fishing method				
	Walking	Canoe 1a	Canoe 1b	Motorised boat transport 2a	Motorised boat transport 2b
Annual costs (USD)					
Investment cost	98	147	147	3469	2403
Operational cost	0	207	207	3951	3267
Labour cost	909	2000	1454	2182	2182
<i>Total</i>	<i>1007</i>	<i>2354</i>	<i>1808</i>	<i>9602</i>	<i>7852</i>
Average catch/trip (kg)	1.62	7.5	13.64	17.5	20
Annual catch (kg)	208	720	1652	1680	1920
Cost USD/kg catch	4.84	3.27	1.09	5.72	4.09

Walking: Fishing gear – handline (hook, bait), torch and batteries

Canoes 1a and 1b: Wooden canoe ~NZD1000 (~USD689) investment cost; fishing gear – handlines (hooks, bait, sinker), lamp and fuel; boat maintenance cost

Motorised boat 2a: Aluminium hull, 5m length, 50HP outboard engine, safety equipment; operational cost – 25 litres fuel/trip; fishing gear – 4 heavy lines (traces, slows, hooks, skirts), insulation bags

Motorised boat 2b: Aluminium hull, 5m length, 25HP outboard engine, safety equipment; operational cost – 22 litres fuel/trip; fishing gear – 4 reels and lines (traces, slows, hooks, skirts), insulation bags

A comparison of three different SSFs showed that production costs range between USD 1.10 and 4.90 (NZD 1.60–7.12) per kg of fish caught. These costs compare with local prices ranging from 5.50 USD/kg (8.00 NZD/kg) for pelagic fish upon landing (head, tail off and gutted) to, on average, 10.30 USD/kg (15.00 NZD/kg) for reef and deep-bottom fish (at the local market). This indicates that the net producer surplus for reef and deep-bottom fish significantly exceeds local market value, while for pelagic fish species the net producer surplus is significantly less.

This case study shows that the low-investment and least-risk fishing option (walking), which is adopted by most Niuean fishers, is not economically attractive. However, fishing is part of the local lifestyle, and thus leisure time spent fishing is an added non-monetary value and labour is not a perceived cost. This conclusion is supported by the significant differences between prices paid for different species groups (i.e. on average 5.50 USD/kg [8.00 NZD/kg] for pelagic and 10.30 USD/kg [15.00 NZD/kg] for reef and deep-bottom fish. The varying level of prices for the different fish are indicative of food preferences (and thus perceived values), because they cannot be conclusively explained by variations in production costs. Also, the discounted fuel prices that are applied exclusively to the commercial export-oriented longline fishery, and not to local SSF operations, do not explain any of the disparities emerging from the

calculations. The local market potential is very limited given the small resident population (about 1500 people) and the common practice of non-monetary catch distribution. Thus, market mechanisms can be excluded as a major factor in explaining the local price difference between pelagic, reef and deep-bottom fish.

Interestingly, this case study also shows that the local valuation of fish contrasts with standard economic approaches, which widely disregard SSF production and typically allocate higher values to pelagic rather than coastal SSFs. This observation suggests that previous national account figures may have underestimated the value of Niue's SSFs, as they either applied an average price regardless of which type of fish was considered (Dalzell et al. 1996), or applied a much lower price for coastal catches than was used for oceanic catches.

With respect to fisheries management, the Niuean case study illustrates that:

- although Niuean people do not depend on SSFs for food or income, fishing and fresh fish remain an integral component of their lifestyle;
- Niueans' culturally determined preferences and values are reflected in the local market prices, and the generally much higher prices paid for reef and deep-bottom fish (wahoo may be an exemption); and
- demand for fish, and thus fishing pressure, may be driven by cultural forces, thus bypass-

ing or challenging the promotion of alternatives for income generation and/or food security, which are often cited as fisheries management options when seeking to divert fishing pressure elsewhere.

Non-monetary values – the Vanuatu case study

The Vanuatu case study highlights the ambivalence of mixing and comparing traditional values with Western marketing systems for SSF valuation. The 'farm gate price' (FGP), which refers to the price received by the fisher excluding any marketing costs (e.g. transport, labour, market charges), is often used for national-level accounting of the price value of fish sourced from SSFs. This approach was used to compare the degree to which priced and non-priced values apply, and to identify possible reasons for any differences.

The case study includes three coastal communities: Paunangisu on Vanuatu's main island of Efate (population 390); Moso, representing a community on a small island off Efate (population 187); and the island of Uliveo (population 1016), in the remote Maskelyne Archipelago. In addition we have added prices at the next market centres, i.e. Port Vila for the two Efate communities, and Norsup, Lakatoro for the Maskelyne people (Table 3).

The substantial variations in local FGP and consumer prices (Table 3) do not show a conclusive pattern of present prices and hence monetary value of fish across the three selected communities and their local and closest regional market places in Vanuatu. Trends do emerge, however, when comparing the remoteness of the community, based on the distance and transport connections to the nearest

urban centre. The more remote the site (Uliveo is the most remote), the higher the per capita consumption of fresh fish (Figure 1) but the lower its monetary price (Figure 2).

Table 3. Comparison of the farm gate price (FGP), local traders' price and consumer prices for five Vanuatu communities

Community	FGP for local community (USD/kg)	Local price paid by traders (USD/kg)	Price paid by consumers (USD/kg)
Paunangisu	1.65		2.29
Moso	1.99		
Port Vila			2.51
Uliveo	0.61	1.74	
Norsup, Lakatoro	1.74		

Exchange rate Vanuatu vatu (VUV) to USD: 0.0091617

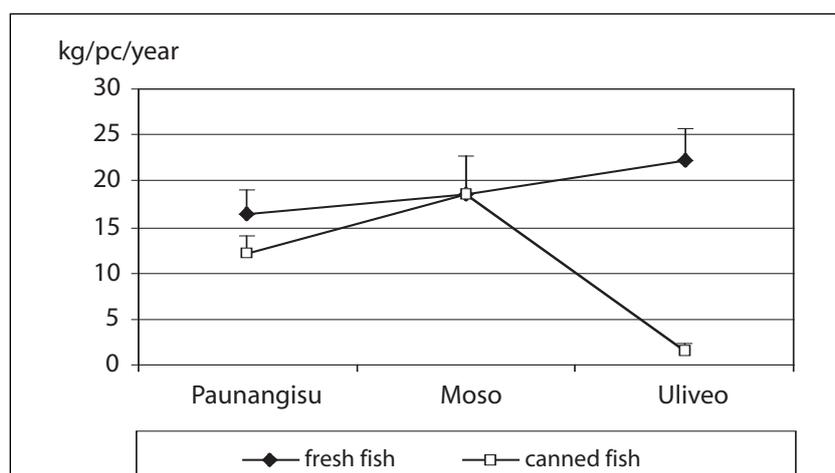


Figure 1. Average annual fresh and canned fish per capita consumption (kg/year) for three Vanuatu communities

