

Empowering women through pearl industry-based livelihoods in Fiji

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Introduction

Pearl farming is the Pacific region's most valuable and highest priority aquaculture activity (SPC 2007; Ponia 2010). Pearl culture is compatible with traditional lifestyles and offers livelihood opportunities to coastal communities at a number of levels, including oyster collection and sales, and the production of mother-of-pearl (MoP), mabé pearls and MoP handicraft items. These potential livelihood opportunities are recognised in French Polynesia through the active introduction of pearl farming to remote atolls and islands where they support local populations (Arnaud-Haond et al. 2003; Southgate et al. 2008; Andréfouët et al. 2012). Although the cultured pearl industry in Fiji is much smaller than that in French Polynesia, and still developing, it is large enough to support associated livelihood activities and collaborative research between the University of the Sunshine Coast in Australia and the Ministry of Fisheries in Fiji is now beginning to generate significant benefits in partner communities. This research is funded by the Australian Centre for International Agricultural Research (ACIAR) and the Ministry of Fisheries, and is directed primarily to benefit women's groups and youth groups. Research activities focus primarily on three potential income-generating activities such as the: 1) collection of juvenile black-lip pearl oysters (*Pinctada margaritifera*, locally called *civa*) that are sold to round pearl farms for pearl production; 2) production of mabé pearls (also called half-pearls) using the winged pearl oyster, *Pteria penguin* (locally called *melamela*); and 3) production of pearl shell and mabé pearl handicrafts for domestic sale.

Oyster collection

Methods for collecting juvenile pearl oysters are simple and well established (Southgate 2008; Kishore et al., 2018), and involve the deployment of appropriate materials (such as rope, frayed rope and shade cloth) to a depth of 2–8 metres at a suitable oceanic site. These materials, known as 'spat collectors', provide a substrate for pearl oyster recruitment, and after a period of 12–15 months, juvenile oysters can be harvested from the spat collectors (Fig. 1). This activity provides the basis for the ~ USD 100 million per annum round pearl industry in French Polynesia (Arnaud-Haond et al. 2003) and can be achieved by local people with minimal training and using cheap and readily available materials (Fig. 2).

A national pearl oyster spat collection programme began in Fiji in 2015 in response to increasing demand for *P. margaritifera* by Fijian round pearl farmers, the need to diversify spat collection efforts in Fiji to mitigate potential impacts of destructive weather events, such as Tropical Cyclone Tomas, and a desire to broaden the socioeconomic benefits of spat collection to Fijian communities. The national spat collection programme assessed pearl oyster recruitment at 29 sites across Fiji (Kishore et al. 2018). It generated an improved supply of oysters to round pearl farmers, thus supporting industry expansion, and allowing the identification of sites with high recruitment

where spat collection efforts could be increased in a targeted fashion. Resulting from this research, more than 12 Fijian communities now generate income from the sale of *P. margaritifera* to round pearl farms, with incomes ranging from FJD 520 to FJD 2,640 (USD 245–1,245) per crop. Sales of *Pinctada margaritifera* spat to round pearl farmers are facilitated by the Ministry of Fisheries, which determines farmer interest, negotiates a sales price on behalf of the spat collecting community, and organises transport of the oysters from the collection community to pearl farms.



Figure 1. Collection of black-lip pearl oyster (*Pinctada margaritifera*) juveniles or 'spat' using spat collectors at Namarai, Fiji. (image: Paul Southgate)

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Figure 2. President of the Raviravi Women's Group, Kinisimere, with spat collectors before deployment in seawater. Spat collectors are composed of a long length of rope from which individual frayed-rope spat collectors of 1 metre length are suspended at a depth of 5 metres. (image: Pranesh Kishore)

Women's groups represent half of all communities involved in the spat collection program with the remainder comprised of youth groups. The ACIAR and Ministry of Fisheries (MoF) project provides direct support to all communities through the initial deployment of spat collection infrastructure, initial and ongoing training, regular extension and assessment visits, and active research at many sites, which helps improve the efficiency of spat collection efforts and builds local capacity. Incomes generated from pearl oyster sales by partner community groups have been used in various ways including

construction of a village hall, purchase of a village truck, building a new shop, assisting school children, reinvesting in pearl farming materials and infrastructure, and distribution as Christmas bonuses among group members.

Mabé pearl production

At a number of community spat collection sites, where oyster spat recruitment was successful, a second species of pearl oyster, *Pteria penguin*, made up a significant proportion of recruits. While of no value to round pearl farms, this species is traditionally used to produce mabé pearls (Gordon et al., 2019) that are also known as half-pearls or blister pearls (Taylor and Strack 2008). Mabé pearls are produced by adhesion of hemispherical nuclei to the inside surface of *Pteria penguin* shells, a process called 'seeding', using simple methodology that can be taught to community members with appropriate training (Fig. 3). Once nuclei are applied, oysters are returned to the ocean (Fig. 4), where they are grown for 10–15 months before resulting mabé pearls can be harvested (Fig. 5). Seven Fijian community groups have been trained for mabé pearl production using *Pteria penguin*; four have successfully produced mabé pearls and generated incomes from their sales ranging from FJD 735 to FJD 2,200 (USD 346–1,038) per crop, while another two communities will harvest their first mabé pearls in early 2019. Women's groups make up 57% of the communities currently engaged in mabé pearl farming in Fiji, comprising more than 130 women.

