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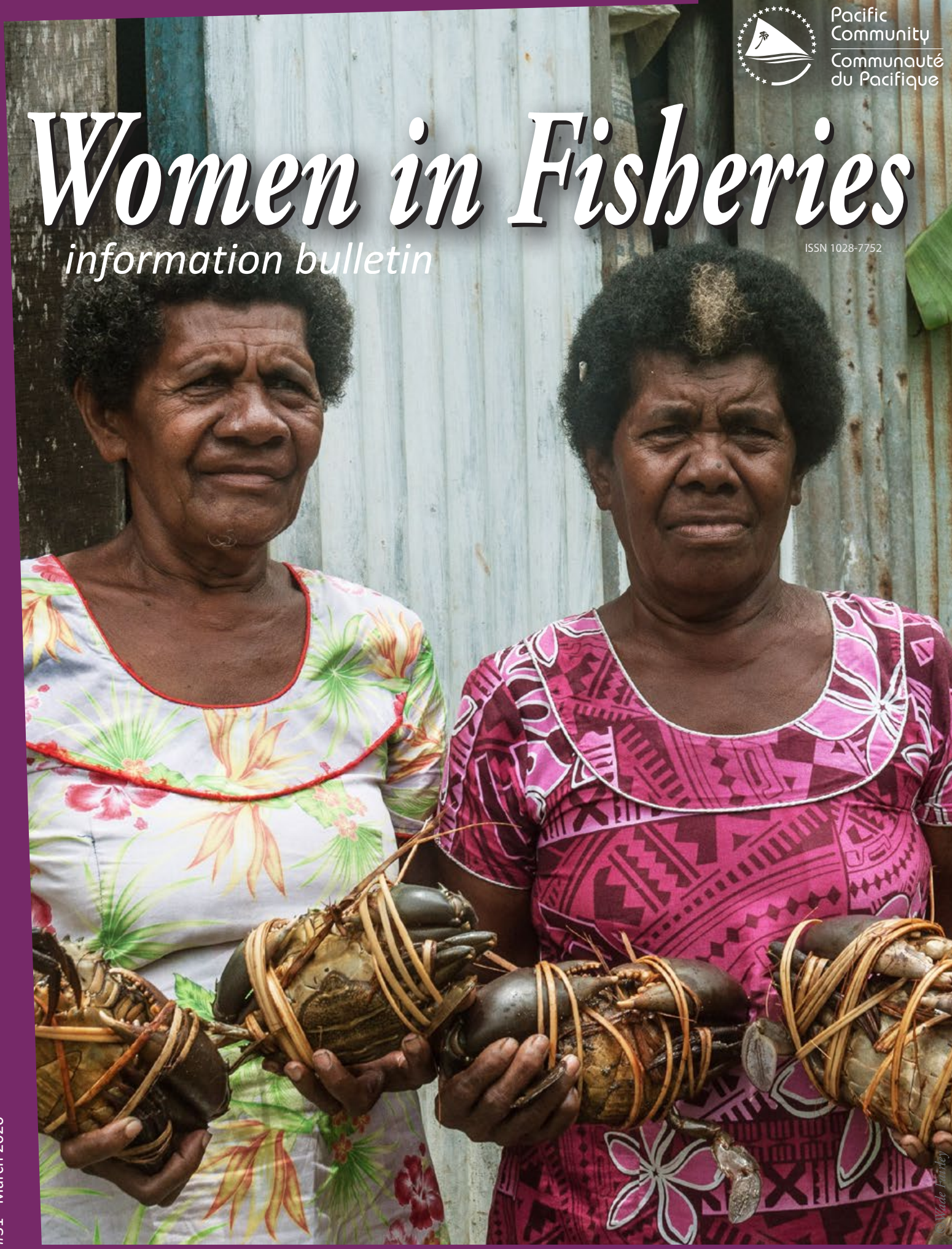

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#31 - March 2020

Beyond gender-blind livelihoods: Considerations for coastal livelihood initiatives

Five women in fisheries profiles

Capturing the value of fisheries using photovoice

Inside this issue

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A fisherwoman gleaning sea cucumbers in the seagrass beds adjacent to the farm. ©George Stoyle

Fisherwomen preparing sea cucumbers in a traditional Palauan style for immediate consumption. ©George Stoyle

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Table 1. Summary of the demographics of women sellers interviewed.

Location	# Women	Ethnic composition	Age (Yr)	Education levels	Marital status
Savusavu	7	iTaukei (71%) Indo-Fijian (29%)	31–58	Both primary and secondary school	Married (57%) Widowed (29%) Single (14%)
Labasa	47	iTaukei (100%)	23–69	Primary, secondary and tertiary level	Married (88%) Widowed (4%) Single (8%)
Suva	71	iTaukei (100%)	22–70	Primary, secondary and tertiary level	Married (81.6%) Widowed (13.2%) Single (5.3%)

market were all middlewomen, as fisherwomen normally sell at the market on an irregular basis. The majority of these women sellers across all markets were married and a small portion were either single or widowed. Education levels for these sellers varied, with some women having either primary or secondary education, while only a few women from the Labasa and Suva markets had some form of tertiary education.

Seafood sales at the market

Women vendors sell a wide range of seafood (fish species and non-fish species) at the market. The mud crab (qari) and the emperor fish (Lethrinus spp.) were common species sold across the three markets (Table 2). It was also found that less than half of the women vendors interviewed (in Suva and Labasa markets) sold cooked seafood products, with the most popular items, being fish, octopus (kuita) and seaweed (lumi). The majority of women vendors invest a lot of their time in selling their products at the market, with an average of seven to eight hours spent in selling. The average time in travelling to markets is one to two hours, with most of these women stating that they would stay until all their seafood was sold. Across all three markets, the majority of the seafood vendors (> 50%) sold at the market by themselves, with a small portion of women selling seafood with either their husband or children. The most preferred days for selling for most women vendors were Fridays and Saturdays, as there was an increase in number of customers, hence an increase in sales. In terms of the market levy, women vendors paid an average market fee of $1.19/day (Savusavu market), $1.84/day (Labasa market), and $3.50/day (Suva market). None of the women vendors interviewed sold to exporters, restaurants, hotels or shops.

Image 3. Selling groupers at the Labasa market. ©Sangeeta Mangubhai, WCS.

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Cover picture: ©Alyssa Thomas, WCS

Editorial

Happy International Women's Day! This 31st issue of the Pacific Community's *Women in Fisheries Information Bulletin* includes eighteen original articles from Fiji, Indonesia, Palau, Papua New Guinea, Republic of Marshall Islands and Solomon Islands. Topics covered include tuna, roles of women as fishers and sellers in small-scale fisheries, and gender considerations for coastal livelihoods. Chelcia Gomese from WorldFish and colleagues share an innovative participatory methodology called "photovoice" to capture the viewpoints of local fishers and the value of fisheries in Solomon Islands. For those who want a bit of inspiration, we have profiled a fisheries observer debriefer and assessor from the highlands of Papua New Guinea who found herself drawn to the sea, a local fisherwoman from Fiji who wants to fish all day long, and two Fijian Master of Science graduates returned home and working in the women in fisheries space.

We welcome two new Fijian authors to the bulletin. Chinnamma Reddy recently completed a Master of Science looking at the socio-political and socio-economic relationships between customary fishing rights owners and users in Fiji. She writes a short, poignant piece to share the "hidden voices" of three Indo-Fijian women engaged in the fisheries sector. Bulou Vitukawalu, with a Master of Science in aquaculture, summarises a study by the Wildlife Conservation Society to understand the barriers and opportunities for women seafood vendors in municipal markets in Fiji.

As the Pacific-European Union Marine Partnership (PEUMP) program gets up and running, staff from the Pacific Community (SPC) present a review of Pacific gender and fisheries literature to understand women's and men's roles, contributions and challenges in the fisheries sector. SPC partnered with the University of the South Pacific to trial new training focused on gender, social inclusion and human rights-based approaches in the fisheries sector, which will be rolled out in 2020.

On International Women's Day, we would like to acknowledge and stand in solidarity with all those women and men who are advocating and fighting for gender equality in the fisheries and aquaculture sectors.

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Gender in tuna value chains: Case studies from Indonesia and Solomon Islands

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Introduction

There is a wide range of opportunities for women working in tuna fishery value chains. Not many women fish for tuna, which tend to be caught further offshore than where small-scale fishing women usually go, or from large industrial vessels that employ only men. Women, however, make up large parts of the workforce in tuna value chains once the catch lands on the wharf. Women work in trading and processing tuna, in manual labour, and in technical, financial and managerial roles. This is true for formal, export-oriented tuna value chains, informal value chains and those ending in domestic markets.

Some of the largest tuna employment opportunities for women and men are poorly paid – general crew on fishing vessels (men) and fish processing line workers (women). Beyond that, however, the roles occupied mainly by women are lower paid and have less authority than roles occupied mainly by men. In office work, women cluster around administrative assistance roles, whereas men cluster around managerial roles. The types of trading mainly women do (smaller scale and more local) is less lucrative than the kinds of trading mainly men do (larger scale and including export markets). On the other hand, the most physically risky work on fishing vessels and lifting heavy loads tend to be done by men.

The work women do in tuna value chains is arranged to fit around family caring obligations, and is shaped by "gender norms", meaning the socio-cultural ideas about what kind of behaviour is appropriate for men and women. In Indonesia, norms about women's work are that paid work is important in society, but that this should not conflict with women's "role in fostering a happy family in general and guiding the young generation in particular" (Ford and Parker 2008). In Solomon Islands, the gendered division of labour around livelihoods, including fishing, has been changing over recent decades with the increasing importance of cash incomes, but women remain more responsible than men for domestic work (Lawless et al. 2019). Some women have done well in careers in tuna value chains. For example, some are technical supervisors or managers in canneries, or have built up trading businesses and fleets of fishing vessels. Within processing companies, the values of senior managers regarding gender equity is an important factor affecting women's working conditions.

This paper is based on research conducted to assess the governance of tuna fisheries in terms of well-being contributions to coastal communities, with case studies of fisheries in Indonesia and Solomon Islands (Fig. 1).[4] The project was mostly based on interviews with people in tuna value chains and fisheries management (86 in Indonesia and 48 in Solomon Islands), with analysis of relevant fisheries policy and technical documents. We found that gender as well as socio-economic status and status as migrants were key social factors affecting what kinds of opportunities were available to which people, and who was best able to grasp opportunities in tuna value chains. In this paper, we present key findings about the gendered division of labour in each tuna value chain case study.

Indonesia

In Indonesian tuna value chains, men tend to occupy roles associated with fishing and heavy physical labour, positions associated with authority, and trading roles associated with higher levels of wealth generation. Women tend to participate in roles associated with lower value trade and processing, and are not usually in positions of authority (USAID Oceans and Fisheries Partnership 2018). Due to women's generally less powerful position within society, they may be more vulnerable to labour abuse. Tuna fishing and processing in Southeast Asia has been in the spotlight in recent years for labour abuse. For example, the Bumi Menara Internusa (BMI) tuna cannery in Lampung (Sumatra) has been reported as resisting the enrolment of women processing workers in the compulsory government health insurance scheme (International Union of Food 2019).

One of the noteworthy aspects of the gendered division of labour in Indonesia is a pervasive norm in fishing businesses that men do "on the water" work and women do "on the land" work. This means some women build up detailed knowledge and contacts in markets. In some cases, this has led to upward mobility, with some women traders moving from domestic markets to more lucrative roles in export chains. By virtue of their involvement in successful fishing businesses, some women have risen to positions of significant influence. In particular, Susi Pudjiastuti, a fishing businesswoman before she entered politics, was the longest-serving Fisheries Minister since the return of democratic rule in 1998. The Secretary General of the Indonesian Pole and Line and Handline Fisheries Association is fishing businesswoman Janti Djuari.

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[4] For further information about the larger project, see https://www.uts.edu.au/about/faculty-arts-and-social-sciences/research/fass-research-projects/assessing-governance-tuna. There are also opportunities for women in the pre-fishing end of the value chain – in supplying goods and services for fishing, such as food for fishing crews, gardening and cleaning for factories, repairing nets and other fishing gear and equipment. These inputs to tuna value chains were, however, outside the scope of our project so are not considered in this paper.

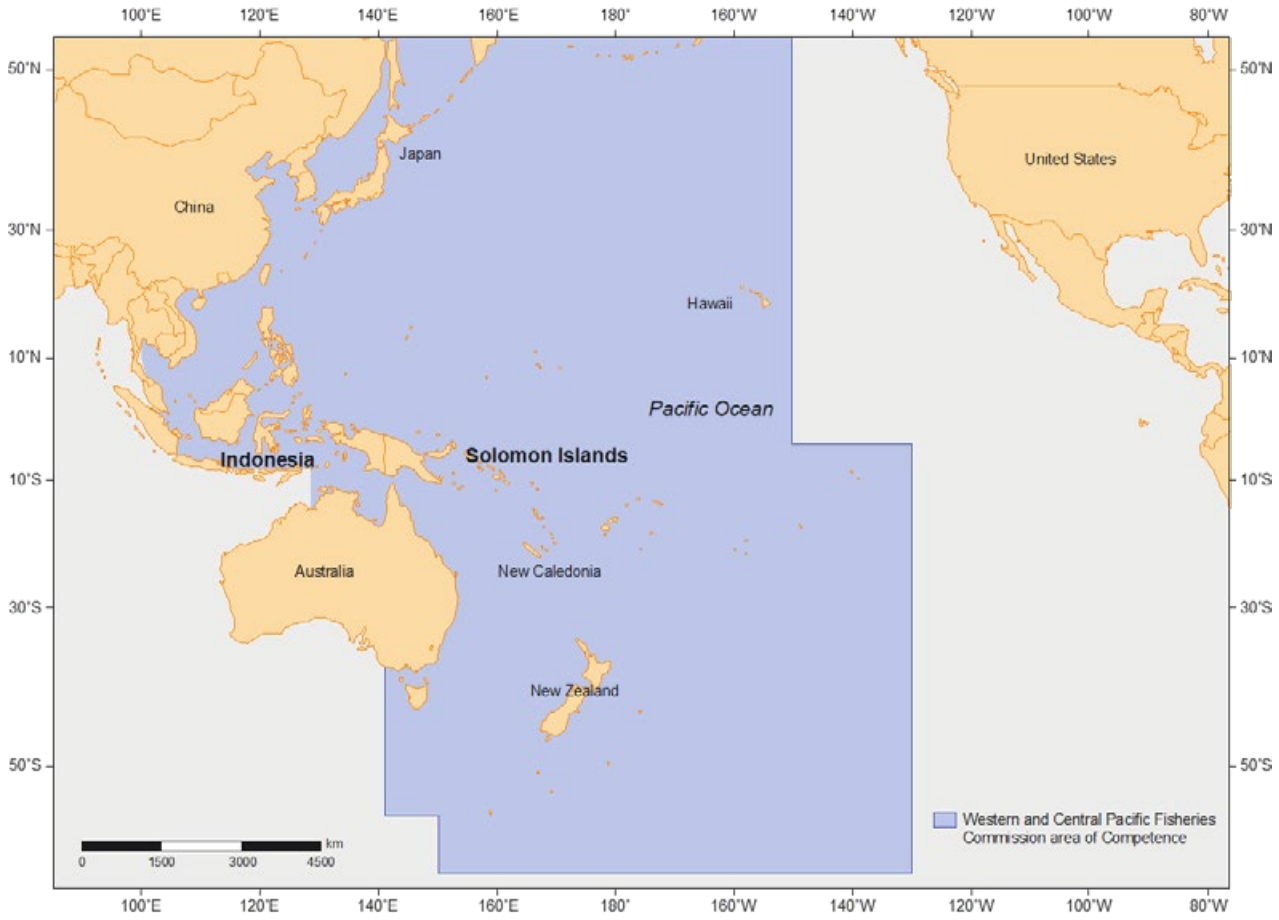


Figure 1. Map of western Pacific showing Indonesia and Solomon Islands.

Maluku

In Maluku Province, there are two kinds of handline fisheries that supply local markets as well as markets in the provincial capital city Ambon and export markets (see Fig. 2, Fig. 3). One handline fishery is from very small vessels of less than two gross tonnages (GT; a measure of the size of boats) that target free-swimming schools of yellowfin tuna, some of which is exported, including as a fair trade product to the USA. The other fishery consists of slightly larger vessels of 5–8 GT that target skipjack, mainly around fish aggregating devices (FADs), which is mostly destined to be sold fresh or smoked in Ambon.

In both of these handline fishery value chains, men occupy most roles associated with fishing, with lifting heavy loads, with the most lucrative export-oriented trade and with positions associated with authority, such as managerial and executive roles in export companies.

In exporting companies, women make up the majority of workers in processing and administrative roles, and are also involved in middle management. In one exporting company in Maluku, women were reported as being 60% of the workforce on the floor, where their skill in cleaning and grading fish loins was seen as particularly valuable. Men tended to undertake heavy lifting and transporting roles, as well as some processing roles. However, in the management side of the business, women made up only 30% of the workforce, and were engaged in mostly administrative and middle management roles.

The gendered division of labour varies somewhat between larger businesses in the main city market in Ambon and village markets, and family businesses in village areas. In the larger businesses, men do most of the unloading, transporting and preparing larger fish for sale as fresh, and the processing for smoked fish. In village-based family businesses in trading and processing, women play a larger role (see Table 1 and Fig. 3).

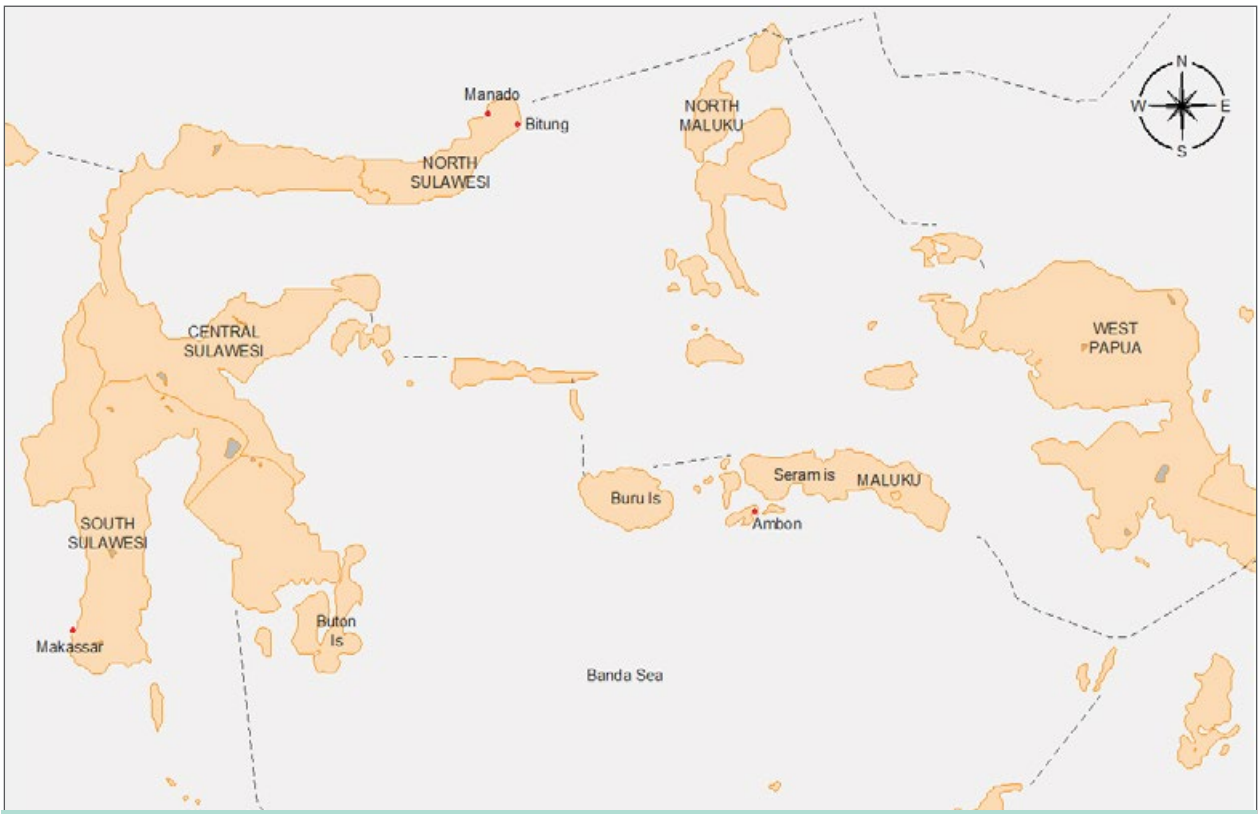


Figure 2. Indonesia study sites Maluku and Bitung.

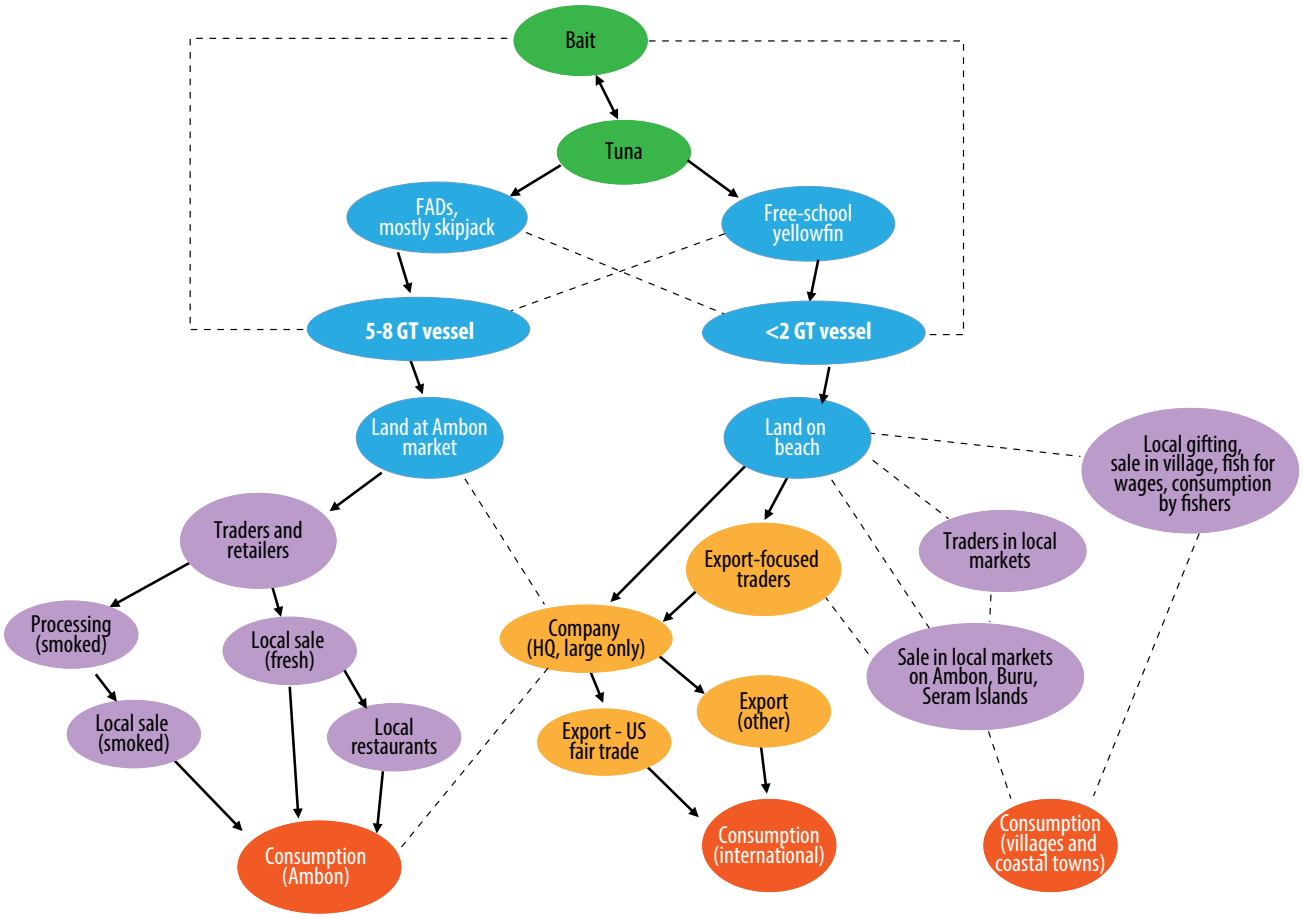
Table 1. Trading relations in handline yellowfin value chains in Maluku.