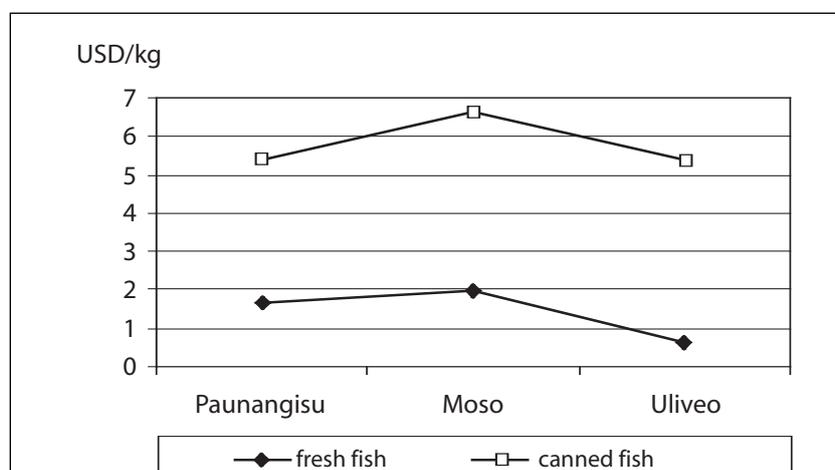


Figure 2. Local prices (USD/kg) for fresh fish and canned fish for three Vanuatu communities

In contrast, canned fish consumption is lowest in the most remote community, and the per kg price for canned fish always substantially exceeds the FGP for reef fish.

Remoteness can also be defined by market access, which is supported by the fact that Uliveo has the smallest proportion of households that depend on fisheries as a primary source of income (Figure 3). However, in terms of the number of people involved in fisheries, Uliveo scores the highest (Figure 4). Thus, it is not surprising that 100% of households in Uliveo reported that they consume fish caught by a household member (Figure 5).

Through this comparison, Uliveo emerges as a highly subsistence-oriented community, which is supported by its low average household expenditure level (Figure 6).

Despite differences in local FGPs, income and dependency on fisheries as a food source, a high proportion of fish exchanges in all three communities are still non-monetary; the differences in the percentages shown in Figure 7 is not easily associated with the remoteness of the community or ease of market access.

The community of Paunangisu has the easiest access to the country's main market in Port Vila. In addition, a local shop buys and sells fish. The community has generally adopted the wholesale price paid by the local shop to fishers; when fish are sold by fishers directly to community members, the same price is charged. The higher retail selling price at the local shop is paid mostly by people from neighbouring villages, but also applies to customers from Paunangisu (Table 3).

There is no local shop or trader available for Moso's fish landings, and the only market opportunity is in Port Vila. The FGP in Moso is 20% above that of Paunangisu. Due to the off-island location of Moso village and lack of any cooling facilities, the average cost of taking fish to market, including transport (boat and road), ice blocks and market fees, amounted to USD13.10 per return trip. By com-

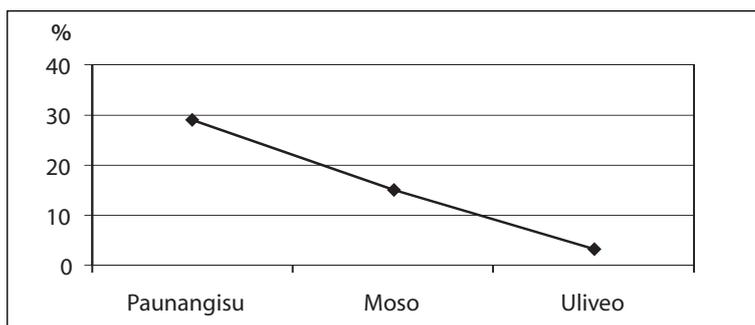


Figure 3. Percentage of households in three Vanuatu communities that reported fisheries as their primary income source

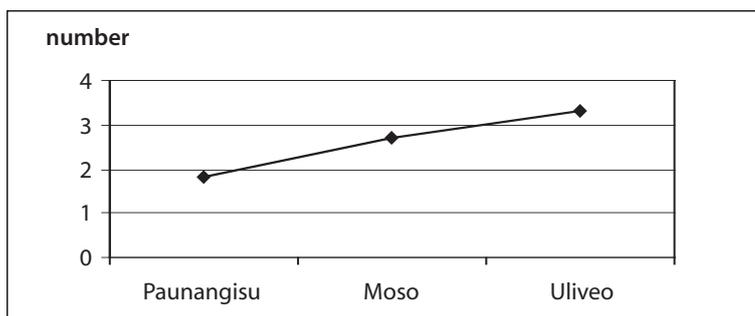


Figure 4. Average number of fishers per household for three Vanuatu communities

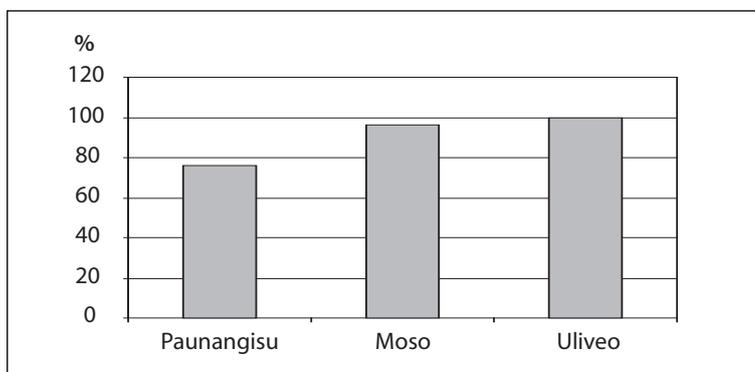


Figure 5. Percentage of households in three Vanuatu communities that consume fresh fish caught by a household member

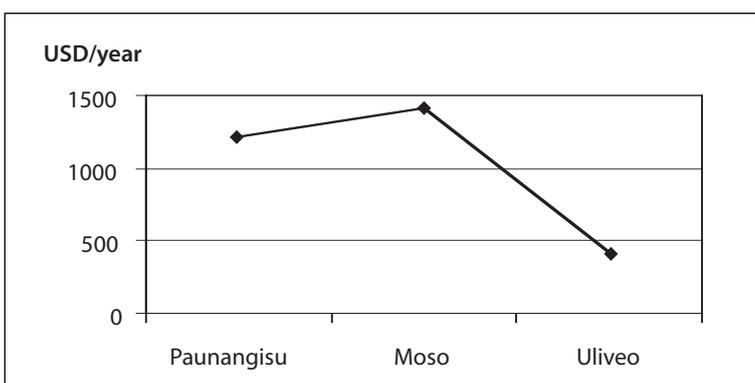


Figure 6. Average annual household expenditure (USD/year) reported for three Vanuatu communities

parison a return trip, including longer road transport and market fees but no cost for ice (due to the shorter connection), totals USD9.16 for a fisher from Paunangisu.