The women's community at Raviravi Village (Vanua Levu) generates considerable recruitment of both *Pteria penguin*



Figure 3 (top left). A member of the Natuvu Women's Group implants a hemi-spherical nucleus onto the inner surface of a *Pteria penguin* shell for mabé pearl production during training in Natuvu Village. (image: Pranesh Kishore)



Figure 4 (top right). Dimo from the Ravita Women's Group shows pearl oysters she has tied to a rope before they are returned to the ocean for mabé pearl production. (image: Pranesh Kishore)

Figure 5 (bottom right). Members of the Raviravi Women's Group with some mabé pearls from their first pearl harvest. (image: Pranesh Kishore)



and *Pinctada margaritifera* to their spat collectors and have used both species for mabé pearl production. The single crop of *Pinctada* mabé pearls so far grown at Raviravi generated an income of FJD 1,600 (USD 755). *Pinctada margaritifera* is also used for mabé pearl production by the women's group at Qamea Island (Taveuni) where 150 oysters that had previously been used for round pearl production were donated to the women's group by the local pearl farm (Civa Fiji Pearls Ltd). The mabé pearls produced by these oysters were harvested in late 2018. Indications are that some of the income generated will be reinvested in pearl farming materials and equipment, and that remaining funds will be used for community benefit through the Vanua Trust of Laucala.

While mabé pearls are generally less valuable than round pearls, they have a number of comparative advantages: 1) they can be farmed by local people with minimal training and, unlike round pearls, production does not require the input of skilled overseas technicians; 2) they require a shorter (around half) culture period of 10-12 months; 3) multiple pearls (up to five) can be produced from a single oyster that may collectively approach or exceed the value of the single round pearl produced from each *Pinctada margaritifera*; and 4) mabé pearl production requires minimal husbandry input and is compatible with coastal community lifestyles (Fig. 6). Harvesting mabé pearls involves cutting them from oyster shells and this generates MoP shell pieces as a by-product. Oyster shells, MoP shell pieces and mabé pearls, can all be used to produce pearl jewellery items and handicrafts, and this offers further income-generating opportunities for Fijian women.



Figure 6. Members of the Ravita Women's Group initially used bamboo rafts to clean their oysters. But recognising their success and potential, the Fiji government has recently provided boating equipment specifically for pearl farming. (image: Pranesh Kishore)

Pearl shell and mabé pearl handicraft production

There is strong international and domestic demand for mabé pearls, and strong domestic demand for MoP items in Fiji, particularly those with a local or traditional design (Chand et al. 2014; Naidu et al. 2014). An initial value-chain analysis identified that around FJD 8.5 million (≈ USD 4 million) worth of pearl and pearl shell handicraft

items are imported into Fiji each year, targeting international tourists. This represents considerable potential for import replacement through local production, which can now be supported by an improved local oyster (shell) supply from community spat collecting initiatives. Pearl handicraft skills training in Fiji began in 2014 to investigate the potential of locally made handicraft items (using *Pinctada margaritifera* shells) to compete with pearl shell imports. This was achieved by working with the Ba Women's Forum (BWF) and Ba Town Council (BTC) to form a micro-enterprise – essentially a women's training collective to create economic empowerment and sustainability by introducing new technology, training and workshop facilities for creative development. The ACIAR/MoF project provided modern machinery to assist with water-based grinding, sanding, polishing and cutting of pearl shells, and smaller tools for shaping, drilling and engraving. A workshop was established in the women's bure at Ba in partnership with the BTC to: 1) support regular training of the women's shellcraft group by visiting handicraft skills trainers (Fig. 7); and 2) produce high-quality, retail-ready pearl shell jewellery and handicraft items (Fig. 8).



Figure 7. Members of Marama Shellcraft Fiji of the Ba Women's Forum in their workshop in Ba practicing pearl shell polishing, design and engraving with trainer Neke Moa from New Zealand. (image: Paul Southgate)



Figure 8. Members of Marama Shellcraft Fiji checking out the Marama Shellcraft Fiji product display in a Tappoo retail outlet. (image: Theo Simos)

Now operating as an autonomous unit with the BWF, Marama Shellcraft Fiji (MSF⁴) has begun trading with Fijian and international customers, and has gained 'Fiji Made' accreditation. Until 2017, the production efforts of MSF focused on shellcraft items made from pearl shells obtained as a by-product from Fijian round pearl farms. However, increasing availability of cultured mabé pearls in Fiji since 2017 has allowed expansion into the production of mabé pearl jewellery items (Fig. 9), which is a significant new development in Fiji.