Type of trader	Markets	Acts as a patron to fishers providing credit and supplies?	Gender
Exporting companies based in Ambon	Exports higher-quality large fish. Some direct sale of fish in Ambon.	No, but does provide some cold storage for collector traders and fishers	Mixed: men and women, depending on roles (see gender analysis below)
Village-based traders focused on export, known as "suppliers", "middlemen" or "collectors"	Aggregates tuna from fishers, sale to exporting company in Ambon for high-quality fish, and some sale in local markets for lower-quality fish.	Yes, but also buys from independent fishers	Mostly men
Village-based traders selling primarily into local markets	Sale of smaller and lower-quality fish in local markets in Ambon, Buru and Seram, sometimes some processing (e.g. salted/dried fish).	No	Mixed: men and women
Fishing family traders	Sale of small and low-quality fish in village or markets in Ambon, Buru and Seram.	No	Mostly women

Sources: Primary interviews, Bailey et al. (2016).

No clear gendered division of labour is evident in selling and processing fish in the Ambon Market – men and women are involved. Gender differences are more visible in the roles of unloaders (all men) and the larger-scale traders who own vessels (mostly men). Women involved in retailing and trading roles may be employed by a trader or sell smoked fish their husbands have processed as part of a family business. If they are part of a family business, women retailers exercise a degree of independence by not being under a "boss", and tend to manage the business, including finances, payment for services and supplies. Women who need to balance family obligations with their paid work appreciate the flexibility that comes with casual work in Ambon Market, although the work is insecure. Some of the larger traders in the Ambon Market, who employ networks of processors and retailers, are women. These entrepreneurs have substantial influence and are actively involved in financing fishing trips and negotiating prices at the dock.

Interviewees in Maluku described the gendered division of labour in the family businesses in handline tuna in terms of the husband doing "all the activities on water" and the wife doing "all the activities on land":



Note: Solid black arrows represent where most of the volume from the fishery goes; dotted lines represent where lesser amounts of fish are sold.

Figure 3. The Maluku tuna value chain.

Left: Tuna being loined and prepared for sale alongside reef fish in Arumbai Market, Maluku. ©Dedi S. Adhuri
Right: Unloading a handline and troll line vessel dockside at Arumbai Market, Maluku. ©Dedi S. Adhuri

Men and women usually make an agreement on how to decide how much is the price. If the fish is below twenty kilos [and therefore not able to be sold to a trader in the export chain], the woman will decide. So the man just catches the fish and leaves it for the woman. And after that woman will slice the fish and make salted fish or cook or sell, all over around the place. In some cases, the woman will also provide for the boat in buying food, preparing food for husband to go for fishing. Even buying the oil, petroleum, and preparing everything for the business. The husband usually just gets ready to go fishing and come back. Here, in Ambon usually the wife also brings to the market to sell it or going around try to find market for their fish.

Gender specialist in a civil society organisation, Ambon

This way of approaching family fishing businesses in village areas means that women may develop proficiency with finances and small business management. In Ambon, some women traders who started in the domestic part of the value chain have been able to upscale and trade in the export chain, where returns can be much more lucrative. One woman we interviewed had 62 fishers in her operation. This is large scale for Maluku, where interviewees indicated that traders usually work with between 20 and 70 fishers.

Bitung

Bitung is one of Indonesia's major industrial tuna fishing and processing hubs. Purse seine and pole-and-line fishing vessels supply fish for canneries targeting export markets and also supply domestic markets for fresh, smoked and canned fish (see Fig. 4).

According to Bitung processing-company managers and worker interviewees, fishing crew are all men, while 70% or more of the workforce in cannery processing plants are women. Although some processing plant managers interviewed reported that they had women in managerial roles, and that policies for the advancement of women existed and were a priority for further action, a survey of the fisheries sector in Bitung overall found that as few as 2% of management roles were filled by women (USAID Oceans and Fisheries Partnership 2018).

As in Ambon, in Bitung women's roles in fishing families lead to them running small-scale processing and trading businesses. We interviewed one family where the wife ran a fish smoking business, which had started alongside her husband's fish trading business. Informal traders in Bitung called *tibo-tibo* are almost entirely made up of women. Some of these have moved on from small-scale trading to substantial integrated fishing and trading operations. Some *tibo-tibo* own small purse seine vessels, hire fishing crew and trade a range of small pelagics, coastal and skipjack tunas into local markets and into canneries. *Tibo-tibo* also hire networks of women retailers who distribute and sell both smoked and fresh fish in rural markets throughout North Sulawesi and Gorontalo, providing an important source of income for rural women. (see Tab. 2).

Table 2. Trading relations in the Bitung skipjack cannery and associated local market value chains.

Type of trader	Markets	Gender
Canneries	Focused on export markets but also domestic urban markets, including Bitung. Supply some raw material to other tuna processing hubs in Jakarta, Bali and Ambon.	Managers: 98% male, 2% female (USAID Oceans and Fisheries Partnership, 2018). Cannery workers: majority female; precise % unclear
Trading firms	Supply raw material to canneries and other processing plants	No data
Tibo-tibo	Supply raw material to canneries and trading firms. Also supply fresh and smoked tuna, and fresh small pelagics to markets in Bitung, Manado and rural North Sulwesi	Majority women, some men
Family smoked-fish businesses	Supply smoked fish to markets in Bitung, Manado and North Sulawesi	Mixed
Businesses aggregating offcuts, frames, heads	Supply local restaurants in Bitung, possibly Manado	Unclear, likely mixed
Retailers in Bitung markets	Bitung	Mixed
Retailers attached to *tibo-tibo*	Bitung, Manado and rural North Sulawesi	Women

One *tibo-tibo* who owns seven purse seine boats, and trades in small pelagics and tunas in the domestic chain as well as to canneries for the export chain, described the gender dynamics of the business as follows:

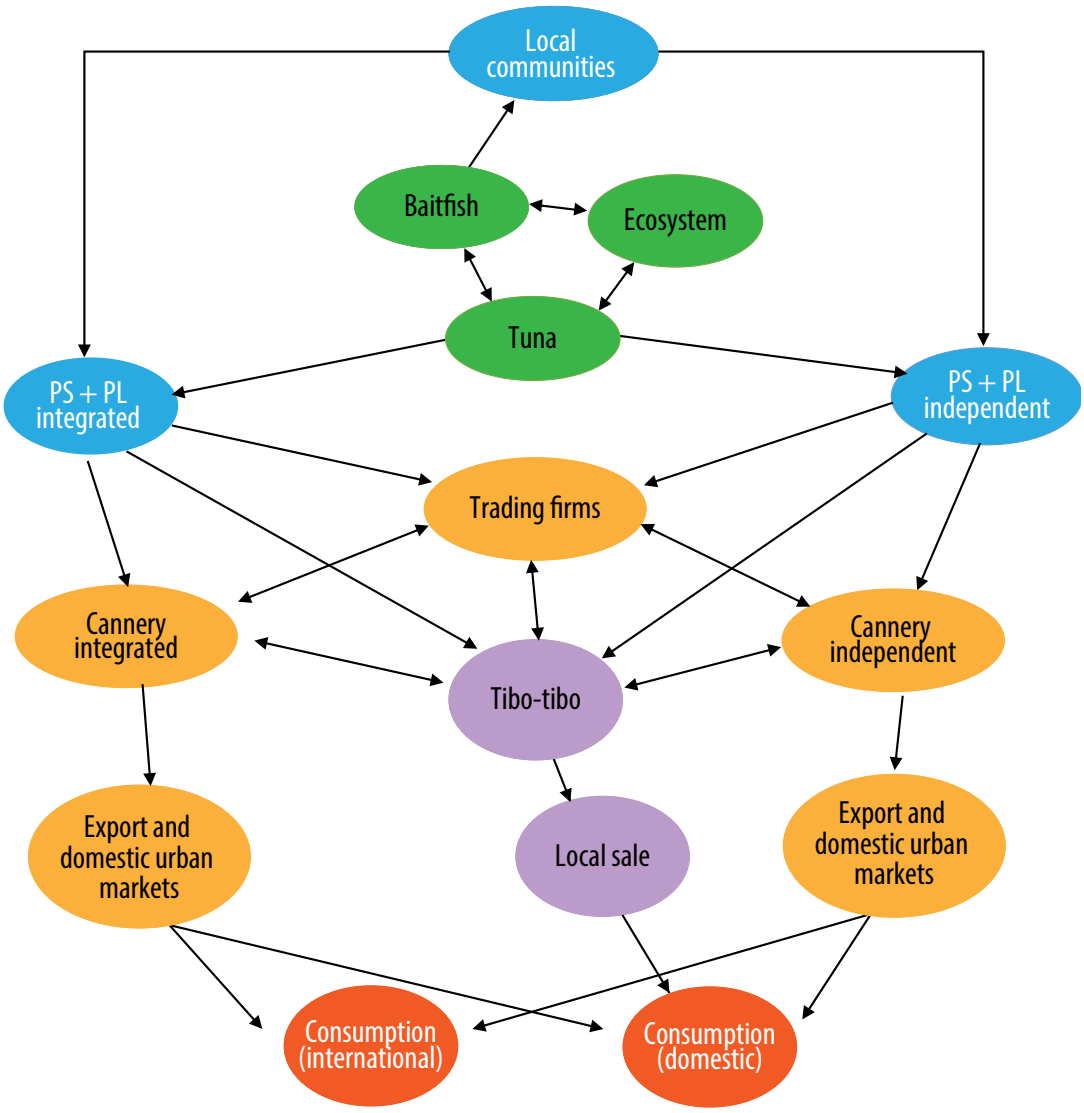
Women, they are not shy to sell. But men, it is the nature of ignorance, they don't want to get involved in money. They are shy about this, right. But women in the way they work for a living are not so shy ... So, we are good negotiators. So sometimes in the company, if there are a lot of fish or something ... we must still make money, right ... So if others have come first, if our ship is left behind and we don't go to the factory then where to go? So we must force [the sale] anyway ... You know that the company ... sometimes if their factory is not full yet, they will just say its full, then lower the price. Then like it or not, I must negotiate [to make a sale].

Woman *tibo-tibo* trader, Bitung

Solomon Islands

The gendered division of labour in tuna value chains in Solomon Islands is similar to that in Indonesia and reflects wider gender dynamics in Pacific tuna industries (Barclay et al. 2015; Sullivan and Ram-Bidesi 2008). Men tend to occupy roles associated with fishing, heavy physical labour, and positions with authority and high remuneration. Women participate more in roles associated with processing, informal cooking, retail for domestic markets and business administration, and are less well represented in positions of high remuneration and authority (Barclay et al. 2015).

One notable difference between Indonesian and Solomon Islands tuna industries is that the value chains are much shorter. That is, the fish pass through fewer businesses in the journey from ocean to plate. In Solomon Islands, both industrially caught fish and the fish from small-scale fishing vessels are often sold direct from the fishing company or fishing family to consumers, or involve only one more step, where a trader buys the fish from the fishing company and sells it to consumers (Brewer 2011; Pomeroy and Yang 2014). The complex trading networks in Indonesia, where the fish may go through three or four steps between the wharf and the



Note: PS is the purse seine fishing method; PL is the pole-and-line fishing method.

Figure 4. Bitung tuna value chain.

Skipjack tuna being smoked in Bitung. ©Nick McClean

Tibo-tibo with catch from mini purse seiners[5] being traded on Bitung dock. ©Nick McClean

consumer, and where many women have become successful business operators, thus do not exist in Solomon Islands. The tuna selling businesses Solomon Islander women run or participate in are all small, involving only family members or at most a couple of casual employees. We found no larger businesses such as we saw owned or run by women in Indonesia.

On the industrial fishing and processing side, the opportunities for women to work in offices and processing plants are similar between the two countries. There is one main tuna loining and canning plant in Solomon Islands, SolTuna, which is associated with the National Fisheries Development (NFD) fishing fleet. In recent years, SolTuna, working with the International Finance Corporation (IFC), has focused on improving opportunities and conditions for women. The results of these efforts show that where senior management actively works to improve gender equality, the benefits for women in formal industrial tuna value chains can increase.

Another feature of industrial tuna value chains in Solomon Islands is the presence of "salt fish" in domestic markets. This is fish that has been caught by industrial vessels and stored in brine onboard, but is of the wrong species or is damaged so will not be accepted by processing plants. It is sold, bartered or given away by fishing crew from industrial vessels transshipping in the main tuna ports of Honiara and Noro (Fig. 5). Salt fish buyers sell it as is in wet markets, or take it home and cook it, often as fried battered fish with sweet potato chips, and then sell it in markets or food bars. Women are prominent in salt fish small businesses.

Noro

Women make up two thirds of the SolTuna workforce, with most of these being the women cleaning and preparing fish loins for canning. As is usual in seafood processing globally, these processing line workers are almost all women. Other manual labour roles in the factory involving heavy lifting or machinery have been filled mainly by men. Women work in quality control technical roles and are prominent in low- to mid-level administrative roles. Until 2019, only men have been employed on the NFD fishing vessels, as is usual on industrial tuna fishing vessels worldwide, but in 2019 three women started as cadets in the fishing fleet (IFC 2019). Some women are involved in the onshore servicing and managing of fishing vessels. Most senior managers have been men, but there have also been women senior managers.

Solomon Islands is a small island country where the majority of livelihoods have been based on the food people grow or catch themselves. The cash economy has been small, most people have not relied on cash incomes as their main economic foundation, and formal employment has not been available for much of the population. Men disproportionately occupy positions of authority and higher-paid jobs (ADB 2015; Barclay et al. 2015; World Bank 2015). Since the cannery first started in Noro in the early 1990s, it has been an important opportunity for rural women with low levels of schooling to enter the formal economy. The importance of these opportunities is heightened by the fact that rural employment sits at only 13% on average, with rural women's employment rates much lower than this, and while

[5] Mini purse seiners also catch some skipjack and small pelagics as well as tunas.

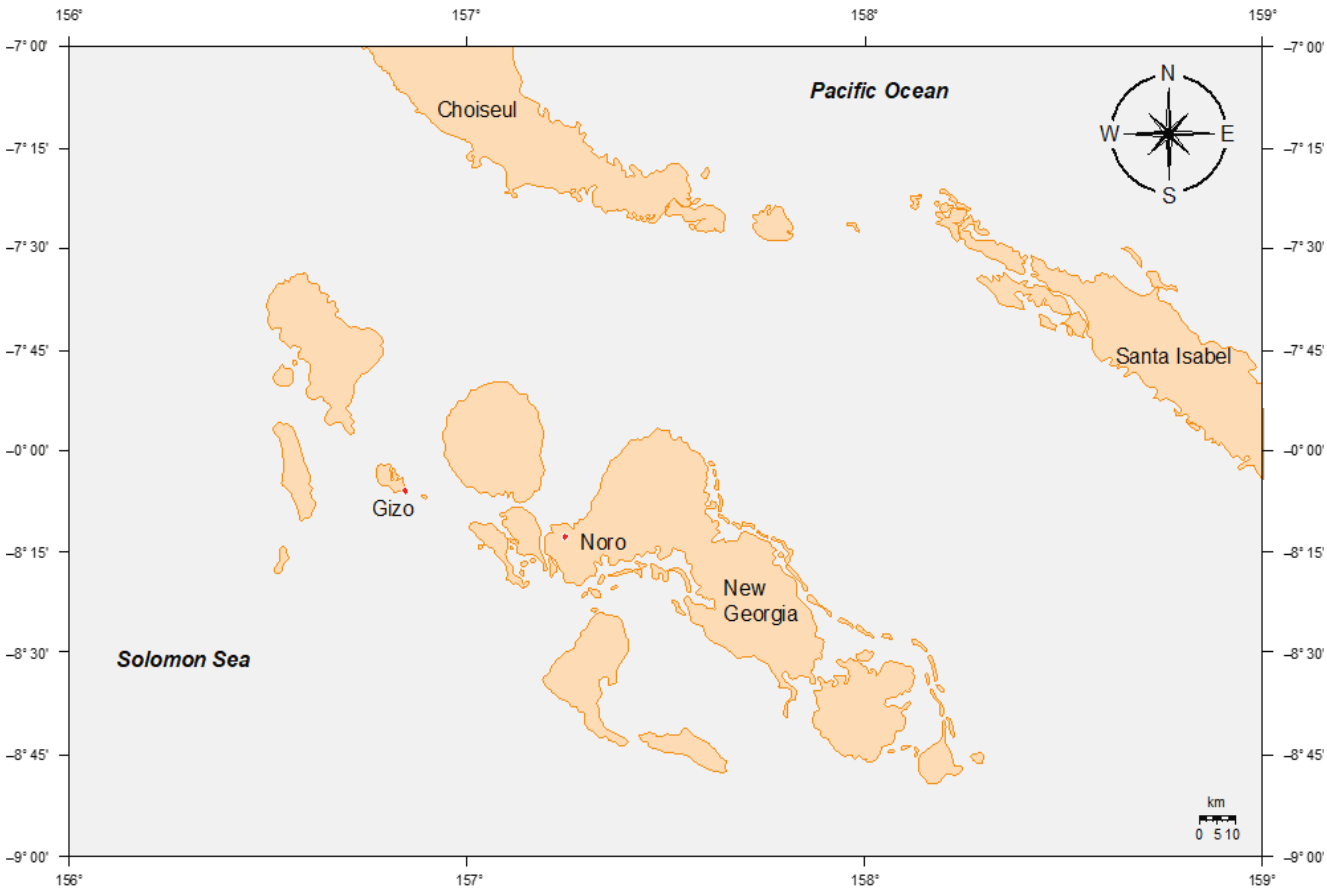


Figure 5. Solomon Islands study sites Noro and Gizo.

employment opportunities are rising across the economy, opportunities for women remain "particularly scarce" (World Bank 2018).

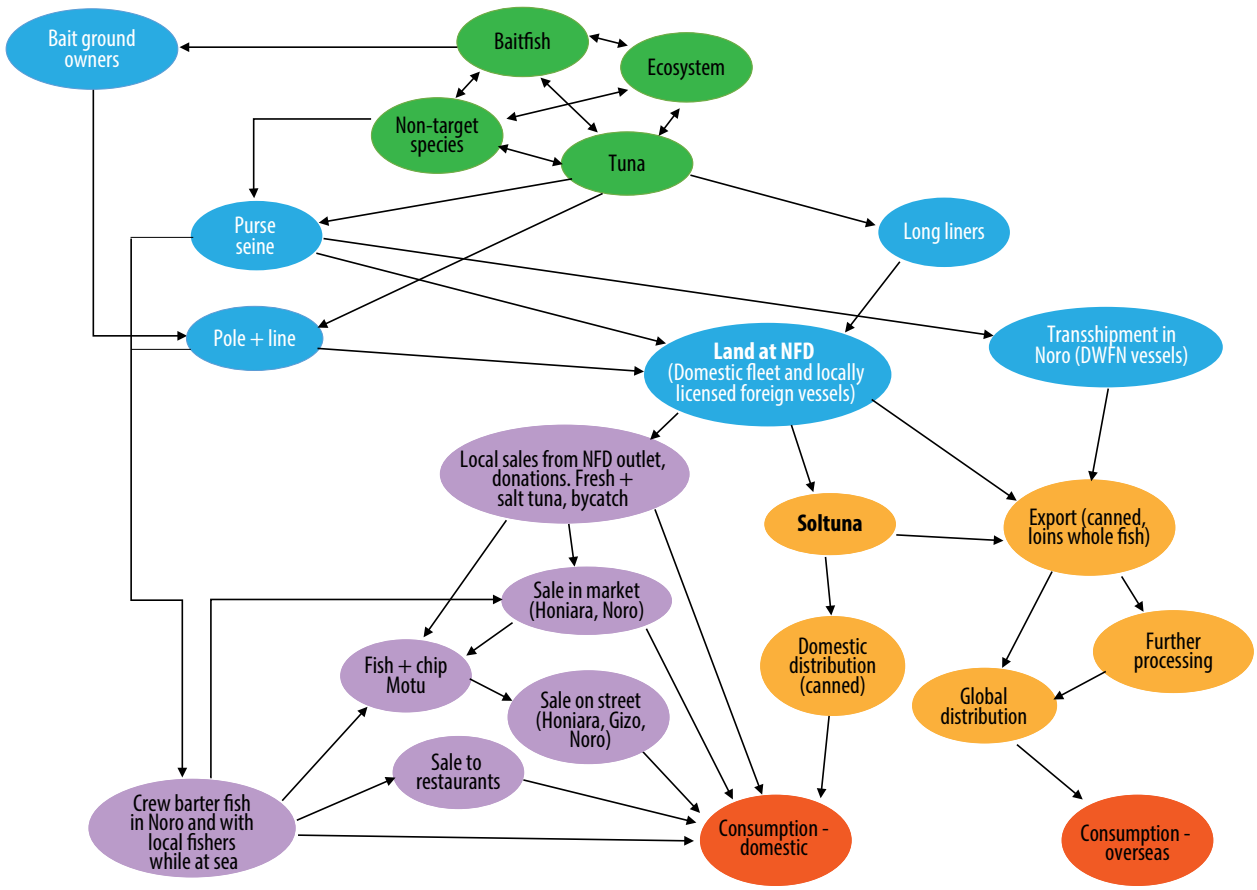
The opportunities for women in the formal industrial tuna value chain in Solomon Islands (see Fig. 6) have been improved through the IFC gender specialists working with SolTuna since 2015 in association with an IFC loan for upgrading the processing factory. They identified areas where women's working conditions affected productivity and implemented several changes.