Selling fish at the Port Vila market (where a higher price can be charged), and taking into account only transport and market fees but no additional labour costs, requires that over 20 kg be marketed at one time by Moso fishers (Figure 8) and over 10 kg by

Paunangisu fishers (Figure 9). Given that local fisheries are small-scale (i.e. a typical catch will on average be no more than about 10 kg), this option is economically not viable. In fact, the bias between the market price in Port Vila and transport costs alone suggests that, even at the country's major market, reef fish are widely underpriced. This situation may, however, be determined by low purchasing power rather than any inherent lack of value for local reef fish resources.

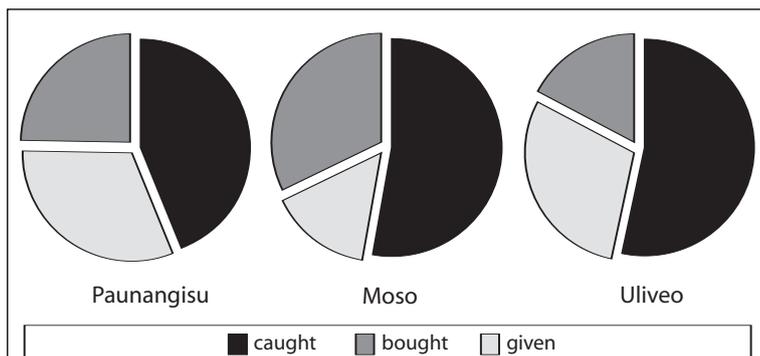


Figure 7. Percentage of fresh fish consumed that is sourced from fishers' own catches (caught), received on a non-commercial basis (given) or commercially acquired (bought) in three Vanuatu communities

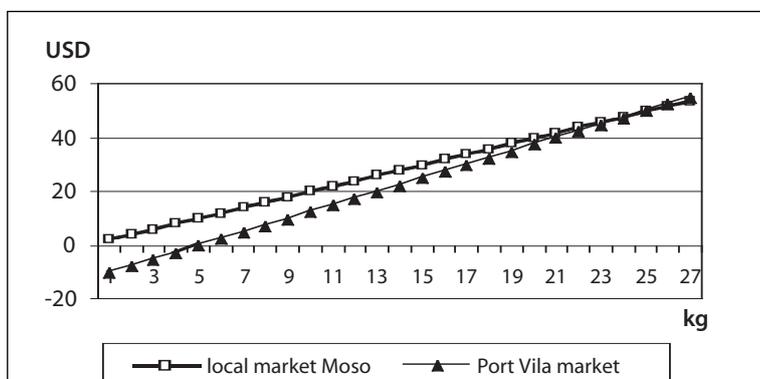


Figure 8. The marketing break-even point for fresh fish at Moso village and Port Vila urban market

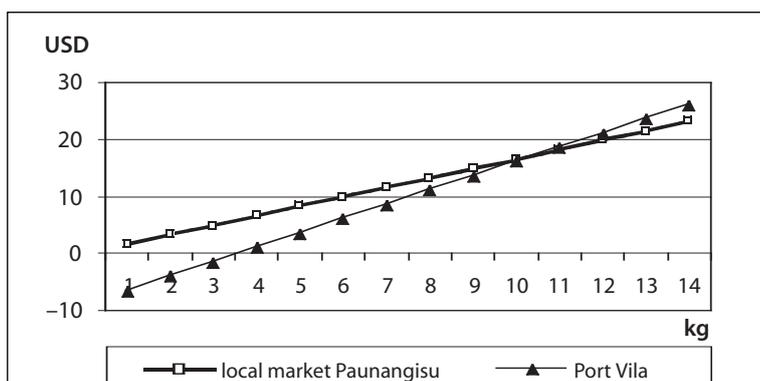


Figure 9. The marketing break-even point for fresh fish at Paunangisu village and Port Vila urban market

In the case of Uliveo, a marketing alternative exists in the form of a trade boat that makes regular monthly visits. The average FGP of 1.74 USD/kg paid to fishers is 2.8 times higher than what is paid by community members. However, this income opportunity has not altered the fact that fish basically remain a low-priced commodity among Uliveo's people.

In summary, the Vanuatu case study shows that:

- substantial variations in local FGPs and consumer prices are not necessarily conclusive, if production and, in particular, transport costs are taken into account;
- data suggest that the more remote the community, the higher the per capita consumption of fresh fish and the lower its monetary value;
- the non-monetary exchange of fish among community members cannot be easily explained by the remoteness of the community or ease of access to a market;
- observations suggest that the factors considered do not fully explain the degree to which monetary and non-monetary values are exercised at the community level and
- any of the monetary values considered fail to reflect the perceived and de facto values of SSFs at the rural community level, in terms of their contribution to maintaining and enforcing social institutions, food security, networking, social insurance and social cohesion.

The great variation in FGPs and their failure to accurately account for perceived but non-monetary values have prompted efforts to use 'substitutional cost' as an approximate measure. Canned fish is commonly consumed; compared with other protein prod-

ucts, it is a low-cost protein substitute for fresh fish in PICs.

The total amount of fish (predominantly reef fish) consumed in each of the three Vanuatu communities and in Niue has been calculated, and its monetary value expressed in local FGP and its replacement cost in local canned fish price (net weight) for the corresponding caloric value.

Figure 10 shows that although total consumption figures vary considerably, value expressed in canned fish equivalents always exceeds the value in local FGP in Vanuatu. In Niue, however, the opposite is true, as the local FGP for fresh fish indicates an even higher value than that paid for the high-priced canned fish.