Figure 9. Unique pearl shell and mabé pearl jewellery items produced by Marama Shellcraft Fiji, Ba. (image: Paul Southgate)

Based on the success of handcraft training at Ba, the ACIAR/MoF project recently established a second pearl handcraft training centre in partnership with the village of Somosomo at Taveuni. The Nasomo Ra Marama Handicraft group from Somosomo now has access to a well-equipped workshop supporting shell processing and handcraft production (Fig. 10). They have so far completed two training workshops and are already producing high-quality shellcraft items.

The two handcraft training workshops so far established at Ba and Somosomo require a source of power for the machinery used in shell processing. But because power is not readily or cheaply available in many coastal communities in Fiji, a new programme of pearl shell handcraft training using hand tools was recently begun with the training of 18 women from three communities hosted by the Navatuda Women's Club in Raviravi (Vanua Levu). Training included nine workshops delivered over eight days, and focused on basic handcraft skills (cutting, grinding, filing, sanding, macramé, design and jewellery components) as well as



Figure 10. Members of the Nasomo Ra Marama Handicraft group from Somosomo Village, Taveuni, polishing pearl oyster shells in their workshop. (image: Paul Southgate)

basic business skills and marketing. Eight sets of hand tools were provided to the Navatuda Women's Club to allow participants to continue to apply their newly acquired skills. MoF has supported this initiative by funding a small facility for the display and sales of pearl handcrafts within Raviravi Village (Fig. 11). Hand tool-based pearl shell handcraft training will be extended to other communities in the coming months and will target remote communities that have access to pearl shells (through the spat collection programme), or who produce their own mabé pearls.



Figure 11. Members of the Navatuda Women's Club and officers from the Ministry of Fisheries (MoF) inspect pearl handcrafts at the small display and retail facility funded MoF at Raviravi Village. (image: Moape Kania)

Developing enterprise links

Development of numerous community groups involved with different, but related, pearl industry-based activities, such as spat collection, mabé pearl production and pearl shell handcraft production, supports establishment of

⁴ <https://maramashellfiji.wixsite.com/website>; <https://www.facebook.com/maramashellcraftfiji/>



enterprise links between themselves and with retail outlets. Perhaps the best example of this is MSF, which does not have direct access to a spat or pearl farm and relies on other communities to supply pearl shell and mabé pearls for its shell-craft production. Another example is the Natuvu women's group which has plans to purchase adult *Peria penguin* from Galoa and Raviravi communities to increase their mabé pearl production. MSF have also developed enterprise links with other women's groups and communities that are not associated with pearls, but with the supply of traditional materials used in their shellcraft products such as 'voivoi' (leaf of *Pandanus* spp.), 'vau' string (native *Hibiscus* spp.), 'masi' (bark cloth from the mulberry tree) and fired, handmade clay beads. Interactions between neighbouring women's groups on Taveuni who are concerned with spat collection (Qamea Village), mabé pearl production (Dreketi Women's Group) and mabé pearl and pearl shell handicraft production (the Nasomo Ra Marama Handicraft group from Somosomo), brings mutual benefits and support. With potential for technical guidance and marketing support from the nearby round pearl farm (Civa Fiji Pearls Ltd), this developing 'pearl hub' at Taveuni may provide a valuable model for similar developments in other parts of Fiji.

Broad support for the development and governance of community pearl-based enterprises is provided by the Fijian government where, for example, the Ministry of Itaukei Affairs assists in formulating community development plans and provides governance training. These activities provide a good basis for developing small businesses and assist in setting enterprise goals. Other government agencies that assist and support women's pearl-based enterprises in Fiji include the Prime Minister's Office; the Ministry of Trade Industry, Tourism, Land and Mineral Resources; and the Ministry of Women and Poverty Alleviation. The ACIAR/MoF project provides complementary training in basic business skills, enterprise development and marketing to all partner communities (Fig. 12) and, over the coming months, will begin regular workshops for key members of each partner community in order to foster further collaboration between communities, share ideas and experiences, and improve enterprise and governance capacity. These aspects will become increasingly important as more communities become engaged in pearl industry-based livelihoods, particularly as communities involved in spat collection shift towards mabé pearl production (Fig. 13).

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Figure 12. Nazmin Ali, Workshop Supervisor of Marama Shellcraft Fiji (MSF) instructing Armila Prasad in preparing invoices and delivery documents for the first MSF order to the Jacks Group of Companies, November 2018. (image: Theo Simos)



Figure 13. Future Fijian pearl farmer from Raviravi, Vanua Levu. (image: Pranesh Kishore)

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