One issue was absenteeism among women factory workers. The wages for tuna processing line workers are very low, and many women were struggling to make it through the fortnightly pay cycle, so were taking days off to sell things in the market to earn cash. Part of the problem was a lack of financial planning skills, as many workers are the first generation in their family living on cash incomes. Furthermore, many have not finished school and have minimal mathematics education. A financial literacy programme devised by IFC enabled women on low incomes to better manage their wages so as to make it through the full pay cycle and then be able to receive the bonuses the company offers to staff with good attendance records. This resulted in a 6% reduction in absenteeism and has also reportedly led to reduced levels of family conflict, with a reduction in disputes arising from financial pressures that families were experiencing (IFC 2016, 2018).

Another strategy was to encourage more women to work in non-traditional roles as electricians, mechanics and forklift drivers. Forklift accident rates were quite high, and the company found that having more women drivers resulted in more careful driving and lower rates of accidents (IFC 2016). A focus group with six women SolTuna workers revealed that having the opportunity to undertake these new roles built their confidence and self-esteem. They said their experience opened new social dynamics and possibilities for men and women that did not exist in village lifestyles, and provided a positive example to their children.

Other issues have remained difficult. The wages are lower than what women can earn by selling farm produce or cooked food in markets. The women who stay working long term in the factory are those who climb the ladder to higher paying jobs, or those who do not have access to land for growing food or for other reasons are limited in their economic choices. Affordable childcare is another problem for women factory workers, also contributing to high turnover and absenteeism (Barclay et al. 2015).

Fresh and salt fish from industrial vessels that end up in local food markets are another important part of the tuna industry value chain. NFD has formalised the trade from its vessels, selling fish through a shop in Noro. Other industrial fishing companies, however, have not formalised the trade. Buyers of salt fish travel in canoes or dinghies powered by outboard motor or paddle by hand out to fishing vessels and obtain bags of fish, bringing them back to shore to sell immediately, or to cook and then sell. Much of it is used for fish and chips, which is a very popular street food in Solomon Islands. Salt fish may also be used in curries or other popular meals in food bars. The majority of salt fish traders in Noro and Honiara are women, and having access to fish from industrial vessels enables women who are not from fishing families to buy affordable raw materials (Barclay et al. 2015; McClean et al. 2019).



Note: NFD = National Fisheries Development; DWFN = distant water fishing nation.

Figure 6. Noro tuna value chain.

Gizo

People catch tuna by handline and troll line to sell in urban markets in Solomon Islands, alongside reef fish, crabs and shellfish. In the town of Gizo in Western Province (see Fig. 5) the tuna fishers come from two villages outside Gizo called Titiana and Babanga, which are populated mainly by ethnic iKiribati people, many of whom were relocated from the former British territories of the Gilbert and Ellis Islands, now the independent countries of Kiribati and Tuvalu. In Solomon Islands, these communities and their language are called Gilbertese. Being from atolls, people from Kiribati tend to have very high fishing skills, including in the open ocean, compared to the more agriculture- and forestry-focused cultures of the people indigenous to the islands around Gizo. In addition, being non-Indigenous, Gilbertese people have very limited access to the majority of land suitable for farming, which is held under customary tenure. These factors combined mean that Gilbertese villages in Solomon Islands are often fishing villages, and focus on fishing for food and sale and using cash to buy most of their other food. Although most Gilbertese are Solomon Islands citizens and many have lived all of their lives in Solomon Islands, they experience marginalisation as a migrant group.

Around 200 tonnes of fresh tuna passes through Gizo market each year (Albert et al. 2014). As well as the fish sold in Gizo, some is eaten by fishing families, and some is used for gifting or sale within fishing villages (Fig. 7). Large yellowfin tuna is sold to restaurants in Gizo or tourist resorts around Gizo, where it is used for sashimi or tuna steaks. Fish that is not sold within a day or so may be smoked to preserve it for later consumption in the village, sold around Gizo, or occasionally smoked fish may be sent to fill orders from Honiara. In Gizo, fresh tuna is a popular option to take home to cook, and it is also sold in paper packets of fish and chips as street food. In Gizo, around 100 fish and chip vendors, almost exclusively women, buy tuna from the Titiana and Babanga fishers as a raw material for their trade. The fish and chip businesswomen are not Gilbertese but are primarily from the local indigenous groups.

All of the fishing in Gizo is very small scale, with usually two people working together on outboard motor–powered open fibreglass canoes. The gendered division of labour in the Gizo handline fishery is similar to that of the family business handline fisheries in Indonesia, as discussed previously. Most of the fishing is done by men. We heard of only one woman who fished for tuna in our interviews. Trading is done by both men and women. In some families, men regularly sell fish in Gizo market, whereas in other families wives take care of the trading activities once their husband returns with the day's catch. One of our interview families employed a man from outside the village to retail their catch in the market.

Previous studies of fisheries in the Pacific have highlighted that divisions of labour and the control of finances have been proposed as important aspects of women's and men's control over decisions affecting livelihood outcomes (Barclay et al. 2018; Kruijssen et al. 2013). However, when asked about the influence of gender relations related to the fishery, Gizo

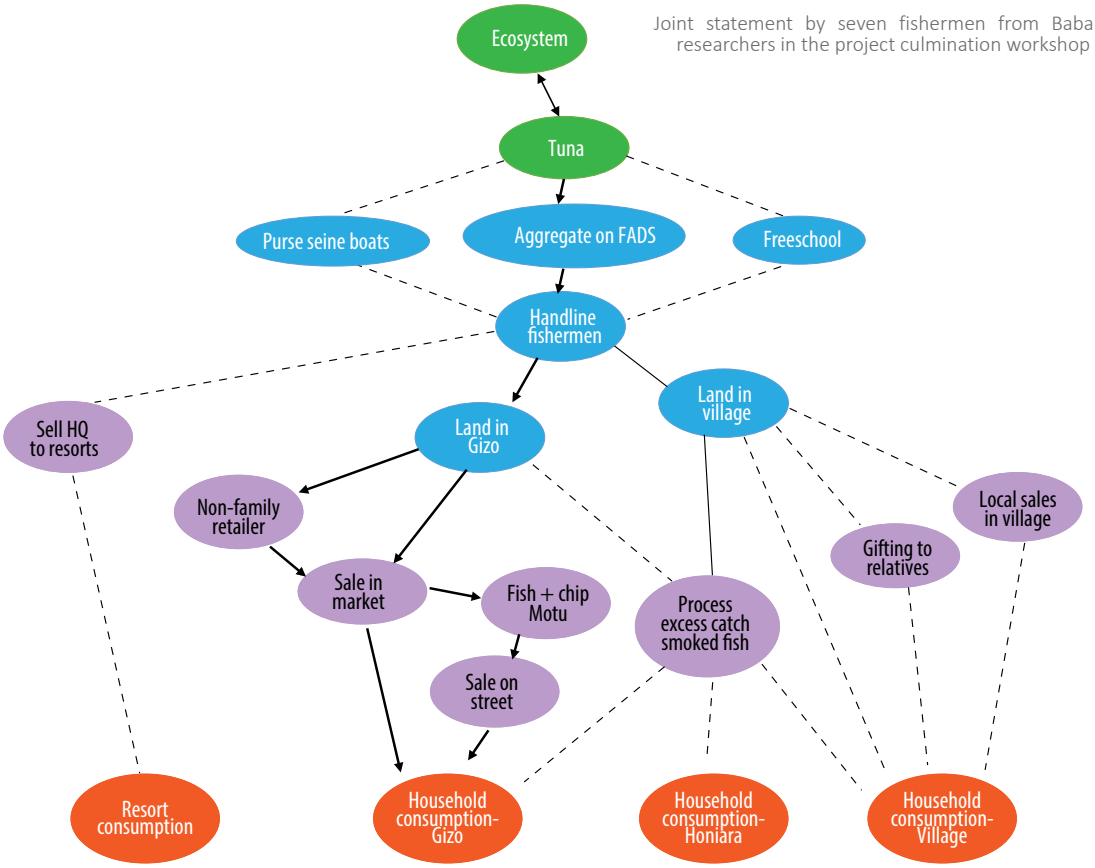
Fish and chip vendors in Noro market. ©Kate Barclay

A fish and chip vendor preparing dolphin fish and skipjack fillets, to be cooked and sold later, Gizo. ©Nick McClean

interviewees generally said it was not an important influence. Both male and female interviewees said the division of labour and the control of money earned is not predetermined around social norms regarding prescribed roles for women and men, but simply that the family worked together in whatever way was required to ensure that work was done. Gilbertese fishing family interviewees were more concerned about highlighting the disadvantage they experienced as an ethnic community:

We, Gilbertese, understand from when we are small, that we are the last people, for government, for companies to consider our needs. That's our concern, that we have been left out for so long. So now we have to push not just for help, but also for representation in our parliament. We are asking for a Gilbertese representative in parliament, so our voice can be heard. This is the only way we feel we will be listened to and we can have the support that we need to improve our lives. But whatever happens, we are not going to give up. If there is an option for us to improve our fishery, we will take it. Because you see, most tuna fishermen in the Solomon Islands, we are Gilbertese.

Joint statement by seven fishermen from Babanga, presented to researchers in the project culmination workshop



Note: Solid black arrows represent where most of the volume from the fishery goes; dotted lines represent where lesser amounts of fish are sold.

Figure 7. The Gizo tuna value chain.

Conclusion

Some parts of tuna value chains have strongly gendered divisions of labour, such as fishing (men) and fish processing lines (women), while other parts of the chain, such as trading and middle management roles in processing factories, are quite mixed. In general, women are clustered around the lower-paid and lower-authority jobs, although the predominantly male roles of fishing crew and heavy lifting are also low paid and can be physically dangerous. Industrial tuna processing businesses offer a range of different types of opportunities for women, from entry-level manual work, to technical/scientific, financial, administrative and management roles. Depending on the management of particular companies, women, as a relatively marginalised group in society, can be subject to labour abuse, or their needs and concerns may be addressed by management in improved working conditions. The informal parts of value chains around industrial fisheries and from small-scale fisheries also provide opportunities for women in trading, processing and retailing. In Indonesia, extensive trading networks and social norms that leave the land-based side of family fishing businesses to wives mean some women have developed thriving, large businesses in trading and financing. Trading networks are much less complex in Solomon Islands, and thus far the tuna trading businesses are all very small. In both countries, women have extensive family responsibilities, and the casual roles available in tuna trading and marketing, although insecure and lacking income protection, are flexible, which is important for mixing caring responsibilities with paid work.

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Beyond gender-blind livelihoods: Considerations for coastal livelihood initiatives

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Fish drawing ©Philippa Cohen

Sustainable and improved livelihoods are often entry points to enhance human well-being and the management of natural resources (Allison and Ellis 2001; Sulu et al. 2015). Yet research shows that many of these livelihood initiatives still proceed as "gender blind" or "gender reinforcing" (e.g. Kleiber et al. 2019a; Lawless et al. 2017; Stacey et al. 2019). A gender-blind initiative fails to account for the norms (i.e. roles, rights and responsibilities of women and men) and relations (i.e. the power dynamics among and between women and men) influencing how individuals experience opportunities and outcomes differently (Kleiber et al. 2019a). A gender-reinforcing (or gender-exploitative) initiative is one that exploits norms and relations to achieve or accelerate other outcomes, and in doing so, perpetuates or exacerbates existing inequalities (Kleiber et al. 2019a; Lawless et al. 2017). Such initiatives may focus on just men, or just women, without considering gender differences. Consequently, these (often well-intentioned) initiatives may serve to reinforce or amplify existing gender inequalities (Elmhirst and Resurrección 2009; Nightingale 2006). Our recent publication in the journal of *Maritime Studies* (Lawless et al. 2019) sought to bring foundational information to coastal livelihood initiatives in Solomon Islands to inform gender-sensitive approaches. In this article, we provide a summary of four key gender considerations that emerged from this research.

In order for initiatives to facilitate improved livelihood opportunities, we argue it is important to understand the agency of different individuals. A person with agency "is free to do and achieve in pursuit of whatever goals or values he or she regards as important" (Sen 1985, p. 203). Yet the conditions influencing a person's agency are gendered. Agency differs among and between women and men depending on the sets of choices available to them and their different capacities to exercise those choices (Boudet et al. 2013). In rural settings, opportunity structures, such as access to fisheries extension services, are more accessible to men, elevating them into positions where they are more able to access, control and benefit from natural resources (i.e. fish, land and produce) and productive assets (i.e. income, equipment and technology) than women (Meinzen-Dick et al. 2014). Studies in rural contexts around the world have shown that men are more able to make claims on natural resources and determine the direction of decisions related to resource use and assets within households and communities (Boudet et al. 2013; Meinzen-Dick et al. 2014). In the Pacific, research shows that women can be adversely affected by changes to marine resource rules and use if not sufficiently consulted (Vunisea 2008). Other differences in identity such as age, ethnicity, religion and disability status (referred to as "intersectionality") affect the opportunities people have and can exacerbate the effects of gender (World Bank 2013).

Using a series of focus group discussions (FGD) adapted from an established methodology called GENNOVATE,[5] we sought to capture the gender-differentiated experiences of women, men and youth. The FGDs included both qualitative and quantitative techniques. FGDs were held with a total of 232 women, men and youth across three coastal communities in Solomon Islands. Discussions were conducted separately with adult women (n = 92), adult men (n = 79), female youth (n = 16) and male youth (n = 45). The communities we selected were chosen because they (a) had a high dependence on coastal and/or terrestrial resources, (b) experienced resource depletion associated with fisheries and/or agriculture, and (c) had expressed an interest in receiving support to improve livelihood opportunities and the improved management of their natural resources.

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[4] Promundo, Washington, United States.
[5] A comparative global research initiative examining gender norms and agency in natural resource management (https://gennovate.org/).

Women with clams. ©Meshach Sulu

Woman and garden. ©Wade Fairley

Selling cooked reef fish at the market. ©Filip Milovac

Results: Gender implications for agency in coastal communities

We found men had access to a greater set of livelihood choices than women. Men's livelihood activities included building and selling hand-carved dugout canoes, gardening, cutting and selling firewood, building houses for informal salaries, formal paid employment, and fishing for both food and income. In contrast, women were engaged in domestic duties (i.e. child and family care, housework, food preparation) and had limited access to livelihood opportunities: "some of us women only have our garden [small agricultural plots] for our livelihoods". These results are not unusual; in fact, external organisations often recognise women's more limited livelihood opportunities and seek to expand their livelihood portfolios. Yet we also find livelihood diversification (whether community initiated or as a deliberate strategy facilitated by external agencies) may simultaneously increase women's responsibilities and time pressures. One woman reported, "Life now is hard ... [in the past] men had their own work, and women had their own work. Nowadays women's work is heavy ... Before, carrying water and hoeing the garden only the men did. But now, the women are doing this work". Female respondents also reported that being involved in an externally initiated savings club meant that they had less time to maintain their domestic roles. These results are consistent with other findings from Solomon Islands that suggest women's labour demands tend to escalate as livelihood activities diversify (Cohen et al. 2016; Pollard, 2000).

Rigid norms related to divisions in labour meant women were expected to be primarily responsible for domestic and food production roles, thus limiting their physical mobility to leave the household or community. Some female and male respondents suggested women should not travel far (i.e. to attend markets) because in her absence a husband would have to undertake the work of his wife (i.e. domestic labour). An adult male respondent reported that "there is no reason for a woman to go out marketing, she is supposed to be staying at home with the kids". Yet we found that such divisions in male and female labour were more fluid in instances where community members perceived there to be benefits for the household. For example, in one of the communities, a women's savings club had facilitated increased income and food for households. Evidence of these benefits meant men became more prepared to undertake women's work and were more supportive of women attending markets. Referring to this initiative, one adult man reported, "today women can instruct their husbands to clean the house when they are away. This is not something that was practised before".

We found that women were less likely than men to trial new livelihoods because they felt more vulnerable to risks of failure. Across the three communities, 91% of women stated they were primarily responsible for providing food from gardening and consequently held greater concerns about limited or delayed rewards in trialling new livelihood practices (particularly those introduced by external organisations). This trend of risk aversion among women is seen in other rural settings, due to women's greater domestic responsibilities, leaving women with less time and physical space to innovate and experiment (Fothergill 1996). These findings emphasise the need for externally initiated livelihood initiatives to address perceptions of risks, particularly among women, rather than the more common approaches that only seek to fill technical or knowledge gaps. Initiatives that can assist to carry the cost of innovation, with specific attention to the constraints upon women, are more likely to bring improved outcomes for individuals, as they are more able to access and participate in initiatives (Cohen et al. 2016).

Women's and men's perceptions of their agency to make decisions was dependent on what the decision related to. Men primarily discussed community-level decisions (i.e. in relation to management of coastal resources, the Church and schools), whereas most women discussed decision-making at the household level (i.e. in relation to crop farming, food consumption and children). We found men were more able than women to make decisions within communal domains (i.e. decisions related to coastal and terrestrial resources), as demonstrated by their greater involvement in local community governance structures than women. However, explicit efforts of external organisations to work with women increased their self-efficacy and confidence to contribute to communal decisions. One woman explained, "when organizations come into our community we see the light. Like when you [external organization] come, you educate us and open our minds. That's why we know we have the right to make decisions and we feel free to speak out. Before our mouths were zipped. We had good ideas, but we never voiced them. If we voiced our ideas, no one would follow them". These findings (along with Pollard 2000) question the dominant narrative in Solomon Islands that women's participation in decision-making is subordinate to men's. Women viewed themselves as central within their households, which can translate into their perceived ability to act on behalf of what they value and have reason to value (consistent with the definition of agency we use). Consequently, it is important that livelihood initiatives acknowledge that measures of agency can vary depending on the particular settings in which decisions are made (i.e. within households or communities), and that individuals may value particular issues or decisions differently (i.e. depending on the different resources central to individual livelihoods).

Conclusion: Gender considerations for coastal livelihood initiatives

Whether livelihood initiatives intentionally acknowledge and engage with gender or not, they will affect women and men in ways that may reinforce or, alternatively, shift existing gender expectations and relationships, thus having implications for the agency of different individuals (Elmhirst and Resurrección 2009; Nightingale 2006). Consequently, considering gender is much more than a collection of sex-disaggregated data on livelihood roles. Gender considerations require attention to gender norms and relations shaping the different opportunities and experiences of women, men and youth. Our study offers four key considerations for livelihood initiatives to ensure they enhance, rather than reinforce, existing disparities between and among women and men. First, initiatives need to consider whether livelihood diversification may unintentionally intensify women's workloads and time burdens. This may require understanding existing roles and aspirations and being aware of both the intended and unintended impacts that may affect women and men (i.e. through good monitoring

and evaluating procedures, and adjustment of practices as needed). Second, livelihood initiatives have the potential to enable women and men to depart from entrenched gender roles in instances where people can see compelling benefits (often by examples of success) to the household (e.g. Locke et al. 2017). Third, initiatives that can help carry the cost of innovation, and thereby lower the risk inherent in experimentation particularly for women, may enhance opportunities to access, participate in, and improve livelihood outcomes through innovation. Finally, livelihood initiatives need to acknowledge that measures of agency are dependent on different decision-making contexts, which shape what an individual values and has reason to value. This is important in terms of natural resource use, as women, men and youth may participate and use resources differently, and may value and respond to changes to these resources in different ways. Drawing on gender-inclusive and reflexive facilitation practices (e.g. Kleiber et al. 2019b) may help to understand these different perceptions and values, mitigate any potential consequences, and contribute to the design and delivery of gender-sensitive livelihood initiatives.

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Hidden figures: The role of Indo-Fijian women in coastal fisheries

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This article is part of a Master of Science research topic[2] *conducted between July and August 2018. The original thesis titled "Indo-Fijian fishing communities: Relationships with Taukei in coastal fisheries" investigated the socio-political and socio-economic relationships between iTaukei customary fishing rights owners and fish resource users, specifically Indo-Fijian fishers within Ba Province in Fiji. While the topic did not directly address women fishers as a user group specifically, the research highlighted the crucial role and contribution that Indo-Fijian women played in the coastal fisheries sector. This article attempts to highlight the "hidden" voices of three such women who were interviewed during the study.*

Introduction

Globally, women play a diversity of roles in coastal fisheries, supporting essential services such as food security and livelihoods. These services are not limited to supporting themselves and family members, but are extended to supporting and maintaining local economies and relationships within women's local communities. Women also play an active role in post-harvest activities, including marketing and distributing marine products from source to market. However, their contributions to the fisheries sector are often overlooked, considered insignificant and not factored into national or regional planning and support. Consequently, women in coastal fisheries face multiple challenges in accessing support and resources needed to deliver these critical services.

In the Pacific, there is an increasing focus on women's roles in fisheries and particularly coastal fisheries (Harper et al. 2013, 2017; Thomas et al. 2017; Vunisea 1997). However, data and information limitations on the level and types of support needed for women in coastal fisheries compromise opportunities for women in this sector. As a result of limited gender- and activity-specific data that are collected at local and national levels, the actual number and participation levels of women in the sector are poorly reported and reflected. The challenge in collecting context-specific data is even more pronounced for women of different ethnicities and social groupings and the multiple roles that they perform within the sector. In Fiji's case, for example, we note that women of different ethnic and social groups occupy and perform different and sometimes multiple roles within the coastal fisheries sector. For instance, indigenous *iTaukei* women are predominantly involved in specific subsistence or economic activities such as mud crabbing, whereas Fijian women of Indian descent (Indo-Fijian women) are usually traders or the middleperson involved in buying off the mud crabs and reselling.

Findings from this study support the argument that other groups, or communities, are rarely reflected in national data provisions and that there is a need for identifying and documenting the participation of all ethnic and social groups involved within the coastal fisheries supply chain in Fiji. The study finds that not only do Indo-Fijian women play a role in the patron–client relationship (as middleperson) but they also play a role in supporting male/female fishers' livelihoods and their families involved in coastal fisheries activities.

Indo-Fijian woman vendor describing mud-crab sales and distribution at the Labasa fish market. ©Yashika Nand, WCS

Methods

A qualitative research approach enabled a range of views and perspectives to be collected on the nature of relationships between Indo-Fijian and *iTaukei* community members and how they use and access coastal fisheries. The research was conducted in the Ba Province of Fiji within three sites. Indo-Fijian women were not targeted participants within this study, but rather their involvement by chance within the research highlights their key role in supporting livelihoods as fisherwomen/entrepreneurs/middlepersons.

Using the snowball and convenience sampling technique, participants were interviewed at either their home or business setting. Most Indo-Fijians are not socially structured as in within *iTaukei* villages, but live in either townships or informal rural settlements outside the towns. Most fishers

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operate their businesses from their homes, which includes the involvement and interest of other family members including women. Consent to participate in semi-structured interviews was sought from all individuals, which allowed the conversation to flow in a structured yet open manner between the interviewer and participants. Other personal observations and field notes contributed to the overall understanding and interpretation of the information and data collected. Voice interviews were transcribed and are presented here as narratives of the women's experiences and voices from within the coastal fisheries sector.