Although local canned fish prices vary across countries as they reflect various taxation, transport and marketing costs, this comparison nevertheless shows that the use of a simple replacement cost – such as canned fish – will presumably still under-represent the true monetary value of SSF products by not reflecting their true and perceived social and cultural values. This is particularly of interest when import substitution is used to estimate the contribution of SSFs to the national economy.

Discussion

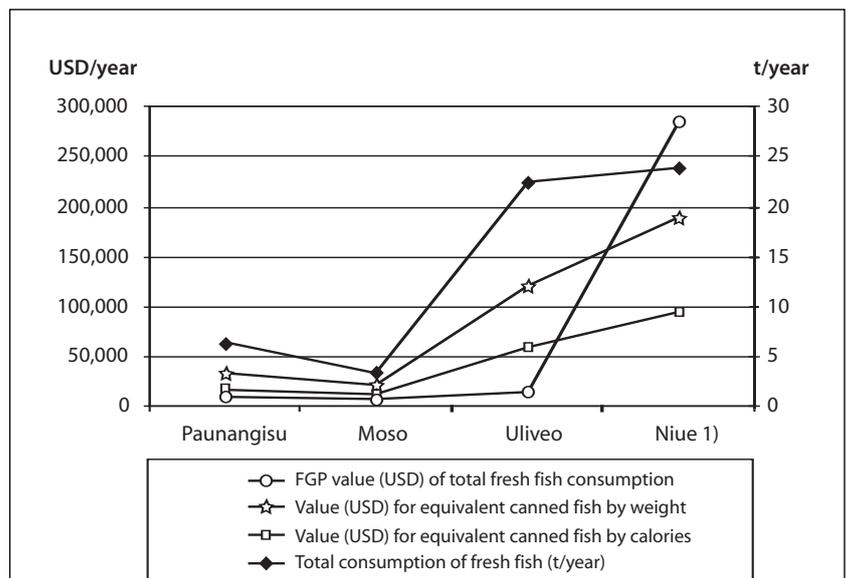
In the past, Pacific traditional systems and values were geared to subsistence living by small self-sufficient groups (Crocombe 2001). From the time of colonisation, monetisation was seen as a necessary prerequisite to economic growth. The Western cash-based economic system has increasingly penetrated the entire lifestyle of rural traditional communities throughout the region.

Commercialisation and monetisation of formerly local, mainly subsistence, reciprocal exchange or barter economies have linked them with external markets and prompted three major consequences. First, external incentives lead to changes in perceived resource values by local communities, and these changes may result in the introduction of individual profits at the expense of local social equity (Ruddle 1993). Sec-

ond, external factors may be internalised by the local community authorities, which can weaken traditional values and may result in the breakdown of traditional management systems. Third, although the cash-based economic system is regarded as a major accelerator of the degradation of coastal marine resources due to increased fishing pressure and non-sustainable fishing strategies, it has nevertheless not succeeded in completely replacing the traditional, non-monetary and barter economic system.

At present there is a mixed or intermingled system of monetary and non-monetary fisheries product marketing and exchange practices in PICs, which may explain why SSF resources are often economically undervalued by rural communities. It may also be a possible explanation as to why the economic performance of SSFs is regularly underestimated (if not ignored) in national accounts (Ram-Bidesi 1997; FAO Fisheries Glossary).

As the case studies show, monetary values may vary considerably due to the different scales of the fisheries, their production costs and the degree to which marketing mechanisms apply, as well as food preferences and the willingness (and ability) to pay.



Fresh fish: 1100 cal/kg on average; canned fish, oil drained: 2200 cal/kg on average (source: Dignan et al. 2004; FGP is local price paid to fisher, canned fish price is local consumer cost); USD/kg canned fish (net weight): Paunangisu 5.40, Moso 6.62, Uliveo 5.39

Figure 10. Value (USD) of total annual fresh fish consumption in three Vanuatu communities and in Niue as expressed in farm gate price (FGP), in local price for the equivalent weight (net weight) and in caloric value of canned fish

The usefulness of using the society's perceived value (also referred to as the willingness to pay principle; Freeman 1993) in the framework of PICs may be limited. This principle requires not only recognition of the resource's intrinsic value, but also the ability to pay on the part of the society concerned. While their comparatively high standard of living allows, for instance, the Niuean community to apply the principle, it will be difficult, if not impossible, for most rural coastal communities and many Pacific Island societies, whose livelihoods are predominantly subsistence oriented.

Some of the fundamental mechanisms of the socio-institutional dynamics of SSFs, including their contributions to food security and their position within and relationship to the multiple activities of rural and micro-level (household and local) economies, remain poorly understood (Staples et al. 2004).

The fact that the adequate valuation of SSFs and their products is one of the necessary requirements to improve fisheries management underlines the concern that fishery authorities have with the 'undervaluation' of fishery products in the domestic (and foreign) market. The observations presented in this paper support the arguments that call for simple but effective tools to sensibly value SSFs at different scales, to equip strategic planners and fisheries managers, and to defend the corresponding policies and obtain financial support from all levels involved.

Some of the possible approaches to approximate the value of SSFs and their products in PICs have been tested. However, the approaches applied – annual cost, farm gate pricing, and substitutional cost – did not render the desired outcome. As shown in both studies, but in particular in the Vanuatu case study, social values are decisive but do not correspond to the underlying concepts of the simple techniques applied here (i.e. measurable transactions that also include mechanisms leading to an observed change in the price or quantity of the resources traded). Consequently, as argued by Costanza (1999), the observed market prices are not only inadequate measures of the social value of ocean assets, but also generally inadequate to value SSFs in PICs.

Valuation of SSFs and their products in PICs will contribute to a better understanding of fisheries and fishers' motivations and perceptions from a social and economic perspective. Clearly, fishing management recommendations should not be made without regard to the social values and livelihood of fishers and their communities (Kesteven 1996; Garcia 2005). It is possible that a quantitative

approach derived from environmental economics, which includes the valuation of non-market benefits, could be adopted to assess the total economic value of SSFs in PICs. Such an approach, as discussed by Korovulavula (2005) in the framework of a socioeconomic valuation of biodiversity, takes into account:

direct and indirect use values: in the context of SSFs, direct values are catch and other measurable uses of the coastal fisheries system, while indirect values comprise the environmental and ecological functions and benefits provided by the coastal marine system;

option values: these are values perceived by the people in terms of their ability to use the resource at present and in the future, including use options that may go beyond SSFs; and

non-use values comprising existence and bequest values (Richards and Davies 1999; Campbell and Brown 2003): in our context, this comprises the continuous existence of the coastal fisheries system and its value for future generations.