Personal narratives of women in this sector

Priya's story

Priya is the daughter-in-law in a family-run business in the town of Ba. She married into the family 13 years ago and now manages the general grocery store, which also sells locally caught fresh and frozen seafood. The family also own a fishing boat and a fishing business, which she manages. I asked Priya to explain how their fish business operated, hoping to gain further insights into the fish retail side of fisheries in the area. Priya fell into the owner/operator and middleman (or woman in this case) category of the business. In this situation, Priya provided the appropriate resources, such as the boat, fishing gear, bait, food, and other necessary supplies to fish, while the men (mostly *iTaukei*, some Indo-Fijians) were tasked with fishing and bringing the catch to her. Priya explained that the business operated through an informal labour scheme underpinned by trust rather than a formal job agreement or contracts. I asked her to elaborate on how this trust and mutual agreement scheme worked and was maintained between parties:

I have to think about the families of my fishing crew as well, they have small children. We have two boats, which are crew-operated through the week, beginning on Monday until they can return with enough catch either on Friday or Saturday. We usually allocate five shares; I take two of those. One for the boat expenses and one for food and other fishing supplies. The remaining three is then divided between the crew members. I normally sell my share of fish from our family-owned retail shop. Some crew members take groceries on credit from the shop and have an account. Usually, the wife is able to take food items on credit for the week, while the husband is away fishing. The husband then repays the weeks debt after getting his share from the fishing trip. In this way, I also benefit, and the crew member and his family also benefit.

Priya, interview, 4 July 2018

Most fishers got paid upon return from their fishing trips; some took an advance on the money they would have earned from their contractors. In some cases, the amount taken was more than what they earned from fishing, often due to the variability in fish catch numbers and price of fish. Inevitably, these fishers got caught in a debt cycle, as they constantly tried to balance everyday living costs (bills, travel, medical expenses) with their income. Most times there was not enough cash to last the week, and some fishers set up informal credit arrangements with local business operators that allowed a fisher's family to buy necessary food items on credit during the week. This arrangement involves trust and accountability in repaying debts between the fishers and business owners.

Priya explained that the system they had allowed her business to continue while the fisherman was also able to support his family. Although Priya benefited from this informal system, she also saw it as being open to abuse or disloyalty when workers went elsewhere. One requirement of obtaining a fisheries licence is that the boat is manned by a licensed boat captain. In order to maintain a regularly operating fishing business, Priya paid to upskill and train three crew members to obtain boat masters training with the maritime school in Fiji. In addition, she also supported her crew members in paying for insurance that covers search and rescue in case of a tragedy at sea. However, when asked if the crew were considered employees, she stated that it was difficult to employ fishers on a permanent basis as fishing activity is seasonal and weather dependent and had becoming increasingly unpredictable. Thus, fishers could be considered to be working for her but without any formal agreements.

At times, due to the uncertain work conditions and disruptive weather conditions that hindered fishing activities, fishing crew left her fishing business to look for permanent jobs elsewhere or fish for someone else. For Priya and her business, this was not favourable, as she had to constantly spend money paying for training. However, she still would not employ the fishers as staff to eliminate this concern. Such informal work relations highlight the vulnerability of people involved in the fisheries sector in the area. In the absence of formal employment contracts and inaccessibility to other opportunities provided by waged labour, the fishing business is considered highly risky and volatile.

Seema's story

Seema is a 38-year-old woman who shared similar sentiments to Priya in terms of supporting fishermen and their families, particularly the wives and children. She explained: "There isn't much money in the fishing business. We hardly ever make profit, especially these days when the weather conditions are so unpredictable; we are mostly just 'rolling' in this business. Well, however it is, the business is able to support myself, fishers and their families".

Seema says that the money made from fishing is on a rolling basis, explaining that the income received often equalled the expenses incurred. Seema supports her husband by running a fish shop from their family home. Normally, she just bought fish off the fisherman who went fishing on her husband's

boat. She added, "not many people are able to make any profit from this business, yet we are still in this as I see it as a form of support for me and the fishers and their families" (Seema, interview, 4 July 2018).

Naz's story

Naz is a fisherwoman who goes fishing with her husband. I had started talking to her husband, who is also a daytime net fisherman, when he mentioned that Naz was his crew member. Naz was quite happy to share her fishing tales as she hardly had anyone enquire about that before. I was of course very interested and told her it was unusual to hear of Indo-Fijian women engaged in commercial fishing. While she laughed at this remark, Naz was equally serious when she replied that this is what she had to do to support her husband and family.

Apart from saving costs on paying for an extra deckhand, Naz mentioned that fishing kept her active and fit. She added that just as women helped their men work the farm, plant vegetables, harvest, and then sell, in the same way she saw herself going out to sea to fish, clean the fish, and prepare to sell to middlemen. Her usual routine would be to accompany her husband and a crew member for day fishing, using either a handline or net. They would spend five to seven hours out at sea, sometimes longer depending on the amount of catch they had. The one thing she mentioned, which was similar to what was said by the many others I spoke to, was that if they went out they must make sure to come back with catch to sell. The costs they incur prior to a fishing trip must be recovered, and when possible, a profit helps them with the other needs of their household.

These are just three of the women who are inextricably linked to coastal fishing practices in the area. Their roles across the fisheries sector were important in supporting businesses and families.

Conclusion

This article presents just three of the many hundreds of Indo-Fijian women who are part of the coastal fisheries sector in Fiji. It highlights the multiple roles that they perform to support livelihoods and local economies within their communities. These unique experiences of women in such a male-dominated industry would be a fruitful area for further research. Further studies to understand local and context-specific interactions between men and women and women of different ethnicities are essential to understanding women's roles in Fiji's contemporary coastal fisheries sector. As such, these hidden narratives and experiences of Indo-Fijian women would allow for better planning and participation in resource-planning activities within existing community-based natural resource management initiatives in the country.

Indo-Fijian woman fresh fish vendor explaining the fish market supply chain at a local fish shop in Labasa. ©Yashika Nand, WCS

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Valuing the critical roles and contributions of women fishers to food security and livelihoods in Fiji

Alyssa S. Thomas, Sangeeta Mangubhai[1], Margaret Fox, Watisoni Lalavanua, Semisi Meo, Waisea Naisilisili, Alfred Ralifo, Joeli Veitayaki and Salote Waqairatu

Introduction

Men and women in fishing communities are often viewed as conforming to strict traditional roles (FAO 2017). A woman's job can entail staying in or close to the village and carrying out household tasks, while men work beyond the village area with the responsibility of providing food and income for their households (Harper et al. 2013). This limited framing of gender roles has resulted in an underestimation of fisheries catches in inshore areas, in addition to an undervaluing of the important contributions women fishers make to not only their village but also the economy overall (Kleiber et al. 2014).

Worldwide, men and women also have different and often complementary roles in regard to their fishing. For example, women are more likely to fish freshwater habitats, soft bottom, and mangrove and mudflat habitats close to the village, and largely for subsistence (Kronen and Vunisea 2009; Lambeth et al. 2014). In comparison, coral reefs and offshore environments are more often fished by men (Lentisco and Lee 2015; Ram-Bidesi 2015). In terms of species targeted, women generally focus on harvesting non-finfish (e.g. invertebrates and seaweeds), whereas the men concentrate on catching finfish and select species with a high dollar value (Vunisea 2014). In Fiji, most women fishers are generalists, collecting and selling a wide range of species. The more valuable species are taken to markets to sell (if possible), or sold to middlemen or other buyers in the village. Historically, women's involvement in fisheries was mainly at the household subsistence level, although an increasing number are involved in commercial fisheries (Fay-Sauni et al. 2008; Vunisea 1997). However, women wanting to fish for income face the challenge of needing to find the time to complete their traditionally assigned chores as well as selling their seafood catch (Vunisea 2014).

Despite research efforts to date, there still lacks an accurate perception of women in the fisheries sector (Lambeth et al. 2014); their unique needs and/or perspectives are not routinely incorporated into fisheries management and policy decisions (FAO 2017). An improved understanding of gender roles can therefore allow interventions to be tailored to specific groups of fishers and thus be more effective (Vunisea 2014). In response to these information needs, a national study of fisheries-dependent communities was conducted to better understand and highlight the role of women fishers in the Fijian inshore fisheries sector. Fisheries-dependent communities were surveyed to gain a "better understanding and quantification of the role of indigenous (*iTaukei*) women fishers in fisheries in Fiji". This article highlights some of the key findings from a report (Thomas et al. 2020) that will be launched on International Women's Day in 2020.

Methods

Socio-economic, fisheries and gender surveys previously used by other organisations were used to inform this study's questionnaire. The study was designed to collect information on women's fishing strategies and species caught and sold in the range of habitats fished:

- freshwater
- mangroves and mudflats
- soft bottom
- coral reefs
- open ocean.

Between November 2017 and April 2018, 113 villages across 46 districts and 11 provinces in Fiji were surveyed (Fig. 1). A total of 1239 household surveys and 97 focus group discussions were completed. Within each village, an attempt was made to survey as many women fishers as possible; all women fishers who were available and willing to participate within a 5–6-hour time window were interviewed. Both one-on-one and focus group surveys were conducted, and done in the *iTaukei* language by trained local interviewers (male and female). The trained interviewers included staff and volunteers from Wildlife Conservation Society, Conservation International, the Fiji Locally Managed Marine Area Network, Ministry of Fisheries, University of the South Pacific, Vatuvara Foundation, Women in Fisheries Network–Fiji and the World Wide Fund for Nature.

To provide an estimate of seafood catches and sales, women were asked to name the top three species of fish and invertebrates (i.e. sea cucumbers, crustaceans and shellfish) they usually caught and/or sold, with the understanding that there were often variations, including seasonal fishing patterns. To obtain more details on seafood sales, women were subsequently asked for the top three species they sold (fish, invertebrates, seaweeds). For these three species, the women were then asked to provide information on their buyers, the average sale price and the quantity they normally sold.

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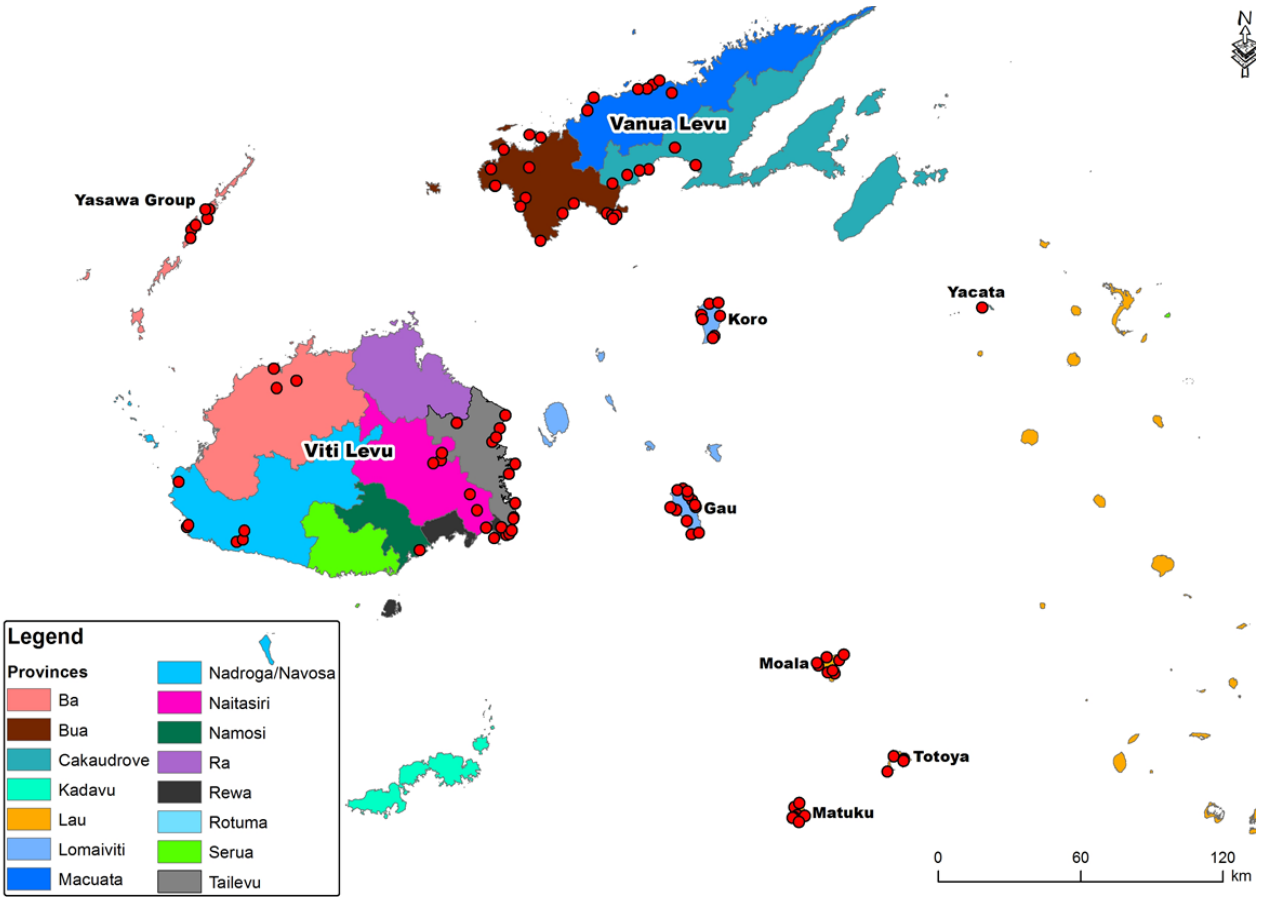

Figure 1. Map of study sites. (Source: Wildlife Conservation Society)

Data analysis

For each habitat, the women fishers provided the local names of their seafood catch, which local staff later matched to a scientific name. However, for multiple reasons, the number of local names was not the same as the number of scientific names. In some instances, the local name was not known to anyone and the scientific name was left blank. For many species, there were also multiple local names as the name differed between the provinces (and even villages, in some cases). Several species of fish and invertebrates also had different local names for the different life stages of that species (e.g. juvenile mud crabs). Finally, some local names also referred to multiple species (e.g. snappers), and were therefore identified at the genus or family level. In calculating the minimum number of species, each type of seafood identified at the species level was counted as one. A local name that was identified as a single genus, family or two different genera (e.g. Scarus/Chlorurus spp.) was also counted as one. The true number of species caught is therefore higher; however, the minimum numbers presented still provide a sense of the diversity of the species caught by women fishers.

Fisher selling crabs at the market. ©Alyssa Thomas, WCS

Results and discussion

Fishing motivations

The women were asked about their main reason for fishing. More than three quarters (83%) selected "obtaining food for their families" as the main reason they went fishing. Income generation was the reason referred to by 14% of respondents, while very few mentioned social (1%), cultural (1%) or church (0.5%) events as the main reason.

Across almost all provinces, fresh fish provided the main source of protein for the women fishers' households. The women were also more likely to use their catch for subsistence than the men in their households. Compared with invertebrates, a higher percentage of fresh fish was caught by the household, purchased, or exchanged and/or given, and a higher percentage of invertebrates was caught by the women themselves (Fig. 2). Although more women are now catching fish in addition to gleaning, the male fishers in

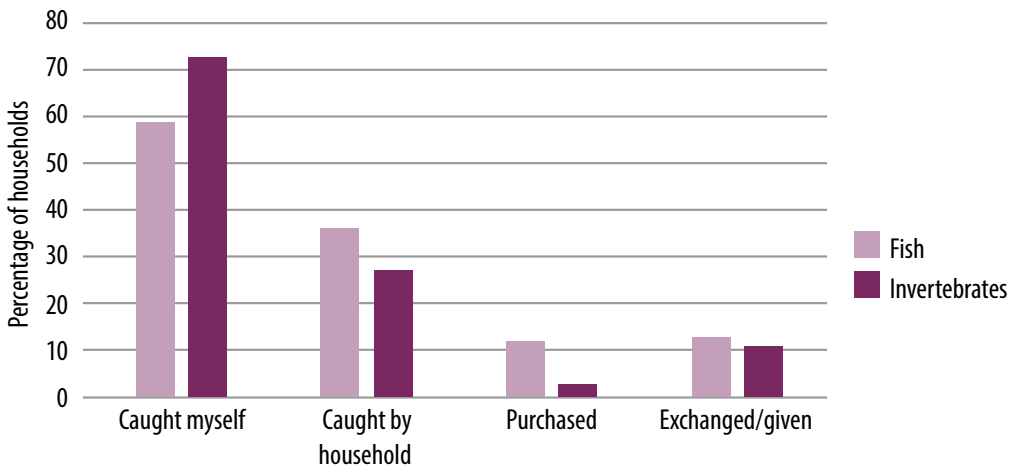

Figure 2. Sources of fresh seafood consumed by households.

the household are still almost exclusively catching fish, which explains the higher proportion of fish versus invertebrates caught by other household members. The results also showed that seafood consumption in the surveyed villages is still largely subsistence based with the seafood caught or exchanged, especially invertebrates. These results are similar to earlier studies that suggested women fishers in Fiji play a critical role in household food security and nutrition, as well contributing to household income through the sale of fish, invertebrates and seaweed species (Kronen et al. 2007; Ram-Bidesi 2015; Vunisea 2014).

The highest percentage of women selling at least some of their catch were those fishers accessing the mangroves and mudflat habitats, especially for mud crabs, a women-dominated fishery in Fiji. Conversely, the coral reef and open-ocean habitats had the lowest percentages of women selling seafood, likely reflecting the high numbers of men that fish in these habitats for income. Fish and invertebrates harvested by women were sold to a wide range of buyers, the most common being municipal markets, middlemen/middlewomen and people from within the village. Women fishers on Viti Levu and Vanua Levu had more options for selling their seafood than those from the outer islands (i.e. Lomaiviti and Lau provinces). The highest prices received for seafood sales were from municipal markets and middlemen. Conversely, the lowest prices were from buyers within their village or from nearby villages.

Although the study documented that only 18% of the women sold at municipal markets, about a quarter of women currently fishing only for subsistence expressed a desire to sell some of their catch for income at a municipal market. However, across the provinces, there were a range of barriers to selling at a municipal market. For Lau and Lomaiviti provinces, there was no market or it was too far away. For other provinces (e.g. Nadroga/Navosa and Macuata), transportation to the market was too difficult and/or expensive. Finally, in provinces such as Rewa and Tailevu, with relatively easy access to municipal markets, the barrier was high levels of competition resulting in lower prices.

Fishing strategies

More than three quarters (78%) of the women fishers interviewed gleaned for invertebrates and seaweeds, which generally does not require any specialised fishing gear. However, gleaning does require specialised knowledge of species and harvesting skills that are often undervalued or underappreciated. For example, many women fishers are skilled at catching mud crabs by hand (Mangubhai et al. 2017), which they learned from their mother, grandmother or aunt from a young age. Aside from gleaning, the women fishers mainly owned and used inexpensive, low-technology gear, such as handlines and hand nets. For women fishers, handlines were the most commonly used fishing gear, across all habitats (86%; Fig. 3), followed by hand nets (49%). Both these types of fishing gear are inexpensive and simple in terms of level of technology, confirming previous research findings (e.g. Fay-Sauni et al. 2008; Harper et al. 2017). Although the handline was the most commonly used gear in all provinces, there was variation between provinces; for example, Ba and Rewa provinces had considerably lower numbers of women using handlines (60% and 65%, respectively). The hand spear was more commonly used in Bua and Cakaudrove provinces, reflecting the targeting of species such as octopus using this gear type.

Gear ownership also sheds light on the range of fisheries the women are engaged in and some of the barriers they face. The two most common gear types, handlines and hand nets, were mostly owned by women fishers themselves (92% and 82%, respectively). In contrast, the majority (57%) of spear guns were owned by men in the household. More complex and/or more expensive gear, such as mesh gill nets, were also more likely to be owned by someone else, suggesting there were some barriers to women accessing more modern or expensive gear types. The women must rely on the fishing gear being available to use when they go fishing and must share the gear with the owners (sometimes including their catch).

Mud crab fishers from Bua Province. ©Alyssa Thomas

Habitats and fishing strategies

Soft-bottom habitats, which include sandflats and seagrass, were fished by most women (64%) followed closely by coral reefs (62%; Fig. 4). The widespread use of the soft-bottom habitat is aligned with prior research (e.g. Fay-Sauni et al. 2008) and matches well with the "traditional" view that women fishers are largely gleaners. Gleaning of soft-bottom habitats at low tide is often for seaweeds (i.e. marine algae) and other invertebrates (e.g. sea cucumbers, shellfish, sea hares). Gleaning requires no specialised fishing gear (as previously discussed), and the soft-bottom habitat is also available across most of Fiji, as are coral reefs. Conversely, freshwater and mangrove habitats are not as widespread (Mangubhai et al. 2019), and the open ocean is accessible only by boat.

However, the high numbers of women fishing the coral reef habitat contradicts the traditional gender roles in fisheries, where the coral reef habitat was mostly accessed by men. As

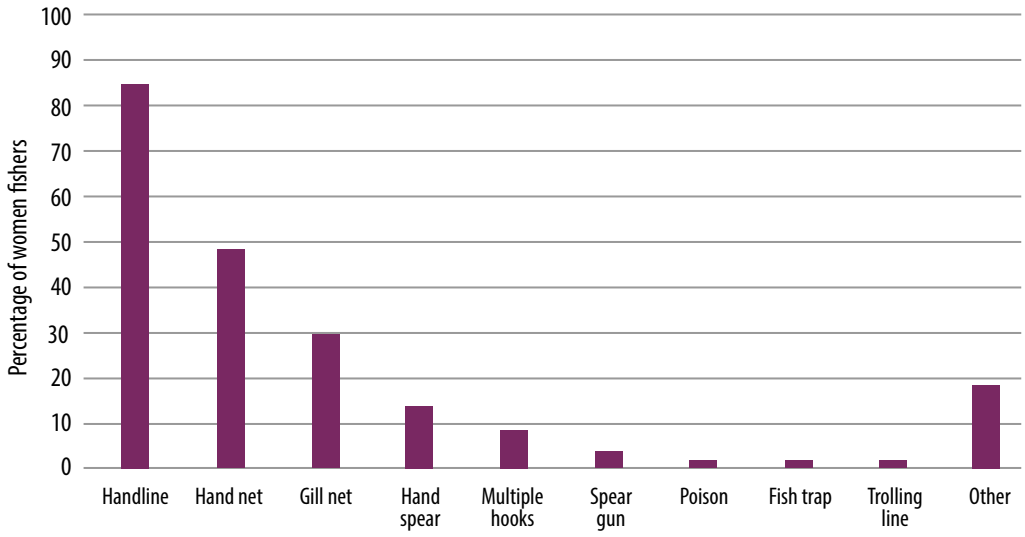

Figure 3. Fishing gear preferences of women fishers across 11 provinces in Fiji.