Such a non-market valuation approach must also aim at the development of a way to standardise values in monetary terms so as to account for a number of values associated with SSFs in PICs, including:

- nutritional security, stability within the rural environment, and protection against external economic variations, which, in conjunction with the larger non-monetary sector, help provide an important fall-back position for PICs (Ram-Bidesi 1997); and
- social institutions that are supported by SSFs and that lead to more equitable distribution and thus reduce the need for an external or governmental social welfare system. These institutions are also regarded as one of the most effective mechanisms (if not the most effective) to mitigate user conflicts and to implement viable fisheries management actions.

Nevertheless, it should also be borne in mind that the greater the monetisation of SSFs, the more likely it is that pressure on fishery resources will increase. Thus, the behaviour of local people may change towards less favourable conservation methods (Kramer and van Schaik 1997; Holt 2005). As a result, fisheries management must aim to stimulate people's perception and willingness to modify their behaviour to ensure resource conservation under the new situation (Vickers 1994).

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Chasing land crabs on Christmas Island

Dr Mecki Kronen¹

Christmas Island, or 'Kiritimati', is the world's largest coral atoll. It is located in the Line Island group, some 3240 km (2015 miles) from Tarawa, Kiribati's main island. About 4810 people (2002 figures) live scattered around the atoll, mainly in four villages on the eastern side. The atoll covers 575 square km (222 square miles), but land resources are very limited. The food resources that support the people come mainly from the lagoon system and its surrounding coastal reef. Reef and pelagic fish constitute the most important food source, as indicated by a high average-per-capita consumption of 143 kg (315 lb) of fresh fish per year.²

Most of the land area is covered by coconut trees planted after 1882. These coconut forests are home to the land crab *Cardisoma carnifex* (Thomas 1999), called 'te manai' in the local language. Land crabs live in burrows but need to remain wet while hidden. On Christmas Island, regardless of the time of day, large numbers of crabs seem to move everywhere through the coconut forests and are easily seen.

One early morning while we were on the island, our host family in the village of Tabakea took us on a major land crab hunt. The entire family drove by truck to the nearby coconut forest. Men, women and children equipped themselves with empty flour sacks or buckets and started a competition to capture the most and the largest land crabs. The hunt lasted about 20 minutes. Mostly the family targeted the areas around established coconut trees, where the ground was covered with old fallen fronds. The fronds were quickly lifted and the land crabs disturbed. The alarmed crabs ran for their burrows but were expertly caught and collected. A 30-litre (7-gallon) plastic bucket was filled with live land crabs in less than 15 minutes. A coconut was placed on top of the catch to prevent any of the crabs from escaping.

During the 10-minute drive back to the village, the crabs' front claws and legs were broken off. Back home all parts of the crabs were soaked and rinsed in fresh water. With the last rinse, the crabs were drained by blowing any remaining water and sediment out of their bodies. The front claws and bodies were later cooked for the family's lunch (five adults and two children).

While the hunt was undertaken by all, including the men, preparation of the crabs was exclusively the

women's business. This is interesting because generally Christmas Island women do not take part in any kind of fisheries, not even the collection of shellfish. The ease of the hunt suggests that land crab resources on Christmas Island are in good condition and not at risk. However, surveys done elsewhere have revealed that the exploitation of land crabs can reach critical levels. For instance, in Pelilin, Palau (Matthews 2002; Olkeriil & Matthews 2003), the facts that land crabs are a commodity, collection targets are mainly gravid females and export volume is not monitored have resulted in a call for conservation efforts and management strategies.



While land crabs are not a commodity among Christmas Islanders and are not targeted for export, future demographic development of the island's community (including immigration), the lack of alternative protein sources to fish, high living costs and a very limited supply of imported canned or frozen meat products may result in increasing pressure on the atoll's land crab resource in the future.

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2. Data are sourced from a socio-economic survey done in the framework of the European Union-funded PROCFish/C project that is currently being implemented by SPC's Reef Fisheries Observatory.

Fishing to sustain livelihoods in Nauru

Aliti Vunisea¹

With the economic downturn in Nauru, the drastic change in people's purchasing power, loss of paid employment, standardised salaries and working without wages have forced a change not only in lifestyle but also in social arrangements. There has been a rekindling of traditional systems, with people bartering food, helping out disadvantaged families and building up communal ties and social activities. Families are moving into larger groupings – some households have up to 26 members — with everyone sharing what they have.

Emerging social problems include vastly increased unemployment. Younger people especially have become victims of the situation, with little opportunity for education or employment. The small portion of the population who work have to support large and extended families. Alcohol and cigarettes are luxury items as people struggle to meet costs. Kava drinking has picked up in the local population and is seen by some as a cheaper alternative to alcohol.

Food security is the biggest need of the people. In the absence of financial security and with limitations on alternative food sources, the problem is chronic and will be so for the next few years. Food insecurity and financial insecurity have in some cases translated into social instability, with petty thieving, illegal trading and black-market niches for basic items, such as fuel, cigarettes and alcohol, on the rise.

Items in the shops are not too expensive compared to other PICTs, but they are expensive for the local people. Prices are high in comparison to people's purchasing abilities; thus, many households go without most imported items and purchase only basic necessities. Price control on food and other basic items is non-existent, and fuel scarcity – with electricity regularly being turned off for most of the day – also has a lot of influence on prices (fuel costs, cost of fish, frozen food, etc.). With the lack of fuel, work in most government offices and the private sector has slowed down.

Dietary changes

Realistically the ability to buy determines the choice of food. Seafood now provides the main source of protein for more than 98 per cent of Nauruan households. It is also the main source of income for the majority of fishers. Nauruans who

have for the past few generations not had to fish for food are learning fishing technologies and adapting to a new way of life, with men, women and children out on the reef daily, gleaning and fishing.

Many households now have 'kitchen' or backyard gardens, initiated with FAO's assistance, where they have planted vegetables and fruit trees. The country has good soil and sufficient land area to support small-scale gardening. More people are eating cassava and breadfruit instead of rice. Kitchen gardens are gradually helping out in the provision of vegetables and fruit, but many households have only two meals a day, with leftovers from breakfast kept for children's meals during the day. The social system has provided a way out, with people firming up family bonds and bartering of food taking place. In addition, preparation of food has changed drastically. With the shortage in fuel supply, people now cook on open fires and kerosene stoves.