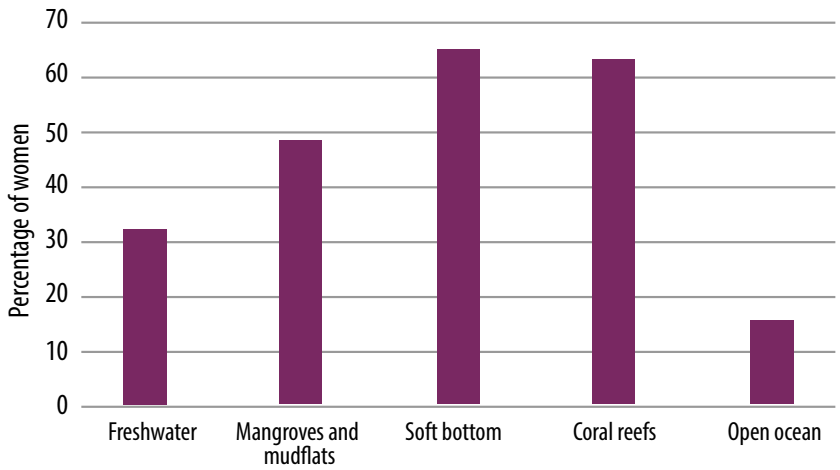

Figure 4. Percentage of women fishing in each habitat by province. In this study, open ocean for women refers to the outer edge of the coral reefs and out to deeper state waters.

the coral reef habitat has also been widespread in the past, the high percentage of women now fishing this habitat suggests that their role in fisheries is changing. The focus group discussions also revealed that the women were not excluded from any fishing areas because of cultural reasons, and there were very few areas where only men or only women fished.

The women fishers travelled mainly by foot, where possible (freshwater, mangroves and mudflats, soft bottom, coral reefs), or boat (barrier coral reefs and open ocean). Almost half the women used a boat to reach one or more of their fishing sites; of these, 83% used a boat without a motor and 18% used a boat with a motor. However, the use of boats was not consistent across habitats, with women using boats to primarily access more distant coral reefs and open-ocean fishing sites. In contrast to the ownership of fishing gear, boats were rarely owned at the individual level (5%) and largely belonged to the village (39%), household (20%) or clan (13%).

Across all habitats, most women took less than one hour to get to their fishing grounds and usually spent two to three hours fishing once they get there, which may or may not include the time taken to look for bait prior to starting to fish. The women fishers also expressed clear preferences for the time of day they went fishing: in the morning and/or at low tide. These time preferences correspond with other responsibilities (e.g. childcare and cooking) and easy access to the fishing sites, respectively. Overall, the women generally fished a habitat one to three days a week, one to two weeks per month and every month during the year.

Fisheries

Women fished across a range of habitats from freshwater rivers to the open ocean, harvesting a wide assortment of fish, invertebrates and seaweeds (Table 1).

The top fish species caught for both sale and consumption were similar for four of the five habitats (mangroves and mudflats, soft bottom, coral reefs and open ocean). Groupers (*Epinephelus* spp.) and emperors (*Lethrinus* spp.), especially the thumbprint emperor (*Lethrinus harak*) and Pacific yellowtail emperor (*Lethrinus atkinsoni*), were among the top three fish caught for both consumption and sale. The mangrove red snapper (*Lutjanus argentimaculatus*) was also a top species for consumption and sale in multiple habitats. The freshwater habitat had different top fisheries: freshwater eels (Anguillidae) and tilapia (*Oreochromis* spp.) were two of the top three for both consumption and sale. Overall, most of

Table 1. Number of local names and minimum number of species of fish and invertebrates caught by women fishers in the five habitats.

	Fish		Invertebrates and seaweed	
	Local names	Species	Local names	Species
Freshwater	64	40	27	14
Mangroves and mud flats	131	79	59	40
Soft bottom	145	83	125	82
Coral reefs	143	91	88	59
Open ocean	94	59	n/a	n/a

Kai fishers selling at local markets. ©Alyssa Thomas

River in Bua Province where women commonly fish. ©Alyssa Thomas

the key fish species caught by the women spent at least some of their life in the mangroves, reflecting the need for better conservation and management of this habitat.

In terms of invertebrates and seaweed, there was a greater diversity in the top species caught, for both subsistence and income. However, the study did reinforce mud crabs and freshwater prawns as key fisheries for the women. Sea cucumber (Holothuridae) was also a key income fishery in several habitats and one of the top species of invertebrates sold at the time of the study.[2] Other top invertebrate and seaweed fisheries included the brown land crab (*Cardisoma carnifex*), antique ark clam (*Anadara antiquata*), giant clams (Cardiidae), trochus (*Tectus/Trochus* spp.), seaweed (*Hypnea* spp.) and several other types of shellfish.

Almost all (92%) women had at least one other source of livelihood besides fishing. Farming (particularly assisting with family-owned farms of high-value crops), handicrafts and small businesses (e.g. baking and sewing) were the most common non-fishing personal livelihood sources for the women. Overall, women ranked fishing and handicrafts as their most important personal livelihoods. They also reported that handicrafts were both their biggest and most stable source of income, followed by the selling of seafood. Only 15% of women reported that their household would be affected if they could not fish, mainly because they had a farm or someone else in their household who fished. Similarly, just over half the women felt that it was easy to earn money outside fisheries, although this differed across provinces.

The women fishers used their income from seafood sales largely for household expenses, food, church, and village functions. Almost three quarters of the women were satisfied with the money earned from seafood sales, but the women in Lau Province had a higher than average level of dissatisfaction. Across all provinces, an average of 33% of the woman's income came from fisheries; however, around 25% of the women received all their income from fisheries. Overall, these results show that fisheries are mainly a secondary source of income for the women.

Barriers

Focus groups were also used to explore the challenges faced by the women, both in fishing and in the selling of seafood. The women reported three main challenges: no available boat, bad/cold/unpredictable weather, and a lack of certain fishing gear (with some women expressing a desire for gill nets). In some villages, boats are necessary for accessing some habitats (e.g. coral reefs, open ocean). However, most boats used by the women were owned at the household or village level, and so could only be used when available. A further barrier was that less than a quarter of women fishers knew how to operate a boat. In terms of challenges in selling, access to municipal markets (i.e. distance, transportation, cost) was the most commonly cited issue. Some women felt that the men had better access to municipal markets, while women were limited to selling seafood within their village. Finally, women were interested in receiving financial support or training on business, alternative sources of livelihoods and value-adding activities.

Prawn fisher from Rewa Province. ©Alyssa Thomas

Conclusions

The study aimed to understand and document the role women fishers played in inshore fisheries in Fiji. Household and focal group discussions across 11 provinces helped quantify women's involvement in the inshore fisheries sector and provided important information to fisheries practitioners and policymakers. Today, many women fishers still carry out the traditional household tasks while fishing close to the village, using low technology techniques, to provide the main source of protein for the household. At the same time, more women are selling at least part of their catch and fishing in the full range of habitats, from freshwater river systems to the open ocean. Many of them are also expressing a desire to further modernise their fishing techniques.

The study reinforced the importance of the mud crab and freshwater prawn fisheries to women, while also showing that emperors, groupers and snappers were the most commonly caught fish, for both consumption and sale. Women in most of the provinces fished each habitat available to them one to three days a week, suggesting that they did not rely solely on one habitat or fishery for their income. However, it was not possible to estimate volumes of fish and invertebrates eaten or traded, as there were no records kept and many units were not quantifiable (e.g. bags, piles, buckets). Future research could seek to quantify these "non-metric" units, as it would

[2] A national ban on the sale and export of all sea cucumbers was announced in November 2017.

be valuable to provide better estimates of the volumes of fisheries women are involved in.

Our findings also show that women play a key role in household food security. The fresh fish they caught provided the main source of protein for most of their households. At the same time, more women were also selling at least part of their catch to earn income for household expenses, school and church. However, male fishers were still more likely to sell their catch than women fishers, highlighting the complementary roles of both genders in households. The data also show that despite the importance of freshly caught fish, the households of most of the women fishers would not be affected if the women could not go fishing. The household farm and male fishers in the household would provide food, and items from the farm could be sold for money. Importantly, most of the women ranked fisheries and handicrafts as their most important livelihoods, as well as the main and most stable source of income.

The study also provided an opportunity to elucidate some of the barriers faced by the women, both in their fishing and fisheries sales, and identify areas where management agencies can assist the women fishers (e.g. training on value-adding, alternative livelihoods). Given the investments women are making in fisheries for their families and the national economy, there needs to be better efforts made to incorporate their needs and unique perspectives into fisheries management. Key fisheries used by the women should be better researched and/or managed in order to ensure their sustainability. This report also makes the case for increasing the inclusion of, and discussion around, the role of the women fishers, and their catches, in reporting and documents on Fiji's inshore fisheries as a whole.

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Addressing barriers and constraints to gender equality and social inclusion of women seafood sellers in municipal markets in Fiji

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Introduction

Fisheries are critical to food security and the livelihoods of coastal-dwelling communities throughout the Pacific region (Bell et al. 2009). Women play significant roles in fisheries and are often considered as primary income supporters for households, as they are increasingly engaged in a wide diversity of activities such as gleaning, fishing, post-harvesting processing, selling and marketing of value-added products (Kronen and Vunisea 2009). However, in most cases, women are often marginalised and/or are under-recognised for the contribution and important roles they play in the fisheries sector (FAO 2017). This partly stems from the misconstrued perception that fishing is a man's domain and is perpetuated by failure to sex-disaggregate data or gather any data at all from women fishers (Pacific Community 2018). About 75-90% of vendors at Pacific Island markets are women, and their earnings significantly contribute to household incomes in the informal sector (https://unwomen.org.au/newsroom/spotlight/markets-for-change/).

The "Markets for Change" project run by the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women) aims to address the barriers and constraints to women's economic empowerment (https://unwomen.org.au/our-work/projects/safer-markets/). The project objectives are "to ensure that marketplaces in rural and urban areas of Fiji, Solomon Islands and Vanuatu are safe, inclusive and non-discriminatory, promoting gender equality and women's economic empowerment". These efforts include providing adequate water and sanitation, extending existing market buildings (in some cases, rebuilding entire new municipal markets and accommodation centres for rural market vendors), providing sufficient spaces and strengthening women's engagement in market forums. Through the programme, women have increased sales and their representation on market committees, and are able to better communicate their needs to relevant authorities.

From 2018 to 2019, the Wildlife Conservation Society (WCS) in collaboration with UN Women, the Ministry for Local Government and three municipal councils (Suva, Labasa and Savusavu) undertook a study aimed at addressing barriers to women's economic empowerment by improving gender equality and social inclusion of women seafood vendors in municipal markets in Fiji (Gavidi et al. 2019). Specific objectives of the study were to:

- document the level of dependency of women selling seafood at markets;
- recognise women's decision-making power regarding their seafood sales at markets;
- address the barriers and constraints faced by women seafood market vendors; and
- provide information that will assist policymakers in creating policy that is aligned with the needs of women seafood vendors.

Methodology

This study involved a socio-economic survey with the questionnaire designed by fisheries and gender specialists from the WCS and UN Women. The survey documented women vendors' decision-making power, the level of dependency on selling seafood at the markets, constraints faced and how these women sellers' needs could be best met. Prior to implementation in three municipal markets in Fiji, the survey was tested on women seafood vendors in a local village. One-on-one surveys were held with both fisherwomen and middlewomen in their preferred language (*iTaukei*, Hindi or English). The surveys were carried out in the following municipals markets: Savusavu (6–10 November 2018), Labasa (6–10 November 2018, 11–14 April 2019), and in Suva (18 May 2019, 21–22 June 2019).

Questions presented to the women seafood sellers included how long had they been dependent on this livelihood, how much income did they generate from seafood sales, who made the decisions in income earned, what was their time investment in selling seafood and what were the constraints faced while selling at municipal markets. WCS also designed a "market observation logbook" to collect data on market facilities and infrastructure being used by women, and the types and quantities of seafood being sold. This information was used to support and validate responses by vendors regarding market conditions and their needs. All financial figures in this report are in Fijian dollars.

Results and discussion

Demographics

Women sellers interviewed across the three municipal markets were from diverse backgrounds of *iTaukei* and Indo-Fijian descent, with age groups ranging from 22 to 70 (Table 1). They comprised both fisherwomen and middlewomen. At the Suva market, a total of 38 fisherwomen and 41 middlewomen took part in the survey, while 25 fisherwomen and 22 middlewomen at the Labasa market were interviewed. Women sellers interviewed at the Savusavu market were all

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Emperors are popular species sold by women at municipal markets in Fiji. ©Sangeeta Mangubhai, WCS

Mud crabs and prawns sold at the Labasa Market. ©Sangeeta Mangubhai, WCS

Table 1. Summary of the demographics of women sellers interviewed.

Location	# Women	Ethnic composition	Age (yr)	Education levels	Marital status
Savusavu	7	*iTaukei* (71%) Indo-Fijian (29%)	31–58	Both primary and secondary school	Married (57%) Widowed (29%) Single (14%)
Labasa	47	*iTaukei* (100%)	23–69	Primary, secondary and tertiary level	Married (88%) Widowed (4%) Single (8%)
Suva	71	*iTaukei* (100%)	22–70	Primary, secondary and tertiary level	Married (81.6%) Widowed (13.2%) Single (5.3%)

middlewomen, as fisherwomen normally sell at the market on an irregular basis. The majority of these women sellers across all markets were married and a small portion were either single or widowed. Education levels for these sellers varied, with some women having either primary or secondary education, while only a few women from the Labasa and Suva markets had some form of tertiary education.

Seafood sales at the market

Women vendors sell a wide range of seafood (fish species and non-fish species) at the market. The mud crab (*qari*) and the emperor fish (*Lethrinus* spp.) were common species sold across the three markets (Table 2). It was also found that less than half of the women vendors interviewed (in Suva and Labasa markets) sold cooked seafood products, with the most popular items being fish, octopus (*kuita*) and seaweed (*lumi*). The majority of women vendors invest a lot of their time in selling their products at the market, with an average of seven to eight hours spent in selling. The average time in travelling to markets is one to two hours, with most of these women stating that they would stay until all their seafood was sold. Across all three markets, the majority of the seafood vendors (>50%) sold at the market by themselves, with a small portion of women selling seafood with either their husband or children. The most preferred days for selling for most women vendors were Fridays and Saturdays, as there was an increase in number of customers, hence an increase in sales. In terms of the market levy, women vendors paid an average market fee of FJD 1.19/day (Savusavu market), FJD 1.84/day (Labasa market), and FJD 3.50/day (Suva market). None of the women vendors interviewed sold to exporters, restaurants, hotels or shops.

Selling groupers at the Labasa market. ©Sangeeta Mangubhai, WCS

Indo-Fijian middlewoman selling at the Savusavu market. ©Sirilo Dulunaqio, WCS

Income and sales

There is a high dependency on selling fish and other invertebrates in all the three markets surveyed, with a large portion of women stating that selling seafood was either their main source of income or only source of income. Women seafood vendors made average weekly earnings between FJD 146 and FJD 600 across all three markets (Fig. 1), and the majority stated they were either very satisfied or satisfied with the earnings made from selling seafood. However, a smaller proportion of the women interviewed explained that income earned was not as reliable, as there was an increase in competition with other vendors (especially those selling the same seafood types), there was not enough space in the market to sell seafood, seafood prices fluctuated accordingly and there were increased expenses for family and village functions. Income generated through seafood sales was used for food, household expenses, children's education, church events and village functions, etc.

Decision-making

Women vendors were asked a series of questions to determine how much decision-making power they had when it came to "what they fished for", "whether they sell at the market or not", "how often they sell at markets" and "how they spent their income". As shown in Figures 2 and 3, the majority of the women interviewed (>50%) made decisions by themselves, while a few shared the decisions with their spouse or with another family member. These results suggest that many of the women vendors interviewed were the main decision-makers; however, there are a significant number of women who value others' advice/feedback on the type of decision they make in regard to their livelihood sources that include income and expenses.

Octopus sold at the Suva market. ©Sangeeta Mangubhai, WCS

Infrastructure used by fish vendors adjacent to the Labasa markets. ©Sangeeta Mangubhai, WCS

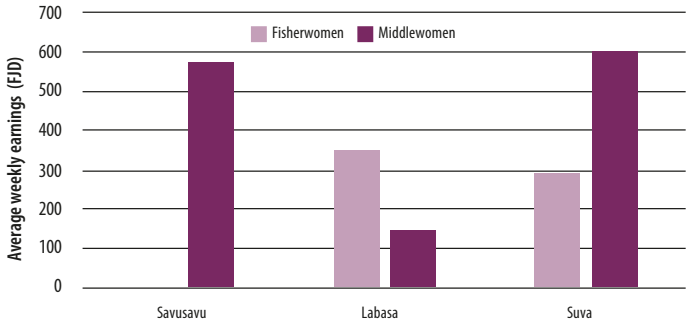

Figure 1. Average weekly earnings for women seafood vendors across the three municipal markets.

Table 2. List of fish species and non-fish species sold by women seafood vendors at the Suva, Labasa and Savusavu municipal markets.

Markets	Top 3 fish species sold	Top 3 non-fish species sold
Savusavu	Longjaw mackerel (*Rastrelliger kanagurta*)	Mud crab (*Scylla serrata*)
	Coral grouper (*Plectropomus leopardus*)	Prawns (*Macrobrachium* spp.)
	Yellowtail emperor (*Lethrinus atkinsoni*)	Lobsters (*Panulirus* spp.)
Labasa	Thumbprint emperor (*Lethrinus harak*)	Saltwater mussels (*Anadara* spp.)
	Camouflage grouper (*Epinephelus polyphekadion*)	Seagrapes (*Caulerpa racemosa*)
	Yellowfin surgeonfish (*Acanthurus xanthopterus*)	Mud crab (*Scylla serrata*)
Suva	Thumbprint emperor (*Lethrinus harak*)	Seagrapes (*Caulerpa racemosa*)
	Mullet (*Crenimugil crenilabis*)	Mud crab (*Scylla serrata*)
	Rabbitfish (*Siganus vermiculatus*)	Saltwater mussels (*Anadara* spp.)

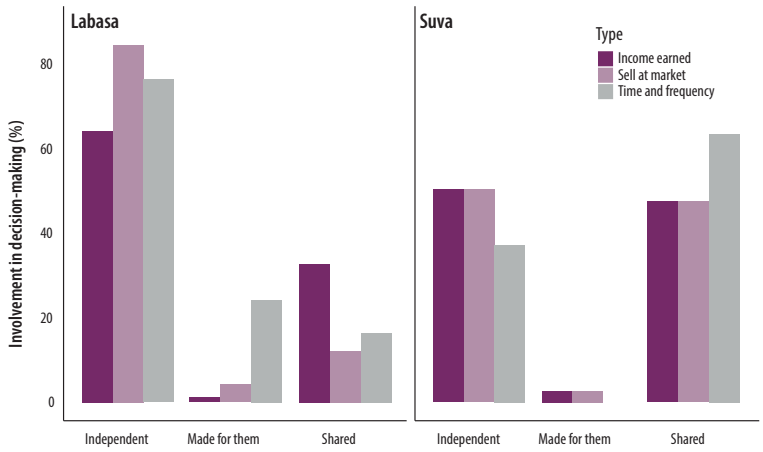

Figure 2. Decision-making power for fisherwomen.

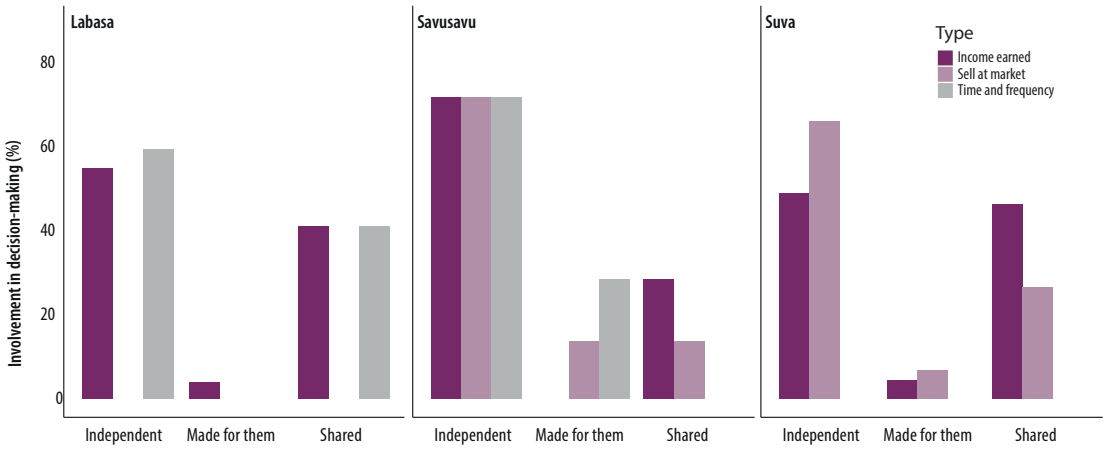

Figure 3. Decision-making power for middlewomen.

Barriers, issues and needs

Barriers, issues, and needs identified through individual interviews with all women vendors are summarised as follows. These were common issues across the three markets surveyed.

- **Space availability and allocation:** A vast majority of the women across the three markets stated that limitations on sufficient space was a barrier to selling seafood. In most cases, women vendors were provided a disproportionate distribution of space, and were required to sit very close to each other in a congested space and/or were asked to share a designated space with other vendors.
- **Poor or inadequate market conditions:** The issue of improper shelters, poor drainage, unhygienic toilets, poor stall conditions, lack of water facilities and lack of tables and chairs have become a growing concern for most of these vendors across all three markets. Many women shared their experiences on how the unavailability of proper shelters would affect their sales and leave them vulnerable, especially during adverse weather conditions. Also, the lack of proper tables and seats have resulted in women using plastics, tarpaulin and cardboard to put their seafood on, with many relying on wooden boxes and drums on which to sit.
- **Lack of information:** Knowledge of municipal bylaws was very low, particularly for women vendors in the Suva and Labasa municipal markets, with few women stating they received information from the respective town/city councils either through noticeboards or through public announcement systems. However, the majority of these women preferred to receive information through word of mouth (>50%). Types of information vendors were interested in included information on fisheries bans, new legislation that affected them as vendors and new laws that could affect their source of income.
- **Communicating their needs:** A number of woman stated they were not comfortable being vocal and sharing their issues and needs verbally or in writing with the respective town/city councils. They stated they were afraid that if they raised their issues or made complaints, they may not be allowed to sell their seafood at the markets. Others stated that the council never responded to their complaints or problems.
- **Access to training:** A number of women highlighted they would like to be trained on how to preserve their seafood to prevent spoilage and in business planning including how to earn more from selling their seafood. However, they did not know how to access these types of trainings.

Recommendations

A number of key recommendations are made as a result of this study.

- Provision of sufficient space and its equal distribution among vendors is a critical issue that needs to be addressed by the respective town/city councils.
- There is an urgent need to improve the overall hygiene and infrastructure across all three markets and to provide women vendors with quality facilities (e.g. tables, seats, clean toilets, electricity, proper shelters, adequate roofing, good drainage, proper rubbish disposals and clean water supplies).
- Relevant information on market issues or new market of fisheries laws should be disseminated to market vendors verbally, and face to face if possible, by the respective town/city council.
- Implementing training programmes on seafood preservation methods for vendors is crucial. This is to ensure that customers are provided with seafood that meets Fiji's safety standards.

Conclusion

There is a high dependency on selling fish and other invertebrates for women vendors across the three markets surveyed. The survey captured how devoted women are in the fisheries sector in terms of post-harvest process, sales and marketing of their seafood products. It also shows the important role women play in their household in terms of providing additional income for their families, thus it is crucial that women's engagement in the fisheries sector is strengthened and supported. Women are becoming the main decision-makers when it comes to earning a livelihood. Lastly, barriers and constraints faced by women vendors need to be addressed to achieve gender equality and promote women's economic empowerment.