Apart from increased fishing participation, people have adopted coping strategies such as a shift to other protein and general food sources. Noddy birds, a local delicacy that in the past was targeted only on ceremonial occasions, are now caught in large numbers on a daily basis for food and income. Every evening men go out in groups to catch birds in the pinnacles in the mined-out areas in the middle of the island. Catches are between 40 and 60 birds per group of 5–6 men; some groups catch up to 100 birds a night. The birds are sold at \$1.00 each.

Changes to fishing activities/catches

Fishing pressure and intensity have increased dramatically in the last three years, with almost all households involved in fishing. Fishing and fisheries resources play a major role in sustaining people's livelihoods and have become the fall-back option for most people. The dynamics of fishing have totally changed, with children, women and men increasing fishing participation, targeted species changing depending on what people can get, and distribution systems changing with increased selling and sharing of seafood. Those who are in paid employment buy imported food-stuffs and exchange them for fish with family members who are unemployed and engaged in

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fishing. In some instances where most members of a family fish, or where they have good fishers, catches are distributed for free to other families.

Children are not usually at school because of the fuel shortage, and are increasingly taking up food-gathering and fishing activities. In some districts men have organised themselves into fishing groups and the catches are sold and the money shared among the group.

Although fishing involvement has rapidly increased, the gear used has largely remained the same. The use of powered boats, night diving and other advanced gear is restricted by lack of fuel, lack of affordability, an inability to buy batteries, and so on. Outboard motors are rarely used and pelagic fishing is dominated by those with canoes (usually Tuvaluans and i-Kiribati).

People are generalists, collecting all invertebrate or finfish species they come across. They are starting to walk longer distances to fish or glean, and sometimes do not catch anything at all. There is a decrease in the size of catches, and also a decline in the number of catches. People are moving into harvesting and consuming species not harvested before (e.g. certain types of *bêche-de-mer* and sea urchin).

Everyone fishes around the island and there are no specific tenure restrictions to limit people fishing in areas outside their own district. The reef area of Nauru is very narrow and has an immediate drop-off that allows people to spear-dive and fish for pelagics. In some ways this has helped to keep total pressure off reef fish as people can still access these fish without boats. People are consuming finfish species that were not usually targeted in the past. All sizes of fish are caught and consumed, which could mean the total loss of certain species if management strategies are not implemented.

Management

The recent increase in intensity of fishing has placed a lot of pressure on reef resources. Given the increase in fisheries exploitation, there is a need for some form of management of resource use. At the moment there is no form of fisheries management, although at the district level people have started to adopt mechanisms that could address the issues, and there are continuing attempts to put in place marine-protected areas. Nauru's open-access tenureship means that everyone is free to fish anywhere on the island. This is very different from other Pacific Island countries. Because of the lack of traditional authority, the protocols seen in other countries are not practised in Nauru. There are no customary regulations, district laws or unwritten understandings on fishing activities, such as size limits, quotas, gear restrictions, use of scuba, or imports (coastal species).

The dietary trend in Nauru is a reversal of the pattern in other Pacific Island countries, where the shift is from dependence on traditional foods to dependence on imported and processed foods. The Nauruan people are first-timers to fishing, bird hunting and kitchen gardening. It is a challenging time for those trying their hand at budgeting on their small pay packets. Women and children are the most affected. The enthusiasm people have and their ongoing attempts at building communities, linking up with families and helping each other will help households in the future.

The challenge will be putting in place management interventions that ensure food security and sustain the long-term livelihoods of the people. The ecosystem approach to management and the need to protect and sustain ecosystems, as well as resources and the people who depend on them, will be the way to go.

Every day, women are out gleaning on the reef top



Children also engage in all forms of fishing.
A young boy showing his catch

Women's changing participation in the fisheries sector in Pacific Island countries

Aliti Vunisea¹

While many aspects of women's fishing participation in Pacific Island countries have changed, their traditional and social roles have largely remained the same. Women's increased participation in the market economy, paid employment and other such activities is in addition to their existing traditional and social roles.

In some cases, the involvement of women in the fisheries sector is undermined and under-reported because their fishing activities are viewed as an extension of their traditional role of food foraging for home consumption. Men have to some extent also started to change their roles, helping out with household chores, but the basic perceptions of women being responsible for domestic chores and food gathering persist and will take time to change. There has been continued debate on the merits of singling out women in fisheries management and development work, with the argument that men and communities in general do not always support 'women only' projects and initiatives.

Although the fisheries sector offers excellent opportunities for future economic benefits in Pacific Island countries, maximising these opportunities is a challenge that communities continue to grapple with. Women fishers especially dominate the inshore and subsistence fisheries in many countries of the region, but are usually minimally involved in training and decision-making relating to fisheries development and management. Decreasing catches, the loss of certain inshore species, the development of coastal fisheries areas for non-fishing users and tourism, general land reclamation and industrial development directly impact on women's fishing activities. This is partly because development activities tend to be within women's fishing areas and thus cut off access to fishing grounds, and partly because the new ventures or uses usually do not include women. As a consequence, women travel further to fish and must look for transportation to distant reefs or engage in alternative means of ensuring their livelihoods.

In many Pacific Island countries, assets and ownership of boats and fishing gear are associated with

men, even in cases where women are the main fishers or income earners in the family. This is more true in patrilineal societies where land and marine tenure and ownership of homes, boats and other amenities are associated with men. Because women usually do not own the boats needed for transportation to outer reefs, any extra fuel costs directly affect them and their fishing participation because they have to pay fares to get to these reefs. In some cases fish and other products are given as payment. This is a hardship faced by women fishers in many coastal rural communities.

Traditional institutions, protocols and beliefs are slowly changing, with modifications to the structures, leadership and dynamics that influence decision-making at the community level. The argument that traditions and customary regulations are major hindrances to women's involvement, although true, has also slowly weakened, with educated women and those with economic standing or respected employment status establishing new codes of conduct and systems of interaction in island communities. These women become agents of change in their communities and represent women's grievances at village forums. Their views and interventions are usually seriously considered by elders and other sectors of communities.