Acknowledgements

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Capturing the value of fisheries using photovoice

Chelcia Gomese[1], Chillion Panasasa[2] and Stephen Sibiti[3]

Background

Men and women contribute to fisheries in many ways. However, women's contribution to coastal fisheries is often not counted and is less recognised in the Pacific. Furthermore, most data collected in the Pacific on fisheries are quantitative, thus missing some important questions that can only be addressed with qualitative research. In particular, how women and men view and value their own roles in fisheries (including decision-making) are not visible in these statistics. Photovoice is a participatory method that will provide a platform for women and men in coastal communities to share their experiences and their voices through photography.

We used participatory photovoice methods to explore the following questions:

- How do women and men view their participation in fisheries?
- What benefits do women and men see coming from fisheries?
- What challenges to participation in fisheries do women and men see?
- How do women and men engage in decisions regarding fisheries?

Photovoice

Participatory research has recently been given increasing attention. One of the key features of participatory research is the commitment to honour the lived experience and knowledge of the people involved, and these are often people from oppressed groups (Gatenby and Humphries 2000). Photovoice is a participatory method that has been used in different contexts, but also developed specifically for small-scale fisheries (Simmance et al. 2016). Photovoice "enables local people to identify and assess the strengths and concerns of their community" (Wang 1997) and has emerged as a good tool for increasing knowledge around marginalised people in communities (Kindon et al. 2007). Women or men are able to express and reflect on their daily lives by communicating through the use of photographs (Wang 1999).

"Pictures show real issues – it raises the profile of communities."

Photovoice participant

Pilot study site

We selected the Santupaele Community in Solomon Islands Western Province for the photovoice pilot study. Santupaele Community includes seven small villages located on the north-west of Kolombangara Island, in the Western Province, with a population of approximately 230 people. The livelihood activities for the people living in this community include fishing, farming, copra and employment in logging companies. The community has a marine protected reef area of about 6.2 hectares and a marine managed area of about 23.9 hectares. WorldFish has supported the community with the construction and deployment of a fish aggregating device (FAD) in early 2018. The purpose of the FAD was to provide an alternative fishing area and to relieve fishing pressure on the tabu reef. However, there are also challenges being faced by the community. Poaching is still reported in their tabu reef area, and logging operations are also close to the tabu and managed reef area.

Photovoice methods

The photovoice activity started off with a community consultation meeting between the researchers as well as the community. Three women and three men were selected to participate in this pilot study. These men and women all represented the different clusters of villages within Santupaele Community. All participants fished and were between the ages of 21 and 49.

The community consultation meeting was followed by a training on the use of cameras. This also involved participants understanding the safety and ethics behind taking photos. Participants were then given the assignment to take 10 pictures for each of the four main questions. This assignment was carried out over two weeks, with researchers checking in during this time frame. After the cameras were collected and photos were developed, participants were asked to pick the four photos that best represented the four questions. Participants were also asked to select one photo from all the photos that best represented their community. The participants were then asked to talk about the photos they took and these answers were audio-recorded and later transcribed. We then used their description and the photos to explore the research questions. A validation workshop was carried out with participants two weeks later, and participants were also able to share with the whole community their individual photos for each of the themes and then communicate the message behind the main photo they chose. Text analysis was then carried out using NVivo.[4]

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[4] "NVivo is a qualitative data analysis (QDA) computer software package produced by QSR International. It has been designed for qualitative researchers working with very rich text-based and/or multimedia information, where deep levels of analysis on small or large volumes of data are required." (Source: https://en.wikipedia.org/wiki/NVivo)

*

Results

How do women and men view their participation in fisheries?

I am very interested in this picture because this man is doing a fishing activity. He didn't have to go far to do this activity. He did not need a canoe but just stood on the beach and fished. He caught a big fish one that he is happy with. I am very interested in this picture because this was the first photo I took and the first fish this person took. The other photos showed that you have to use something to go out and catch fish but this photo showed that you don't need to use anything else to travel out to fish. The man only used a fishing line and hook and threw the line in to fish. It is less expensive and requires no extra cost. Female participant, 2019

The picture shows a tree and branch, we use to fish. It is located in a bay and children fish here. This shows a fishing activity. It shows the place where children fish and it is close to the shore. The fishing activities are usually using line and hook and both adults and children take part in this fishing activity. Male participant, 2019

The two photos show the most common fishing activity in Santupaele as described by the respondents. This is fishing by hook and line. The fishing activities are located close to the shore, which shows that accessibility and location is important for fishing in Santupaele. This type of fishing activity requires less gear and is less expensive. Other respondents highlighted other fishing activities such as fishing at the FADs and spearing fish. Participants also highlighted the importance of having a marine managed area as a part of their fishing activity.

What benefits do women and men see coming from fisheries?

In the picture is the fish that people have caught and put up for sale. This picture shows an old man who caught fish. This old man is over 60 years of age. He is old but hem caught fish and sell to support his family that's why this is an interesting photo. This photos shows that no matter where we live, the money is being generated around in the community through the fish we sell. There are also other ways to earning income for those who don't know how to fish. You can make a garden to sell food and for family. Female participant, 2019

In the picture is money. There is a 100 dollar bill and 50 dollar bill. I took this picture because this is a benefit from fishing. We sell fish, we earn money to survive. We help our family and an individual. A man can benefit from fisheries. This is a clear benefit from fishing. It benefits the family very much. Male participant, 2019

The two photos under this theme show that the main benefits that participants saw coming from fishing activities were income for individuals, households and the community. The first picture shows fish being sold by an old man to support his family. The second picture shows dollars earned by a young man and his family to survive. The other two respondents discussed how fishing at the FADs to sell fish and lending fishing boats for hire provides them income for themselves and their families. Other benefits mentioned by the respondents include fish as a source of nutrients for schoolchildren and eating different varieties of fish.

What challenges to participation in fisheries do women and men see?

This is my brother. He is holding a fish he caught. He caught a big tuna. I took this picture because as you can see, the fish is not complete. A shark bit off half of the fish. I took this because shark is fish from the sea. A lot of times fishermen go fishing, they don't catch a lot of fish. There are a lot of sharks at the rafter right now. Female participant, 2019

The picture shows a man pulling in a bonito and he's fishing line has been torn but it is not clear in this photo. A shark tore his fishing line. I am interested in this photo because the man is sad when the line was torn. He was very sad when his line was torn. Male participant, 2019

Both pictures show the challenges in fishing where sharks tore fishing and hooks. This is a challenge faced by fishers when fishing at the FADs because sharks often attack their catch when they go out to fish. Other challenges, as mentioned by other participants, are a lack of good canoes for fishing. Leaking and broken canoes are challenges for fishers to go out fishing. The dangers that may come while standing in the sea and fishing is also another challenge, especially if one has no canoe and has to stand on the reef and fish.

How do women and men engage in decisions regarding fisheries?

This is an old man. He is my father. He is an elder in the community. He is very active in the community in any community work that we have. He usually blow the horn to call the community to do work. My thoughts on this is that he is an old man now and should be resting but out of every elder in the community, he is the first man to do work. He talks about work but he also works. He does that for our school, church and even at the home. He is a best contribute to work in Santupaele and we can see the outcome of that contribution in our community. Female participant, 2019

The picture shows a table of food with people lining up to eat. I took this photo because this is our contribution as fishermen to the community. We fish and these fishes help feed people who work in community in things like working on the school building. This shows us helping as a community. Male participant, 2019

The two pictures show how both respondents think they are contributing to decisions in fisheries in Santupaele. The common theme that emerged from these two photos was the community or how individuals contribute to community work, which includes work relating to the Community-Based Resource Management Committee that oversees resource management in the community. Other respondents highlighted their contributions in the form of money or fishing equipment towards the community church and school. Others mentioned the passing down of knowledge to the younger generation as their contribution to the community.

Discussion

All six respondents were able to relate fishing activities, benefits, challenges and contributions to decision-makings through the photos they took. While the questions asked

were based on personal experience, many of the photos and explanations depicted answers from a community-scale perspective. Apart from the four themes, participants were asked to share an overall message regarding their fisheries.

Here are women with cooked fish. In the picture are women feeding workman who are building the school. We cook fish and feed those who are building our school. This shows how our community is very cooperative. The message I would like to tell those outside of my community is the togetherness of the Santupaele community. This is so that others can see our commitment and do the same. Female participant, 2019

The two photos show the most common theme that emerged from most of the respondents for their overall message of the community. The common themes were fish and working together. Santupaele Community has worked closely together to ensure that resources and people are managed in a way that is beneficial for everyone but also one that will be helpful for the future. Establishing a managed area and setting up a FAD were ways of reducing pressure on the reef, and for this to happen, communities work together and are committed. Other respondents share the same vision, where Santupaele can be seen as an example for other communities to follow.

There were differences in focus by both men and women, and by age. For example, for fishing benefits, most women talked about having income from fishing activities as the main benefit. For men, two of the respondents talked about gender norms in terms of men's and women's roles as important with regard to food preparation and nutrition as benefits of fishing. Differences were also evident in the challenges described by respondents. For most men, the challenge was the sharks disturbing their fishing activities. For women, that was a challenge for their husbands, but for them, an example was the sea being a danger to them if they had no canoes and had to fish in the sea. An important note to mention is that while cameras were given to both men and women, the pictures still depicted the value of men's fishing and demonstrated a focus on men's fishing.

There were some challenges with using this method. On its own, photovoice can be limited in the way it answers research questions. This method would work better if it was used to triangulate other research on gender, community-based resource management or fisheries. This method can be costly, and participants may need more time for taking pictures; therefore, proper planning is needed. On the other hand, photovoice is a very easy method that can be used to help voice people's opinions to others. Images are powerful and

A rafter is shown in the picture because that is where we fish and sell our food. It is special because WorldFish made it for us. Fishers use different fishing methods to catch different fish there. The rafter has been built so we can go and fish there. In this way we look after our reefs. I want to tell other people to do the same and help others. I just want to say that we must do these things (rafters) to help our reefs. In this way, we won't destroy our reefs. We do this to help our community and our children for our future. Male participant, 2019

can be used to tell a story in a way that has never been done before. This method inspired participants from Santupaele, and they were able to share their successes and challenges in community-based resource management.

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Recognising the role of women in fisheries: A priority for fisheries sustainability in the 21st century

Roxane Misk[1], Jennifer Gee, Vera Agostini and Diana Fernandez Reguera*

The State of World Fisheries and Aquaculture 2018 expresses it clearly: women are part of the fishing sector but invisible in statistics. Indeed, over 59.6 million people are engaged in fisheries and aquaculture worldwide, with women making up 14% of the workforce in the primary sector, and almost 50% when pre-harvesting, post-harvesting and marketing sectors are included in statistics (FAO 2018). The inclusion of women in statistics and the collection of sex- and age-disaggregated data is a major challenge but the first step in breaking the cycle of invisibility of women in fisheries and aquaculture. While this starts by counting women, we cannot limit ourselves or wait for quantitative data to acknowledge the real position of women in the sector, their access to decision-making and their power (Monfort 2015). A clear need exists to recognise the role of women if we want to achieve sustainable fisheries.

This invisibility of women does not only concern the workplace, but also their role in the household and within the community. Women are often assigned the most unstable roles, poorly paid or unpaid positions, and are under-recognised (or not recognised at all); in addition, their unpaid care and domestic work in the household are not acknowledged (FAO 2013).

This triple work and time burden (Grassi et al. 2015) is a consequence of the perception of the role and tasks that women "should perform". These perceptions, built by the norms, laws, traditions and culture of a specific social-geographical context, shape the distribution of roles but also women's access to assets, resources, technologies, information, loans and fundamental rights. This impacts their ability to participate in decision-making, for themselves and their families, and their access to leadership. This prevents them from building a viable and enduring future in fisheries and aquaculture. However, the future of the fisheries sector depends on its ability to be sustainable, and women are major actors in this shift. The time has come to recognise women as agents of change and give them the space and opportunity to realise themselves as such.

The International Symposium on Fisheries Sustainability: Strengthening the Science-Policy Nexus, held in Rome from the 18 to 21 November 2019, sent a clear message of the importance of recognising the role of women in fisheries and implementing a gender lens to achieve fisheries sustainability in the 21st century. These concepts resonated strongly as the event gathered nearly 1000 participants from the fisheries sector, academia, civil society organisations and non-governmental organisations, development agencies, other United Nations agencies and the private sector. Gathering a well-balanced set of participants, across organisation type, geography and gender, was a priority for the FAO in the organisation of the symposium, as highlighted in Figure 1 with the comparison of speakers by gender in conferences related to

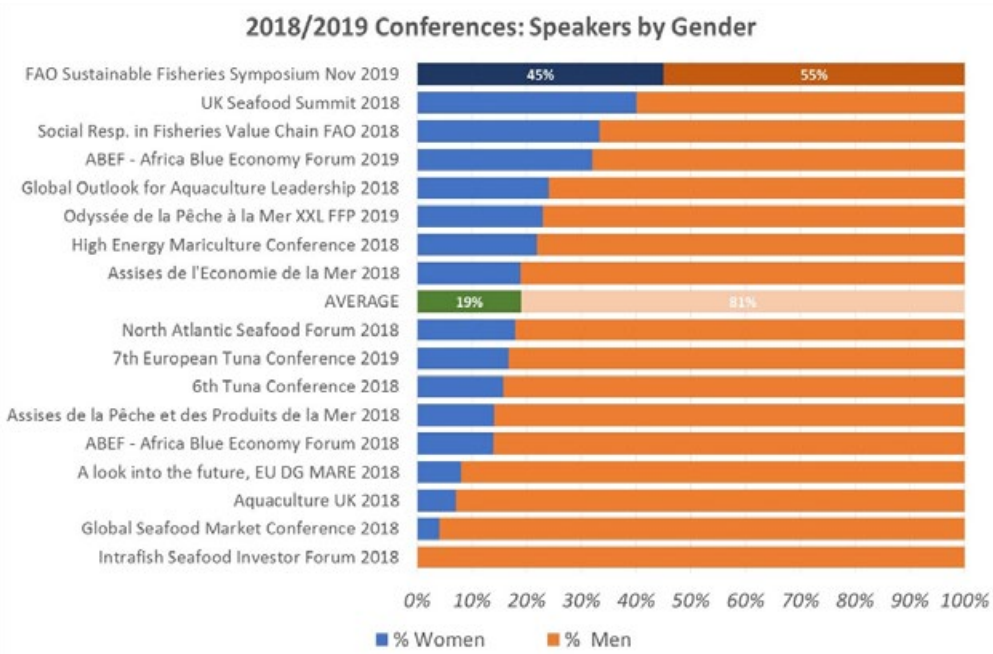

Figure 1. Speakers by gender in conferences related to fisheries and aquaculture in 2018/2019.
(Source: @SeafoodWomen, 6 November 2019, "FAO Sustainable Fisheries Symposium offers an almost PERFECT GENDER balance (45% W-55% M). What a contrast with other fish/seafood conferences. Thks @FAOfish @Manu_FAO" [Tweet]. Retrieved from: https://twitter.com/SeafoodWomen/status/1192083221774831616)

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Figure 2. Word cloud of the preliminary results of analysis of the main key messages presented at the International Symposium on Fisheries Sustainability.

(Source: FAO, 21 November 2019, webcast of Session 8 continued and closing ceremony. Retrieved from: http://www.fao.org/webcast/home/en/item/5150/icode/)

fisheries and aquaculture in 2018/2019 by the International Association for Women in the Seafood Industry. In total, 45% of the panellists and keynote speakers were women.

The main objectives of the symposium were to (1) identify pathways to strengthen the science and policy interplay in fisheries production, management and trade, based on solid sustainability principles, for improved outcomes in practice; and (2) embrace and develop a new vision for capture fisheries in the 21st century, which would take into account the environmental, social, political and governance challenges of the fisheries sector. They were articulated across various topics and themes during the eight plenary sessions, such as the status of global and regional fisheries sustainability and their implications for policy and management; the link between biodiversity conservation and food security; nutrition; sustainable fisheries livelihoods; economics; climate change; information systems and new technologies; and policy opportunities for fisheries. Further information on the symposium and on the sessions is available from the following website: http://www.fao.org/about/meetings/sustainable-fisheries-symposium/en/

Gender was threaded throughout all sessions, mainly by noting gender-related issues in the background information supporting each session and the questions posed to panellists and attendees. The need to include gender was highlighted both as an equity measure, essential to achieving gender equality in the sector, but also to achieving sustainable fisheries.

The key gender-related messages identified during the sessions were:

- Women represent about half of the workforce in the seafood sector and have been overlooked across the fisheries value chain by policymakers. There is an urgent need to modify the way data are collected, and valued along the value chain, to include sex-disaggregated data to account for nutrition, well-being and gender, and other dimensions beyond catch information that promotes trust and collaboration among governments, academia and small-scale fishing communities.
- There is an urgent need to address the lack of access for women to nutritious aquatic food. It is essential to ensure that aquatic food is reaching those who need it most, across diverse communities within regions and diverse individual needs within households.
- There is a need to change the rhetoric around small-scale fisheries and develop a positive narrative that highlights their contribution to food security and resource stewardship. This positive narrative should also target women, recognising their fundamental role in small-scale fisheries and making both sexes responsible for achieving gender equality. Particular attention must be paid to the recognition of all actors along the value chain, particularly women and small-scale producers and processors, who should have the capacity to seize opportunities and reap their fair share of benefits and engage fully in sustainable and equitable food systems.
- Property rights have to be allocated, well defined and based on local context in order to improve the economic performance of fisheries. Economic performance also depends on the full utilisation of human capital. This requires the mainstreaming of gender-inclusive policies to increase the role, well-being and work conditions of women in the sector, including at the decision-making levels. Moreover, there is a need to improve access to credit, finance and insurance for women entrepreneurs and operators from disadvantaged groups.
- The reality of climate change and the growing pressure on biodiversity impels design adaptation solutions that account for the differences between the sexes in terms of vulnerability and build on the individual knowledge, specific skills and positive roles that women play.

Image 1. Participants of the informal gender gathering at the International Symposium on Fisheries Sustainability. ©Alvaro Galassi, FAO

- There is an urgent need to address the digital divide and the lack of access for women to information and communication technologies. Women and fisher folk communities in general should be involved and empowered with services and analytics that improve their livelihood and facilitate ownership.

The sessions were also an opportunity to release videos awarded by the competition organised by the International Association for Women in the Seafood Industry (WSI) from 2017 to 2019. Women from Spain, Madagascar, Peru, Mexico and Canada raised their voices and expressed themselves about their perceptions of the sector, their role and experience, the issues and challenges they faced, but also their hopes and perspectives.

The symposium's closing session strongly highlighted gender emerging as a cross-cutting theme during the symposium and as a priority element in the development of a new vision for fisheries for the 21st century, as captured in Figure 2 with the word cloud of the preliminary results of analysis of the main key messages of the International Symposium on Fisheries Sustainability.

The symposium also provided an opportunity for those involved in gender-related work to come together. Nearly 45 people (whether participants, speakers, panellists or FAO staff) gathered for an informal and unofficial gender "aperitivo" to exchange, discuss and connect about gender inclusion, equity and equality and plans for moving forward.

Gender equality is a complex issue that should be addressed seriously, as would any other complex issue in the sector. This requires developing gender-sensitive policies that not only consist of counting the number of women and men but also allow the understanding of the roles and responsibilities women play, their access and control over assets, information and technologies, and their participation and opportunities in leadership, as well as the reasons for unequal power relationships. At the same time, corporate social responsibility policies should include gender equality as a social standard and set the conditions to eradicate all gender-based violence and discriminations. Needless to say, one single event alone cannot achieve all this, but it can certainly provide the grounds for a new narrative for fisheries sustainability in which gender inclusion, equity and equality are priorities.

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Gender in Aquaculture and Fisheries Section of the Asian Fisheries Society

Save the dates, 6–9 April 2021, and plan to come to Kochi, Kerala, India, for GAF8!

The Gender in Aquaculture and Fisheries Section of the Asian Fisheries Society has selected the Society of Fisheries Technologist (India) (SOFTI) in collaboration with the ICAR-Central Institute of Fisheries Technology (ICAR CIFT) to be our co-organisers in conducting the 8th Global Symposium on Gender in Aquaculture and Fisheries (GAF8).
We are already welcoming partners, the earliest of which is the Network of Aquaculture Centres in Asia-Pacific (NACA).

Kochi, in southern India, is a location that has it all – fisheries, gender and cultural perspectives, as well as being well connected internationally.

GAF8 is being planned as a major forum for the exchange of new knowledge and to foment plans and action to capture the wave of increasing interest in gender in aquaculture and fisheries. Expect different formats and opportunities in 2021.

To share your ideas on GAF8 as planning starts, please contact us through email: GAF8Conference@gmail.com

Check this website for all updates: https://www.gafconference.org/

See you at GAF8!

For more information on Pacific Women:
https://pacificwomen.org/

Training on gender, social inclusion and human rights-based approaches at the University of the South Pacific

Natalie Makhoul[1] and Cherie Morris[2]

Background

A three-day training workshop on gender equity and social inclusion (GSI) and human rights-based approaches (HRBA) focused on the fisheries sector was held at the University of the South Pacific (USP) in Suva, Fiji, in June 2019. The training was provided by the Project Management Unit of the Pacific-European Union Marine Partnership (PEUMP) programme. Eleven of the 16 participants were female. The participants consisted of USP research fellows and staff, postgraduate students, PEUMP USP project staff and a Women in Fisheries Network–Fiji representative.

The PEUMP programme has a total budget of EUR 45 million and is funded by the European Union and the Government of Sweden. The PEUMP objective is to assist 15 ACP countries in the Pacific to better manage their oceanic and coastal marine resources for food security and economic growth, while addressing climate change resilience and conservation of marine biodiversity. The PEUMP consists of six key result areas (KRAs), which are implemented by multiple regional partners including the Pacific Islands Forum Fisheries Agency, the Pacific Community (SPC), the Secretariat of the Pacific Regional Environment Programme, the USP and other non-governmental organisations or civil society organisations.

A holistic approach is required to ensure PEUMP addresses cross-cutting topics on poverty reduction, social inclusion, equal access and benefits for women and men including HRBA, and participation for youth and marginalised groups. PEUMP therefore has an emphasis on the need to mainstream gender, social inclusion and HRBA in its design, implementation and outcomes.

Brainstorming session on how to improve the visibility of gender in fisheries. ©Debbie Singh, SPC

USP is the lead agency for PEUMP KRA6, which focuses on capacity building through education, training and research development for key stakeholder groups in fisheries and marine resource management. The primary activities under KRA6 are marine science applied research, postgraduate scholarships, technical vocational education training, tertiary education development such as undergraduate programme course material enhancements and the design of continuous professional development for career pathways and skills development.

Training purpose

The main training goals were:

1. Raise awareness on the GSI and HRBA dimensions of coastal and oceanic fisheries, including the presentation of key findings from existing research.
2. Build participant capacity to use both GSI/HRBA tools and guides, and to improve analysis skills and technical understanding of people-centred concepts in their various fields of study.
3. Identify GSI and HRBA entry points with a view to informing and influencing KRA6 activities through integration.

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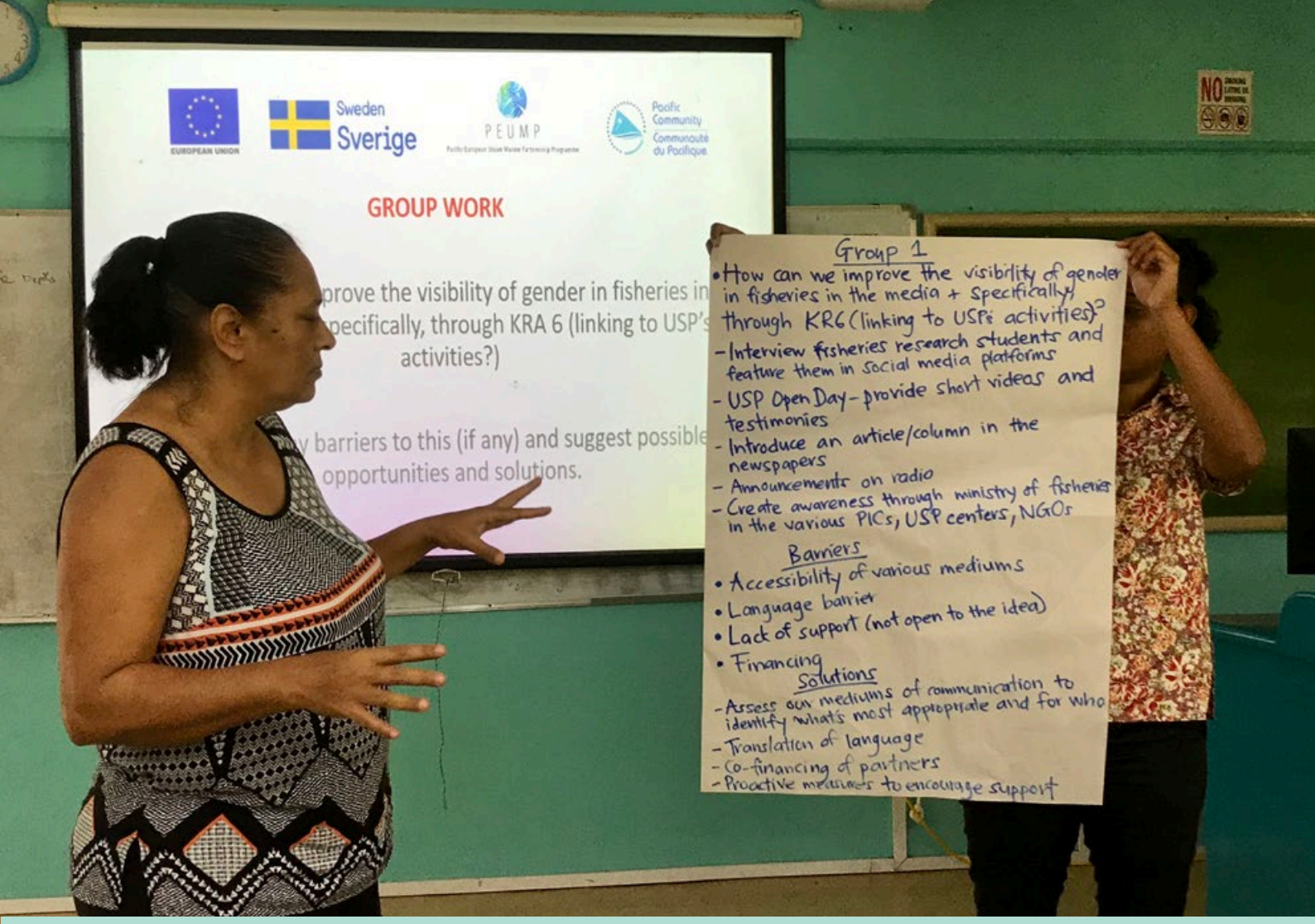

Brainstorming session on how to improve the visibility of gender in fisheries. ©Debbie Singh, SPC

Participants to the three-day workshop on gender equity and social inclusion and human rights-based approaches, USP, June 2019. ©Debbie Singh, SPC

Training sessions

Session content for GSI was developed using the 2019 Pacific Handbook for Gender Equity and Social Inclusion in Coastal Fisheries and Aquaculture. Two participants had prior GSI training, while none had GSI training specific to the fisheries context.

Gender equality was presented from two different angles: (1) as a fundamental human right with reference to the regional and international human rights frameworks; and (2) as a development goal with reference to Sustainable Development Goal 5, linking oceans and the environment.

Lessons learned 1

The recent upsurge of gender equality and human rights as instruments to achieving sound and sustainable management of small-scale fisheries ecosystems has created a need for marine science education to keep abreast with reality needs as well as regional and global priorities. This trend has also called for a more holistic and interdisciplinary approach, targeted at equitable income distribution with a view to reducing poverty and building resilience. The gender equality goal in fisheries needs to be understood from a development perspective in the context of women's contributions towards food security, livelihoods and, more broadly, Pacific social care, well-being and share systems. As a human right, gender equality needs to be elevated beyond just recognition of women's daily economic and social roles. The training placed emphasis on understanding gender equality as a human right and clarified a common misconception that the two concepts were mutually exclusive. Special care was taken in explaining how they both complement one another. By employing a human rights-based approach, the training was able to amplify and reinforce that progressing gender equality is a human rights driven concept.

Human rights issues in the Pacific's oceanic fisheries were reported in a recent case study (Chiao Lee et al. 2018). The study highlighted several human rights violations at sea such as various workers' rights abuses and claims of forced labour. The study also discussed the triggers and enablers of at-sea human rights abuses, flags of convenience, transshipment and their links to human trafficking and illegal, unreported and unregulated fishing.

Lessons learned 2

Fisheries scientists, and more broadly fisheries practitioners, often struggle with the human rights concept and its application as an approach, admitting it felt too theoretical and used rhetoric that lacked a practicality lens. Utilising a relevant case study resulted in effective engagement, particularly while covering human rights abuses, consequences for Pacific Island countries (PICs) from diplomatic, economic and social viewpoints, and exploration of concrete solutions for PICs at national/regional level while applying a HRBA framework.

For coastal fisheries, human rights discussion focused on marine tenureship rights versus the right to property and the state's interest in using marine areas for a "common good" – the former protected under human rights framework covering indigenous people. Displacement and forced evictions were also discussed; international human rights law that sets minimum procedural standards for compensation was presented. Broader human rights issues such as access to information, access to participation and active roles in decision-making processes at local and national levels were covered from a human rights angle.

Lessons learned 3

For coastal fisheries, discussing and understanding human rights issues tend to aggregate around the right to food and the rights of indigenous people to fishing and access to traditional fishing grounds. Further, it was found critically beneficial to present a broader and holistic view on human rights issues such as the right of fishing communities to education, information, health and infrastructure in order to combat narrow understanding. Through this action, the training was able to clearly illustrate the interconnectivity of various human rights.

Outcomes of the training

USP identified a need to review current marine science programmes in light of incorporating GSI and HRBA into existing courses and planned new courses across education levels. The need to mainstream GSI and HRBA into courses was also identified in the USP training needs and gaps analysis (Chapman 2019), suggesting the development of a social science course.

Stereotypical thinking of gender roles continues to reinforce strong associations of a male-dominated fisheries sector, further exacerbating inequalities with regard to gaps in research, investment and interventions that could possibly assist women and other marginalised marine resource users. Thus, GSI and HRBA integration in education is seen as a key strategy to change such stereotypes and to avoid misconceptions of the gender equality principle, which is often influenced by cultural norms.

Postgraduate students in particular identified the lack of social science aspects in postgraduate research and suggested that components on GSI be included through gender-integrated or gender-focused research. In addition, more support and mentorship to shift the science focus towards the social dimension was emphasised. Thus USP lecturers at the Institute of Marine Resources need to be better trained in applying GSI and HRBA as cross-cutting themes

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Bridging fishers' and Western scientific knowledges to farm sea cucumbers in a community setting in Palau

Caroline Ferguson[1], Ann Singeo and Alex Ferrier-Loh

Caroline Ferguson is a PhD candidate in the Emmett Interdisciplinary Program in Environment and Resources (E-IPER) at Stanford University. Her dissertation research explores the social–ecological dimensions of gleaning in Palau.

Ann Singeo is the Executive Director at Ebiil Society in Palau. She co-founded the organisation 15 years ago, with a mission to improve environmental protection through an integrated approach to learning based on combining traditional ecology and biodiversity knowledge with Western science. She holds a master's degree in communications for social change at the University of Texas in El Paso.

Alex Ferrier-Loh is a freelance marine biologist with experience in aquaculture, research, conservation and environmental consultancy across four continents. He holds a master's degree in marine biology from the University of Bangor, Wales.

The challenge: Sea cucumbers are overfished, and farming them isn't easy

Sea cucumbers are culturally and economically important in Palau, particularly for women in rural fishing communities. Yet across the nation, and the wider Pacific region, sea cucumber populations have declined as a result of overfishing and environmental change. In response to this decline, the Palauan government passed a nationwide ban on exporting sea cucumbers in 2012, and some communities have since restricted fishers' access through formal protected areas and informal catch limits. However, both interviews with fishers and scientific monitoring reports indicate slow to no recovery outside of protected areas (e.g. Rehm et al. 2014). Due to their reproductive strategy, when sea cucumber densities are very low, better fisheries governance and regulatory measures alone may be incapable of restoring populations (Friedman et al. 2011). Thus, active restoration of the fishery through restocking may be necessary.

Driving the decline of sea cucumbers across the Pacific is the international trade in bêche-de-mer, a dried luxury seafood product popular in China. Although this trade has been ongoing for centuries, the present scale is unprecedented (Conand 2001). Average market prices of tropical bêche-de-mer species in China have steadily increased since 2011, some more than 12 times in value (Purcell 2014; Purcell et al. 2018). Rapid price increases are likely a symptom of both increasing demand and increasingly limited supply as stocks become overharvested worldwide.

It is in this context of depleted fisheries, high export demand, and weak fisheries governance that sea cucumber aquaculture is gaining momentum in the Pacific region (Eriksson et al. 2012). Sea cucumber aquaculture presents a pathway to restoring depleted wild populations and a potential alternative livelihood in rural fishing villages, where few income-earning opportunities exist. Sea cucumbers have biological and ecological attributes that make them well suited to aquaculture: they feed low on the value chain, occur naturally in high densities and are native to the Pacific Islands, thereby reducing some environmental risks.

But farming sea cucumbers isn't without its challenges: research is still needed to improve survival rates, prevent disease, reduce costs and minimise environmental impacts. And crucially, aquaculture must fit into the broader social–ecological context to ensure project success (FAO 2006).

Our solution: Bridge fishers' and scientists' knowledges of sea cucumbers

To mitigate these challenges, we are bridging the extensive ecological and biological knowledge of lifelong sea cucumber fisherwomen with Western scientific expertise in a community-based, small-scale aquaculture farm in the rural fishing village of Ollei, Palau. Our present goal is to restore locally depleted sea cucumber stocks. We are also considering more direct income-generating activities in the longer term.

The first knowledge bridge came when selecting a species to cultivate: *Holothuria scabra* (English: sandfish; Palauan: *molech*) is both locally consumed and internationally valuable; as such, there was both extensive local knowledge (and interest) and sufficient scientific literature to pursue an aquaculture experiment. Furthermore, *H. scabra* was identified by fishers as a particularly depleted fishery in need of attention.

Our initial set-up for culturing *H. scabra* was based on methodologies outlined by Agudo (2006) and Ito (2014). However, as most currently available methodologies are designed for industrial-scale production, rather than community-scale, we are developing adaptations to reduce costs and work within the limitations of available resources.

Although we face technical and financial limitations in Ollei, we have the great advantage of local brood stock and

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A fisherwoman gleaning sea cucumbers in the seagrass beds adjacent to the farm. ©George Stoyle

Fisherwomen preparing sea cucumbers in a traditional Palauan style for immediate consumption. ©George Stoyle

appropriate habitat mere feet from the aquaculture tanks, enabling us to outsource much of the labour and expense back to the seagrass beds.

Spawning was successfully induced on 15 October 2019. The timing for inducing spawning was chosen by local fishers, based on group discussions about tides, lunar cycles, observations of broadcast spawning and observations of when sea cucumbers were most "full of eggs": in this case, three days after the full moon. Fourteen wild *H. scabra* were collected at 10:00 a.m. on 15 October 2019, approximately one hour before scheduled spawning, from seagrass beds adjacent to the culturing facility. We used a combination of dry, cold, and hot shock treatments to induce spawning. Upon completion of spawning, we calculated that roughly 50 million eggs had been fertilised and observed cell division under a microscope. Of these, we transferred approximately 2.8 million into a single 2800-litre concrete tank for larval rearing. The remaining eggs were immediately returned to the seagrass habitat from which the brood stock had been taken. Brood stock was also returned alive the following morning.

For optimal water conditions, most literature indicates that water in the rearing tanks should be 1-µm filtered and UV-sterilised seawater, with specific salinity, temperature and pH parameters to be monitored and maintained throughout the process. Due to equipment limitations, we were not able to UV sterilise, and we were only able to monitor temperature. We had hoped that with regular water changes from the neighbouring seagrass beds, parameters such as pH and salinity would be maintained; however, we are continuing to experiment with water quality maintenance.

Feeding started on day two, with a combination of *Chaetoceros* sp. and *Isochrysis* sp. Water changes were conducted on a daily basis; larval development was observed under a microscope, also on a daily basis. Unfortunately, by day seven it appeared that the culture had crashed, with no live larvae observed within the rearing tank. We are continuing to trial methods to rear larvae to the settlement stage using low-cost methods in which we use the local environment available to us, at which point we plan to return the individuals to the seagrass beds to grow to adulthood. We plan to regularly monitor the seagrass beds to detect any changes in population densities and individual sizes.

Fishers' knowledges, including traditional knowledges, have contributed enormously to the project's success to date, from not only a technical standpoint but also a community engagement standpoint. Fishers have been consulted on their extensive knowledge of sea cucumber life histories, including their habitats at various life stages, changes in density and size through time, and – crucially – their reproductive behaviours. We also pursued an extensive consultation process on the social and cultural acceptability of farmed sea cucumbers, and fishers and their families have been invited to participate in spawning activities at the farm.

Fishers' ecological knowledge is personal and complex, developed intergenerationally and in highly specific contexts. Some knowledge is shared freely, while other knowledge is closely guarded. Continuity of fishers' knowledge is dependent on the vitality of their fisheries. Fishers' knowledge of sea cucumbers is at risk of being lost as the fishery is depleted. It is our hope that, through the collaboration of fishers and scientists, we can preserve not just the sea cucumber fishery itself but also the related knowledge that is so vital to Palauan culture and livelihoods.

Acknowledgements

We are grateful to the fishers of Ngarchelong and Ngardmau for contributing their time, skills and expertise to this project. Thank you also to Surech Bells, Muku Singeo, Ilima Hirao, Patty Kloulechad, and the rest of the team at Ebiil Society, without whose hard work this project would not be possible. This project is funded by the Micronesian Conservation Trust and Stanford University. We also wish to thank traditional and elected leaders for their support and our many teachers who have guided us along the way.

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New projects
New research

Dialogues in gender and coastal aquaculture: Gender and the seaweed farming value chain

With funding support and methodology inputs from SwedBio of the Stockholm Resilience Centre of Stockholm University, the Gender in Aquaculture and Fisheries Section of the Asian Fisheries Society (GAFS) has joined with ICAR-Central Institute of Fisheries Technology (project coordinator), ICAR-Central Marine Fisheries Research Institute (both in India) and Kenya Marine and Fisheries Research Institute to implement a project on women in seaweed farming. Researchers from the Asian Institute of Technology and the Lagos State University, Nigeria, will also be on the project advisory group.

In seaweed and other coastal aquaculture enterprises, women are locally relevant yet considered marginal in business and development, presenting challenges for creating dialogues among equals that enable the women's voices and concerns to be heard. Recognising this and the important role women play in seaweed farming, location-specific gender dialogues in seaweed farming and collecting areas of Tamil Nadu, India, and coastal Kenya will explore viewpoints on who controls what resources and the political and economic relations that cause and are caused by the distribution of these resources. The gender dialogues are being designed to allow the participants to better understand the labour allocations for seaweed aquaculture and post-harvest, and provide a wider and hopefully joint understanding of livelihoods and the households' priority on labour distribution around different production as well as reproductive activities. Deepening gender dialogues would greatly assist in defining good practices and in learning by practising. Gender perspectives will also allow participants to better understand the access of different people to resources, particularly land/space. Conflicts over tenure in aquaculture need to be recognised. Attention will also be paid to markets as critical to the seaweed value chain and as institutions embedded in the aquaculture political economy.

The project will be undertaken in 2020 and final reports are due in early 2021. Its specific objectives are:

1. To find or create the motivation(s) at each site for holding the dialogues.
2. To promote engagement of fishers, farmers, researchers, policymakers, non-governmental organisations and industry representatives in participatory and interactive collaborations on gender and policy implications, including actors from outside the traditional fisheries/aquaculture field.
3. To elucidate how the impacts of globalised markets, small-scale fisheries guidelines implementations and contextualised institutions (formal and informal) determine conditions for exclusion and struggles of women at local levels.
4. To share views and experiences on how distribution of benefits and quality of participation affect social and economic advancement.
5. To indicate emerging areas of gender and environment policy inquiry.

Woman farming seaweed in Kenya, Africa. ©Twitter

Women in fisheries profiles

Rachael Luru

The first female Pacific Island fisheries observer, debriefer and assessor

This is a story about a woman who was determined to succeed, no matter the obstacles. In this case, it was to go to sea – even though she grew up in the highlands of Papua New Guinea (PNG) and had never seen or lived near the sea. Rachael Luru, the first Pacific Island fisheries observer, debriefer and assessor, works for the National Fisheries Authority in PNG, and this is her story.

I first joined the Papua New Guinea Observer Program in 2011 as a 22-year-old single mother and underwent an intense nine-week basic observer training at the PNG National Fisheries College in Kavieng, New Ireland Province. I come from the Southern Highlands region of PNG, where you cannot see the ocean or sea. My small village, Yaro, is situated in Pangia District of Southern Highlands Province.

At first, I thought to myself that I was never going to be recruited because of where I am from – the highlands – with no knowledge or idea of the sea. I think I was selected because of my answer to this question:

"Why do you think we should recruit you?"
My answer was, "because I am built for it!"

Soon after that interview, I received an acceptance letter from the National Fisheries Authority confirming the success of my application. The letter was an invite to attend the basic fisheries observer training at the National Fisheries College. Believe it or not, I topped my batch of 15 other males with one female and was awarded a Sony digital camera. That is where the challenge began.

My first observer trip was on a Philippines-flagged purse seine fishing vessel. I had to take the challenge to go out on a foreign fishing vessel with only male employees. It took a lot of courage for me to leave my four-year-old son, but as a single mother and in order for a better future for my son, I took the trip. The vessel consisted of more than 30 male crew from different nationalities, but mainly Filipino crew members. At first I was nervous and scared, but I took the risk and sacrifice. I was aware of my role, my rights and responsibilities. I respected myself as well as every other crew member on board. How I treated myself and the crew was reciprocated, and that was how I carried out my duties: without fear and with confidence.

As the only female on board, the greatest challenge I tried to overcome was sometimes having to share shower blocks with the all-male crew. I would put up a huge sign on the door so they knew I was using the bathroom. I always made it my duty to avoid going to specific areas of the vessel. The crew were very aware of my gender. They were respectful and friendly but sometimes cheeky. I always maintained a professional approach and presentation on board. Code of conduct is vital, especially in such a male-dominated field.

Most of the crew didn't really understand English. Sometimes I used hand signals, had to draw, or resorted to learning some basic words in their language to obtain information, as this is a key part of my role as a fisheries observer. I admit it was quite frustrating at times, but I managed to face and overcome the challenges.

The fun part of being a fisheries observer is that I get to travel to other countries and meet other fisheries observers from the Pacific.

In 2013, I was selected as the only candidate to take part in the fisheries observer debriefer training. I passed and was certified as a Pacific Islands Regional Fisheries Observer (PIRFO) debriefer. I continued taking trips both nationally and regionally, and to date, I've covered over 200 plus sea days and debriefed over 100 fisheries observers, both for national and sub-regional trips (Federated States of Micronesia Arrangement and United States Treaty).

In 2018, I was selected to study Certificate IV in Fisheries Compliance and Enforcement, which I completed in May 2019. I graduated from the course in September 2019.

In August 2019, I was selected to attend the two-week PIRFO debriefer assessors training in Port Moresby. I passed the training as the second best among 23 male colleagues, and was awarded a PIRFO debriefer assessor certificate as the first female fisheries observer, debriefer and assessor in the Pacific.

I thought I had passed just another training, but when I was acknowledged by training facilitators as the first female debriefer assessor in the region, my heart jumped and I cried tears of joy. The feeling of accomplishment and relief came to me that very moment. This was the highest achievement in my career in this very challenging role as a female fisheries observer. I have a lot of people to thank and acknowledge – my mentors at work, my parents, my bosses and colleagues who have contributed one way or another towards this achievement.

This journey wasn't an easy one. It took me almost nine years to get to where I am now. I would like to advise other young females out there that "what job ONLY MEN can do is a thing of the past". You are not a failure. You have a purpose in life, and all it takes to achieve your dreams is to be a brave, strong woman who believes in herself and is dedicated and committed. Never think that it is impossible, because what men can do, women can too.

Women in fisheries profiles

Arieta Rasiga

"If I had a fishing boat, I would get my licence, quit my job and fish all day long. There is nothing else I prefer to do."

Arieta Rasiga was born in Lamiti Village on the island of Gau in Fiji. She is 62 years old, is married with five children and has 19 grandchildren. She has been fishing since she was eight years old when her mother started taking her out to the river and the sea.

She remembers fondly her mother, who was a very talented fisherwoman, waking her up at 4:00 a.m. in the morning to head up Waibote-i-Gau River. Her mother explained they needed to hunt for prawns in the dark before the sun rises and the prawns hide away. It would take them two hours by foot to get to her favourite fishing spot, and they would spend the day fishing for prawns, eels and shellfish (*vivili*) from the river. Her mother always carried a spear to catch eels and fish, and Arieta would carry a coconut basket around her waist to hold their catch. Her mother also taught her to fish in the sea for seaweeds (*nama, lumi*), sea cucumbers (*dairo*), land crabs (*lairo*), mud crabs (*qari*) and reef fish.

When they returned home, her mother would go straight to the priest's house and share some of their catch with him. Next, they would give some of their catch to the teachers in the village, or elders who were too old to fish. Arieta feels incredibly emotional when she remembers how generous her mother was with the people in the village. She tries to keep up this tradition and shares her own catch with the priest and her neighbours in her current village of Wainaloka on Ovalau Island where she moved to when she got married.

On her days off, her favourite thing to do is to go fishing. She normally fishes all day, or until there is enough fish for the family. If she needs money, she usually sells her fish to other people in the village, particularly those who are working at the PAFCO cannery in Fiji's old capital Levuka.