On the other hand, in some communities, like those in the rural coastal areas of the Solomon Islands and Fiji, traditional barriers remain. For example, women not only fish but are also expected in many cases to gather root crops from the gardens. In some areas of the Solomon Islands women have to paddle long distances in canoes to fetch food from the gardens. Other women walk long distances carrying heavy sacks of root crops and coconuts on their backs, but because these are accepted traditional roles, not much notice is taken of the women or of the activities. There are taboo areas and periods when women cannot go fishing, and the belief that menstruating women are unclean and must not take part in fishing is still strictly observed in certain areas of the Solomon Islands. In these cases, some women accept their roles and positions in society because of the con-

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cept of bride price, where the perception is that since their husbands have paid a price for them it is their marital duty to do the food gathering and fishing. Food gathering for these women is an almost daily activity, with women of all ages out in the gardens or on the reefs. In some areas of the Solomon Islands, women are the predominant fishers of the mangrove areas, where crocodiles are a real threat. Even with increased crocodile sightings, women continue to frequent mangrove areas foraging for food.

In Fiji, women in some rural coastal areas also undertake gardening and fishing activities as part of the traditional roles of food foraging. In some Fijian rural villages, women still exchange crabs and other marine products for money or food, usually depending on the buyer to set prices. In cases where middle sellers buy from communities, prices are set by the buyers and in most cases women have little knowledge of the market; thus, products are sold at very low prices. Exchanging mats, baskets and tapa for modern household amenities such as curtains, blankets, mosquito nets, plates and pots is in some cases the only means of accessing consumer goods that these women have. They make arrangements among themselves and after a period of 4–6 months of preparation on both sides the goods are exchanged. These transactions usually take place between women in urban areas and isolated rural areas.

From the above discussion, it can be assumed that there still exists a wide gulf between women in urban and peri-urban areas and those in rural coastal locations regarding work undertaken, traditional obligations, and fishing participation. The differences in level of education and marine awareness and the lack of opportunities or infrastructure to support marketing, education and skills training widen this gap even further.

At the other extreme, in Tokelau and Niue women's fishing participation is more a pastime or leisure activity. These countries enjoy a higher per capita income and more Western lifestyle because of their association with New Zealand. Women in these countries almost all have access to income and education and men are the main fishers and food gatherers.

In Samoa women are not as involved in fishing as women in Fiji, but there is intensive participation in certain invertebrate fisheries. Samoan women target the sea cucumber fishery, collecting several species of sea cucumber, cutting them open and taking out the guts to be eaten raw. The guts of certain sea cucumber species are mixed with other species, which are scraped and the skin chopped into fine pieces. This mixture is put into empty soft drink bottles and sold at markets and other distri-

bution outlets throughout Samoa. It is a popular delicacy and is ordered by relatives visiting from overseas countries, for special village functions and for everyday eating.

In Kiribati and Tuvalu, women are mainly gleaners while men are fishers. Women are regularly out in the near-shore areas gleaning and netting for small reef fish. Most fishing in Kiribati is from canoes and this is mostly done by men.

The lesser participation of women in fishing in Samoa, Niue and Tokelau has various explanations; one of them is the protective nature of the men towards their women, with the men not wanting the women out in the sun or undertaking any strenuous tasks. In Niue and Tokelau it could also be due to the fact that economics is not the driving factor for fishing.

In general, women in the Melanesian countries of Fiji, Solomon Islands and Vanuatu are the most involved in fishing. Tradition highly influences fishing participation of women, thus the variations in participation in the countries of the region. Women's fishing participation may seem unchanged and minimal in some cases, but the roles they play significantly affect food security and the future of children in the Pacific.

Women dominate seafood selling and marketing activities in nearly all countries of the Pacific. These activities range from selling at the market, on the roadside, to middle sellers, house to house, to restaurants and to exporters. These women are in most cases selling not only what they catch but what all members of their family catch. In Kiribati, Tuvalu and the Solomon Islands women are hired by middle sellers to sell their products for them. In most cases there is little infrastructure to support these activities and women sit in the hot sun for whole days trying to sell products. Because of a lack of appropriate storage facilities, fish and other products can go bad and prices can fluctuate widely, sometimes resulting in small earnings.

Most selling in municipal markets is on a small scale with no capital support. Selling, bargaining, budgeting and negotiating skills are learnt on the job by women. Although most of them sell at the major markets in all the main towns and cities of the Pacific, they have little idea of the dynamics of the towns as they are usually confined to their marketing space and to small supermarkets where they purchase goods before returning home. Their exposure is therefore confined to the areas around the market, the immediate shopping area and the bus station. These women have over time secured their own networks and groups that help each other in selling and securing buyers for their products.

In general, fishing participation by women takes many forms, ranging from preparation of fishing gear to involvement in fishing, harvesting, processing or distribution activities, especially marketing. The continuing classification of women as food foragers for family consumption with no economic value given to these other activities undermines women's participation and translates to the continuing neglect of women in mainstream development initiatives, education and training. Because their selling activities are usually confined to municipal markets and small-scale buyers, there is little focus on their involvement in the market economy despite the fact that these regular marketing and selling activities in most cases provide families' financial and social livelihoods.

In community settings, women are expected to provide food for visitors, special functions and traditional obligations. There is no financial accounting of the time taken for fishing, preparation, waiting on visitors, and so on. As explained earlier, most of this involvement of women is explained as an extension of their domestic role of providing food for the family.

When discussing women fishers in Pacific Island countries, the emphasis is not so much on equity or equality or the need for gender-balanced work, but rather on the recognition that the fisheries sector is where most women entrepreneurs and home supporters are. These women run the day-to-day financial and social affairs of their families with little acknowledgement or assistance.

The concern is how these masses of women can be included in mainstream development. It means looking at ways of opening up technology barriers, market barriers, education barriers and opportunity barriers, among many others. The challenge is how women can have access to markets and training in marketing, quality handling, budgeting, credit facilities and general nutrition, as well as how they can purchase and own assets that facilitate entering into business ventures – things that could make a difference not only to their own progress but the progress of their families. The bigger challenge is how to translate policies into tangible or meaningful actions that will uplift women's lives.

Women in Pacific Island countries continue to live within traditionally defined settings while at the same time being expected to deal with the modern market economy through their marketing activities. The credit facilities available, development ventures and training provided are foreign and have little meaning for their livelihoods. The missing link in this case is how to get information and

opportunities out to the women. Traditional and social barriers that have been one of the biggest hindrances to women's full participation in fisheries development are starting to break down, but linking women to available development resources and information is still a challenge. Women are moving into male-dominated and newer areas of work and into emerging fisheries. The market does not differentiate between men and women regarding production; it judges the quality of what is produced. This is an area that should be actively exploited and strategically addressed to ensure that women are involved in the private and informal sectors.

In spite of the advances in technology and communication and the widespread availability of information, how to make this information and these opportunities and networks available to our people in rural areas, especially women and youth, is a continuing challenge. At the regional level, networking and advances in regional approaches to fisheries and other sectors have progressed rapidly. This begs the question of how the same sort of networking and collaboration can be achieved at the national and community level, and if these types of networking and collective approaches can in the long run benefit women, or change the way women's issues are currently addressed.

The question that needs to be asked is whether the challenge is to have equality and equity in numbers for women using various indicators, or to empower women in rural coastal communities to make decisions and to be included in development and management initiatives. The overemphasis on women in leadership and decision-making could draw attention away from the urgent need to lift the general standard of living of women out there in rural coastal communities.

The needs in these two cases differ enormously. At the decision-making level, there is a need for political willingness to open doors to women in spite of ingrained institutional barriers. Campaigning, education and training are needed to enable women to come up to speed on discussions and issues so they can be meaningfully engaged.

At the community level, the need is more about taking women out of poverty, putting in place measures that directly impact on the work areas and responsibilities of women, and assisting women to tap into the resources and opportunities that are out there. For many women it is not lack of income or food that is the biggest problem; it is the lack of opportunities to be able to carve a future for themselves and their children.

Fishing for tourists: Women play leadership roles in lagoon management

Jason Brown¹

Fisheries in the Cook Islands is micro-scale, with limited opportunities for participation by both men and women.

Unlike other countries, the Cook Islands has not yet studied fisheries from a gender angle. In the 2001 Cook Islands census, roughly 1 in 10 of those who counted themselves as skilled agriculture and fisheries workers were women (35 out of 301). Cook Islanders are due for another census at the end of 2006.

Since 2001, the Cooks has gone through a mini-boom and bust in fisheries, with women getting involved on the processing side. (However, most of the employees seen in the two main processing plants are men.) At its height, the Cooks fishing boom saw more than a dozen vessels registered and actively fishing in the Cooks exclusive economic zone of some 1.8 million square kilometres. Now just two or three boats remain, with ministry officials saying operators failed to take note of the seasonal nature of Cook Islands deep-sea fisheries.

Most coastal fisheries activities are dominated by men, although women have begun to take a more prominent role in protecting coastal fisheries. Very

few women are involved in fishing; popular singer Apiti Nicholas was a high-profile exception for some years before she retired due to health concerns. Most of the tourism industry's game fishers are men, with only one woman operator involved.

In 1998, traditional leaders – including Koutu Nui (traditional council) president Te Tika Mataiapo – helped build community backing for the reintroduction of the raui, or traditional conservation practices. Key breeding spots in the lagoon around the capital island, Rarotonga, were declared off limits. Supported by the World Wildlife Fund, the raui campaign was highly successful in reducing abusive fishing practices and regenerating lagoon stocks. However, it has been some years since the campaign was launched, and it may need fresh input to maintain community cooperation.

Tourism is the country's number-one industry, worth an estimated 50% of gross domestic product or about NZ\$108 million — compared with just NZ\$10.5 million for combined exports of fish and pearls. It may be that indirect income from fisheries — lagoon-based tourism — needs greater recognition, including the leadership role played by women in protecting the lagoons.

New Coastal Fisheries Management Officer at SPC

The new Coastal Fisheries Management Officer, Magele Etuati Ropeti, is from Samoa, where he worked in the Fisheries Division of the Ministry of Agriculture and Fisheries for over 10 years. In his former post he was head of Fisheries Extension and Advisory Services, which included a successful community-based coastal fisheries management programme that involved more than 80 village communities.

Etuati holds a Diploma in Tropical Fisheries from USP and has a degree of Applied Science in Fisheries from the Australian Maritime College. Before joining SPC, he undertook consultancy work for the Coastal Fisheries Management Section.



Etuati Ropeti

Aliti Vunisea, who previously held the Coastal Fisheries Management Officer position, has moved to PROCFish. She is still based with the Coastal Fisheries Programme and is doing socio-economic studies in communities in Pacific countries.

1. Media Intern at the Pacific Women's Bureau

Press release:

SPC appoints new *Women in Fisheries Information Bulletin* coordinator

Monday 20 November 2006, Secretariat of the Pacific Community (SPC) – Dr Veikila Vuki, formerly with the Fiji Fisheries Division and the University of the South Pacific (USP) and currently the Director of Oceania Environment Consultants, a consulting firm based in Guam, is the new coordinator of the SPC Women in Fisheries (WIF) Information Bulletin.

SPC Director-General Dr Jimmie Rodgers said, “We have in the region people with a wealth of skills and extensive knowledge. I am delighted to welcome Dr Veikila Vuki to SPC’s fisheries work programme. Professionals of this calibre, especially if they are Pacific Islanders, are a great asset to the organisation.”

The WIF coordinator will seek and collect information for the network’s biannual bulletin through regular contact with contributors and networks of people working on the relevant subject, and edit the information through direct exchange with authors.

Dr Vuki hails from Ono-i-Lau – the most isolated and southerly inhabited island in the Fiji Group. She has 20 years of research experience in Australia, Fiji, Samoa, Cook Islands, Kiribati, Vanuatu, Federated States of Micronesia (Chuuk, Pohnpei, Kosrae and Yap), Guam, Marshall Islands and Palau.

She has varied experience in issues related to coastal fishing communities, coastal management, women in fisheries and fisheries development, and has published widely, with most of her recent publications being on the subsistence fisheries of Ono-i-Lau. Dr Vuki is currently an adjunct research associate at the Marine Laboratory, University of Guam. She holds a doctorate in coral reef ecology from Southampton University in England, and a Master of Science degree in marine biology and marine botany from James Cook University, Australia.



Veikila Vuki

Recently, Dr Vuki helped develop and coordinate the Pacific Islands Marine Protected Areas Community (PIMPAC) in the US Pacific Island Territories and the US Freely Associated States (Micronesia). Before working for PIMPAC, she was a research associate at the University of Guam Marine Laboratory for two years researching watershed and coral reef management in Guam.

Dr Vuki was a member of staff at USP’s Marine Studies Programme in Fiji for nine years, where she taught undergraduate and graduate students in marine pollution, oceanography, and coral reef ecology and fisheries management. At USP she was also Principal Investigator for the global monitoring programme SeagrassNet. She has also worked as a Fisheries Officer for the Fiji Department of Fisheries, where she was actively involved in training women in fisheries management, and was a board member of the regional Women in Fisheries network based in Suva.

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