She has a wealth of knowledge about the sea. For example, she explained that when it is the cold season it is a good time to fish for trevally, although, she laughs, she has to compete with the sharks. She uses shrimp from the mangroves as bait and heads out to deeper water where trevally are found. She also tries to teach her children and grandchildren the fishing knowledge she gained from her mother.

What are the challenges you face when you are out fishing?

One of the challenges Arieta faces is getting enough small shrimp from the mangroves that she can use as bait for fishing. She has to invest time catching the bait before she can begin fishing. Hooks and line are more expensive now, and fishing is harder than it was in her youth. Arieta explains, "before, we used to catch a lot of fish, and big fish. But now we have to look around for fishing spots. This is because people are using lots of small nets that catch the very small fish. Or people are using spearguns and scare the fish away".

What kind of assistance would you like from government?

Arieta's dream is to own her own brand-new boat. Two years ago, she saved up her money and bought an old village boat and a small second-hand engine. She does not have a boat licence so has to rely on her husband or son to take her out on the boat to fish. She does not want to go far, as she is aware that the boat and engine are old and she is afraid of it breaking down at sea. If she got a new boat and engine, she would get her boat licence, quit her job, and spend all her days fishing.

Women in fisheries profiles

Emma Kabua-Tibon

Emma Kabua-Tibon was born in 1983 in the Republic of Marshall Islands (RMI), where she grew up with a love for the ocean.

Emma holds a Master of Science degree in marine science from the Hawai'i Pacific University, and a Bachelor of Science from the University of the South Pacific. In 2018, she became the Chief of the Coastal and Community Division under the Marshall Islands Marine Resources Authority (MIMRA). She is also the Coordinator for the RMI Protected Areas Network and Secretariat for the Coastal Management Advisory Council.

Early in her career, Emma spearheaded a marine turtle conservation programme that included the development of RMI's first turtle curriculum, and coordinated a turtle tagging and database programme. She also contributed to various scientific surveys as well as legislation/policy development including the Reimaanlok National Conservation Area Plan. More recently, she was involved in the establishment of RMI's Protected Areas Network and co-organised the first National Oceans Symposium, which resulted in a National Ocean Policy and Implementation Plan for the country.

Emma is not one to sit still and is an active member of her community on Majuro. She serves as the Chairperson of the RMI Environmental Protection Authority Board of Directors, board member of the Jo-Jikum (a youth NGO), Vice-President of a women's NGO called Kora In Okrane (KIO), and a member of the Majuro Atoll Tennis Club. KIO is a young professional women's service organisation that was established in 2006 with a mission to provide targeted assistance to socially and economically disadvantaged groups in the RMI, especially women and children. KIO's current projects include the One Smokeless Stove Per Home Initiative, which aims to distribute energy and eco-friendly rocket stoves to every household in the country to promote safe, improved cooking for women, and the Dren in Mour (Water is Life) Project, which aims to provide all outer island households with individual water filter systems to give families access to clean water and ensure resilience to climate variability.

Why did you choose to work in fisheries?

I chose to work in fisheries obviously because of my passion for marine life. As an islander, I grew up by the sea where activities such as swimming, snorkelling, diving and fishing were a natural part of growing up. I recall from my childhood memories having constant ear infections during summer breaks because I couldn't stay out of the water and crying every time I saw turtles being prepared for cultural feasts. I think the tipping point for me was when I met two female researchers, Dr Silvia Pinca and Dr Maria Beger, who introduced me to the world of marine ecology and took me out on my first marine research expedition to the outer islands. I think Disney's movie "The Little Mermaid" might have had an impact on me as well (and probably other girls too).

Why is the engagement of women in fisheries management important to you?

In Marshallese society, women tend to most household tasks such as caring for the children, cleaning and cooking. While the men are out fishing/hunting for food, the women are busy collecting firewood and preparing the oven. Once the men return with their catch, the women process the fish (cleaning/gutting) to be cooked, dried or smoked. Collection of shells for handicraft production is the only fisheries harvesting activity done by women. This societal and cultural practice has evolved over time due to outside influence and modernisation. Regardless, both men and women have distinct roles, responsibilities and contributions to their family's welfare and the community as a whole. The simple fact that women have different perspectives, different issues and different knowledge/skill sets from men should be enough to warrant women's engagement in decision-making processes, especially to ensure gender equity in the benefits of fisheries management.

What message do you have for women wanting to work in fisheries or aquaculture in the Marshall Islands?

I encourage all women who want to be in fisheries and aquaculture to pursue fisheries and aquaculture. We need more women in this workforce. There is so much to do.

Women in fisheries profiles

Margaret Fox

Margaret Fox was born and grew up in Macuata, Fiji. Her love of the ocean started very early in her childhood.

Her fondest childhood memory is going out fishing during the school holidays with her family and extended family at the Great Sea Reef, whereby she was mesmerised with the vibrant marine life including the colourful corals, fishes and critters and, not forgetting, the bats hanging from the mangrove trees, which she enjoyed rousing during their daytime slumber.

Margaret has a Master of Conservation Biology from Victoria University of Wellington and a Bachelor of Science from the University of the South Pacific. She is currently a Fisheries Coordinator with the Wildlife Conservation Society (WCS), for which she has worked since 2010. She has extensive experience undertaking and leading both biological and socio-economic surveys and has published widely on cetaceans, payment for ecosystem services, fish spawning aggregations, and a range of coastal fisheries. In 2015, she assisted WCS to set up their Women in Fisheries programme focusing on the collection of sex-disaggregated socio-economic data, fisheries value chain analyses of Fiji's sea cucumber and mud crab fisheries, and the impacts of Category 5 Cyclone Winston on women fishers.

In addition to being a talented scientist, Margaret has over a decade of experience working on community-based resource management and adaptation, collating and linking information on traditional ecological knowledge to Western science, and creating awareness of natural resource management through media, forums and workshops. She has helped local communities set up fisheries management plans and apply new techniques to increase the profits of women mud crab fishers. In 2016, she co-led a Women in Fisheries Forum for the Northern Division with the Ministry of Fisheries, Women in Fisheries Network–Fiji and Fiji Locally Managed Marine Area network.

What has been one of the greatest highlights of your career so far?

Coordinating Fiji's first national baseline survey from 2017 to 2018 on the critical contribution of Fiji's women fishers to food security and livelihood. This was an extensive collaboration between WCS, the organisation I work for, and a cohort of stakeholders including government, other non-government organisations and regional institutions.

Why are you passionate about women in fisheries?

Helping provide visibility to women fishers and other women who contribute to the Pacific's fisheries sector, as women play a vital yet unrecognised role in this space. By documenting and highlighting the importance of women's contributions here in Fiji's fisheries sector, including the challenges that they face, provides a platform for these women to be visible and be acknowledged to a wider audience.

What message do you have for inspiring young women early in their career?

Be positive and be open to collaboration. Be prepared to work hard and also, at times, under challenging conditions. A career in conservation is never a straight, easy path. Enjoy the adventure this career provides and also acknowledge the responsibility associated with this work in assisting communities to be responsible stewards of their natural resources and culture.

A selection of Margaret's publications

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Giffin A.L., Naleba M., **Fox M.** and Mangubhai S. 2019. Women fishers in Fiji launch a mud crab management plan for their fishery. SPC Women in Fisheries Information Bulletin 30:20-23.

Gurney G.G., Darling E.S., Jupiter S.D., Mangubhai S., McClanahan T.R., Lestari P., Pardede S., Campbell S.J., **Fox M.**, Naisilisili W., Muthiga N.A., D'agata S., Holmes K.E. and Rossi N.A. 2019. Implementing a social-ecological systems framework for conservation monitoring: Lessons from a multi-country coral reef program. Biological Conservation 240:108–298.

Jupiter S.D., Epstein G., Ban N.C., Mangubhai S., **Fox M.** and Cox M. 2017. A social–ecological systems approach to assessing conservation and fisheries outcomes in Fijian locally managed marine areas. Society & Natural Resources 30(9):1096–1111.

Mangubhai S., **Fox M.** and Nand Y. 2017. Value chain analysis of the wild caught mud crab fishery in Fiji. Report No. 03/17. Suva: Wildlife Conservation Society. 100 p.

Mangubhai S., Nand Y., Ram R., **Fox M.**, Tabunakawai-Vakalalabure M. and Vodivodi T. 2016. Value chain analysis of the wild caught sea cucumber fishery in Fiji. Report No. 02/16. Suva: Wildlife Conservation Society and the Fiji Department of Fisheries. 66 p.

Miller C., Batibasaga A., Chand P., Dulunaqio S., **Fox M.**, Jupiter S., Naisilisili W., Nand Y., Sharma-Gounder S. and Smith B. 2016. Cetacean diversity, common occurrence and community importance in Fijian waters. Pacific Conservation Biology 22(3):272-280.

Thomas A.S., Mangubhai S., Vandervord C., **Fox M.** and Nand Y. 2019. Impact of Tropical Cyclone Winston on women mud crab fishers in Fiji. Climate and Development 11(8):699–709.


Photo credit: Australia Awards Women's Leadership Initiative

Women in fisheries profiles

Nanise Kuridrani Tuqiri

Nanise Kuridrani Tuqiri was born and grew up in Namatakula Village in Fiji.

She holds a Master of Environmental Management degree majoring in conservation biology from the University of Queensland in Australia, and a Postgraduate Diploma in Marine Science from the University of the South Pacific. She is currently a Senior Research Officer with the Ministry of Fisheries overseeing a team of 30 fisheries staff coordinating all research, data synthesis, and providing policy guidance and advice.

Since joining the Ministry in 2005, she has played a critical role in coordinating marine resource assessments, including the establishment and gazetting of marine protected areas. The management and protection of marine species are an integral part of her work, and she made a significant contribution to the management and protection of groupers in Fiji. She coordinated the socio-economic data collection of aggregated reef fishes and the gazetting of the Naiqoro Passage Spawning Aggregation Marine Reserve in Kadavu in 2018. As a scientist, Nanise is interested in understanding the social and economic landscapes behind marine resources utilisation and the wealth it created through sustainable management and conservation. She coordinated the value chain analysis (VCA) of freshwater mussel (*Batissa violacea*) in 2016 and co-coordinated with Science and Conservation of Fish Aggregations (SCRFA) on the grouper fishery VCA in 2017.

She has a growing interest in understanding the impact of climate change on seafood safety and livelihoods. Nanise is actively involved in ciguatera fish poisoning research, working closely with the Fiji National University and the International Atomic Energy Agency. She presented a scientific abstract on "Identification of ciguatera hot spots in Fiji's I Qoliqoli" during the Indo-Pacific Fish Conference held in French Polynesia in 2017. At the national level, she presented a paper on "Grouper management in Fiji" during the Pacific Voices for a Global Ocean Challenge Conference held at the University of the South Pacific in June 2017 and a paper on "Value chain analysis of freshwater mussel in Viti Levu, Fiji" during the Women in Fisheries Celebration Conference in March 2017. She is well respected by her colleagues and partners for the high quality of her work and for her integrity.

What has been one of the greatest highlights of your career so far?

The greatest highlight of my career is being part of the Australia Awards Women's Leadership Initiative Leadership and Mentoring programme for the 2019 to 2020 cohort. I was blessed and honoured to be selected in the programme since the selection process is very competitive: you compete with elite women leaders in the Pacific who have applied for limited spots. The programme is giving me the opportunity to further build my leadership skills and capabilities, and to establish my networks with other Pacific and Australian women leaders who share the same passion and vision to create positive changes in the areas that we serve. I contribute effectively not only to the Ministry of Fisheries on the sustainable management of fisheries resources, but also to my village by encouraging women and girls to actively participate in sports. I am the founder and the Manager of the Vusu Raiders Women Rugby League Club, a village-based women's rugby team that provides a platform for women and girls in my village and district to be empowered and create change. Being involved in these roles has given me the opportunity to mentor young women and girls so that they can also generate social and economic change and contribute to development in my village and district.

Why are you passionate about women in fisheries (or gender and fisheries)?

I was brought up by my grandmother in my village, Namatakula, in the province of Nadroga Navosa. In coastal and maritime villages, one of the regular activities for women is gleaning and fishing on coastal reefs. I often followed my grandmother, and she taught me the basic fishing and gleaning skills, especially to catch octopus. Therefore, I have been fishing from an early age, and this has contributed to my passion to know more about the marine environment and to understand the important role women play in our coastal fisheries. We know that women dominate the use of coastal resources, but only a few take up management roles. And as one of those few women in a senior role, I want to create a positive impact. Specifically, I want to do more impactful research and resource assessments that contribute to policy improvement and service delivery.

What message do you have for inspiring young women early in their career?

You need to self-discover first – know yourself – as this will help you to know your vocation. Sometimes the process to reach your goal might be long, as there are a lot of twists and turns along the way, but never give up. Remain confident, believe in yourself and have faith that anything is possible if you set your mind to it.

A review of Pacific gender and fisheries literature

Natalie Makhoul[1] and Jeff Kinch[2]

Introduction

A review of Pacific gender and fisheries literature was conducted under the Pacific-European Union Marine Partnership (PEUMP) programme this year to provide an evaluation of the "big picture" of gender and fisheries issues most relevant to understanding women's and men's roles, contributions and challenges in the fisheries sector.

The review provides a summary of country-specific information that was available for the following Pacific Island countries (PICs): Cook Islands, Federated States of Micronesia (FSM), Fiji, Kiribati, Nauru, Niue, Palau, Papua New Guinea (PNG), Republic of the Marshall Islands (RMI), Samoa, Solomon Islands, Timor-Leste, Tonga, Tuvalu and Vanuatu.

The review found that a large amount of work and reports on gender and fisheries were conducted pre-2008, with a hiatus until a re-emergence in 2014. Fiji, FSM, Samoa, Solomon Islands and Timor-Leste have all had recent studies done on gender issues in the coastal fisheries and aquaculture sector. FSM and Solomon Islands, in particular, have had comprehensive gender and fisheries assessments conducted with a focus on governance structures and gender mainstreaming capacities of various government agencies. Fiji's literature on gender and fisheries is more fragmented, with specific gender analysis work available within sub-sectors that have mainly focused around women's economic activities in a specific fishery. Samoa's recent gender and aquaculture assessment highlights the significant role of women in aquaculture. Future gender and fisheries assessments that will follow a similar style and methodology to the ones conducted for FSM and Solomon Islands are recommended for the Cook Islands, Kiribati, Nauru, Niue, Palau, Papua New Guinea, RMI, Tonga, Tuvalu and Vanuatu. This will enable a comparison across countries and help identify similar challenges and opportunities to better address gender equity and social inclusion in the fisheries sector.

Recommendations

Recommendations from the review are aimed at addressing economic empowerment, community-level management and skills development of women and men.

Recommendation 1

The PEUMP programme should prioritise gender and fisheries assessments in PICs that have outdated literature or little to no data or information. Where gender and fisheries assessments have been conducted more recently, the PEUMP should focus on the implementation of recommendations from these assessments and continue to advocate for the inclusion of systematic gender analysis into upcoming fisheries research.

Recommendation 2

Fisheries data currently gathered by national fisheries agencies tend to have a greater biological focus (e.g. size-length frequency data for fish species). When commissioning further gender and fisheries assessments, research activities should also include the collection of specific sex-disaggregated data on coastal fisheries use and access. This information can then be used to inform appropriate policy and the types of practical assistance that can be provided to various fishers. As part of this, effort should be made to include information from other sources, including national censuses, household income and expenditure surveys, poverty surveys, nutrition surveys and any specific fisheries sector socio-economic surveys that have been previously conducted.

Recommendation 3

The inclusion of national fisheries agencies, government women/gender affairs agencies and key women's groups should also be part of future gender and fisheries assessments in any country. This is considered vital to support effective implementation of recommendations made, in particular entry points for gender mainstreaming, the development of gender policies or appropriate legislation, and exploring post-assessment support services.

Recommendation 4

There is also a need to investigate fisheries value chains where women are predominantly involved. This is important to identify areas where women can be better supported for greater participation, better efficiency, increasing higher economic returns, and general safety at all points along the fisheries value chain. As part of this, there is also a need to explore private sector engagement as well as investigating alternative or supplementary livelihood opportunities that could be expanded into small businesses for women. This can include but is not limited to various post-harvesting and value-adding processes, packaging and retailing.

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Recommendation 5

Women and men mobilise fishing effort either individually and/or in groups in varied ways based around household needs, social and cultural obligations, labour requirements and access arrangements. The opportunities for groups to be more organised and formalised into associations or cooperatives needs to be supported to coordinate effort and market opportunities. As part of this, investigation of existing women's groups is also important to determine what organisational capacity these groups may have to support various initiatives that increase women's participation. There is also a need to investigate women's access to suitable financing mechanisms and assess basic financial literacy training needs.

Recommendation 6

To raise the profile of women in national fisheries agencies there is a need to highlight women successfully engaged in these agencies as a vehicle for encouraging other women and girls to enter the fisheries science, management and development arena and pursue careers in this area. In addition, there is a need to identify and map pathways for women into the formal fisheries sector, particularly management positions within the tuna processing industry. The tuna industry allows for much opportunity, but there is a need to identify if women are being exploited, harassed, and fairly remunerated compared to their male colleagues. Further, there is also a need to ascertain if women have suitable representation and opportunities for training support and counselling.

Recommendation 7

Explore ways to increase gender perspectives in fisheries management and marine conservation initiatives by non-governmental, civil society and faith-based organisations. As part of this effort, research conducted should explore women's roles and contributions in fisheries management and marine conservation initiatives, their level of advocacy engagement, their level of awareness, their level of participation and the extent to which gender roles are being analysed to inform these initiatives.

Conclusion

The review has highlighted a need to conduct specific gender-focused value chain analyses (VCAs) in the fisheries sector. To date, there has been very little to no focus on PICs outside of Fiji to further explore gender perspectives within VCAs.

A common activity that was identified from the review, which could be developed as a specific cross-PICs activity, is to have VCAs conducted on small-scale tuna catches and to identify supplementary livelihoods opportunities, in particular value-added processes for smoking, salting, drying, canning, loining and jerky products. Such a designated activity can also be supported by a designated fish aggregating devices programme. The viability of commercialising such business opportunities needs to be carefully investigated in individual PIC contexts, however, where purchasing power may be low, infrastructure limited, market access difficult and subsistence lifestyles disproportionally favoured. In addition to prioritising VCAs that have a greater gender focus, skills development programmes will be important as will financial literacy training and access to gender-friendly credit and saving schemes.

In terms of empowerment and agency, strengthening women's groups such as associations, cooperatives, fishing clubs or similar institutions needs further investigation. By supporting such groups, women would have a stronger platform to participate in decision-making, raise concerns that affect them and take on board additional responsibilities outside of traditional roles. This inclusion would also assist with obtaining perspectives from women on changes in the marine environment and fishing activities and increasing their involvement in local-level management activities.

The review has shown that there is both challenges and opportunities to gender equity and social inclusion and associated economic empowerment, food security and resilience in the Pacific Islands region's fisheries sector. While previous gender and fisheries assessments have gone some way to enhancing our understanding of issues within specific PICs, there is still a lot of work to be done.

Gender in Aquaculture and Fisheries Section of the Asian Fisheries Society

GAF7 Long Report: Expanding the Horizons[1]

This publication presents an overview of all presentations, special sessions and training workshops from the 7th Global Conference on Gender in Aquaculture and Fisheries (GAF7), held from 18 to 21 October 2018 at the Asian Institute of Technology, Bangkok, Thailand. Organised by the Gender in Aquaculture and Fisheries Section (GAFS) of the Asian Fisheries Society (AFS), the Asian Institute of Technology and the Network of Aquaculture Centres in Asia-Pacific and supported by many sponsors and partners, this conference followed 28 years of women and gender symposia and workshops supported by the AFS. GAF7 created a platform for sharing the latest gender in fisheries and aquaculture research, learning new methods and approaches, launching new training products and crafting a vision for the future of our research field. GAF7 presenters and participants came from all continents. Here are some of the key conclusions.

Strong evidence exists that when women are made visible and given a voice changes start to take place. But miracles don't happen overnight; most take a long time. Change is impeded by many factors, and the lack of sex-disaggregated data in fisheries make change hard to assess. Added to the data gap is actual resistance to integrating gender equality into the sector. Sex-disaggregated data, if available at all, rarely extend beyond production data, thus omitting valuable information on the post-harvest and support services in which women's participation is most prevalent. GAF7 presenters described their attempts to work around the lack of sex-disaggregated data by tapping into data inferred from a national fisheries census, institutional data and data collected by special studies. A panel-led discussion proposed empirical studies to work through model approaches, at the national level, for collecting sex-disaggregated data.

Despite the challenges of assessing change, a rich set of surveys and impact assessments provided GAF7 with rather sobering results. In Indonesia, several fisheries development assistance projects that were intended to include gender equality components barely did so; a survey of the seafood sector found women were indeed integrated into the sector but still experience many types of discrimination. In India, state and national fisheries policies overlook non-traditional opportunities for women; women have been replaced in many nodes of the shrimp value chain by mechanisation and export market orientation, and capacity building programmes for fish processing are mainly driven by the top-down demands of importers. Special Workshops explored gender indicators for small-scale aquaculture certification and for monitoring the progress of implementing the Small-Scale Fisheries Guidelines. Photovoice, a graphic image-based research tool for impact assessment and other social science research was taught in a Special Workshop and used by a team of participants in assessing GAF7.

Some change can be self-initiated, especially by women's collective action, of which GAF7 heard many fine examples from Africa (AWFISHNET), Asia (Bangladesh, Cambodia, Japan, Philippines and Thailand), the Caribbean and Mexico.

The impetus to progress toward gender equality comes from many quarters. GAF7 presenters and participants explored solutions like education for future experts and new gender-sensitive technologies that offer new opportunities, such as in fish marketing in India, and to overcome emerging problems such as climate change impacts on seaweed and shrimp farming. Educators showed how, in India, Japan, Philippines and Thailand, attempts to mainstream gender in fisheries education has met with passive, active, and hidden resistance from colleagues and/or administration. Thus it becomes necessary to mainstream gender in the academic curriculums of fisheries science. Institutions testing gender transformative approaches found that backlash to innovations to help women can be reduced by engaging women and men together as agents of change.

Fisheries and aquaculture are not monolithic, as reflected in studies that focused on women in particular industry nodes such as seaweed growing and tuna landing ports. Women's entrepreneurship was featured in "positive deviators" in Bangladesh, collectives in Japan, individual women's stories in Nigeria, small-scale oyster growers in the Philippines, and, in India, women traders in competitive value chains, and by those balancing choices between fish and non-fish livelihoods.

Citation

Williams M.J., Gopal N., Rejula K., Pedroza-Gutiérrez C., Satapornvanit A.N., Ramirez P., Ananthan P.S., Badayos-Jover M.B., Roxas A., Sijitha Mary C.X., Pierce J. and Choudhury A. 2019. Long Report GAF7: Expanding the Horizons: The 7th Global Conference on Gender in Aquaculture & Fisheries. Selangor: Gender in Aquaculture and Fisheries Section of the Asian Fisheries Society. 57 p.

Download the report: GAF7_Long Report

[1] https://www.genderaquafish.org/gaf7-long-report-expanding-the-horizons/