

# Pearl culture and marine park management in Tanzania



Paul Southgate, James Cook University, Townsville, Australia  
[paul.southgate@jcu.edu.au](mailto:paul.southgate@jcu.edu.au)

# Mafia Island

- Southern Tanzania
- Centre of WWF Eastern African Marine Ecoregion
- Reefs fringing the islands of Pemba, Zanzibar and Mafia are among the finest remaining reefs in the region.
- Mafia Island's reefs support 400+ species of fish and 40 classes of corals.



# Mafia Island Marine Park

- Tanzanian Government assisted by WWF established the Mafia Island Marine Park (MIMP) in 1995
- First Marine Park in Tanzania
- Largest protected area in the Indian Ocean
  - covers 821 km<sup>2</sup> (shaded area)



# Mafia Island Marine Park

- MIMP supports a local population of 18,000 people who are poor and rely heavily on limited resources.
  - Fishing and coconut production are traditionally sources of income on the island.
- WWF is exploring with local communities, sustainable livelihoods that will facilitate conservation measures and address the high levels of poverty on the island and is promoting income-generating activities including aquaculture.
- WWF has employed a local Aquaculture Coordinator and collaborating with James Cook University has undertaken research to investigate the feasibility of pearl culture.
- Long-term aim to establish small-scale artisanal pearl production that will generate revenue for local fishing communities within Mafia Island Marine Park, reducing dependence on fishing and strengthening perceptions that the marine park can benefit local residents and protect regional marine biodiversity.

# Pearl culture

- As demonstrated in the Pacific, cultured pearl production provides opportunity for income generation for coastal communities
- Pearl production may occur on small family-based pearl farms and individuals may enter the industry at a number of levels to produce oyster shells (mother-of-pearl), half-pearls or round pearls, or they may simply collect juveniles (spat) from the wild for sale to pearl farms
- These activities provide opportunity for the involvement of women and provides the raw materials for local handicraft manufacture which may include lower grade pearls or pearl shell



## Consultation with local villages



# Pearl culture at Mafia Island

- Black-lip pearl oysters are abundant within the Mafia Island Marine Park with high quality nacre
- Fifty oysters were 'seeded' to trial half pearl production
  - each was 'seeded' with 4-5 hemi-spherical nuclei following anesthesia



WWF trainee inserting half-pearl nuclei



Pearl oyster with implanted plastic nuclei



Implanted oysters are transfer to grow on rafts with the MIMP



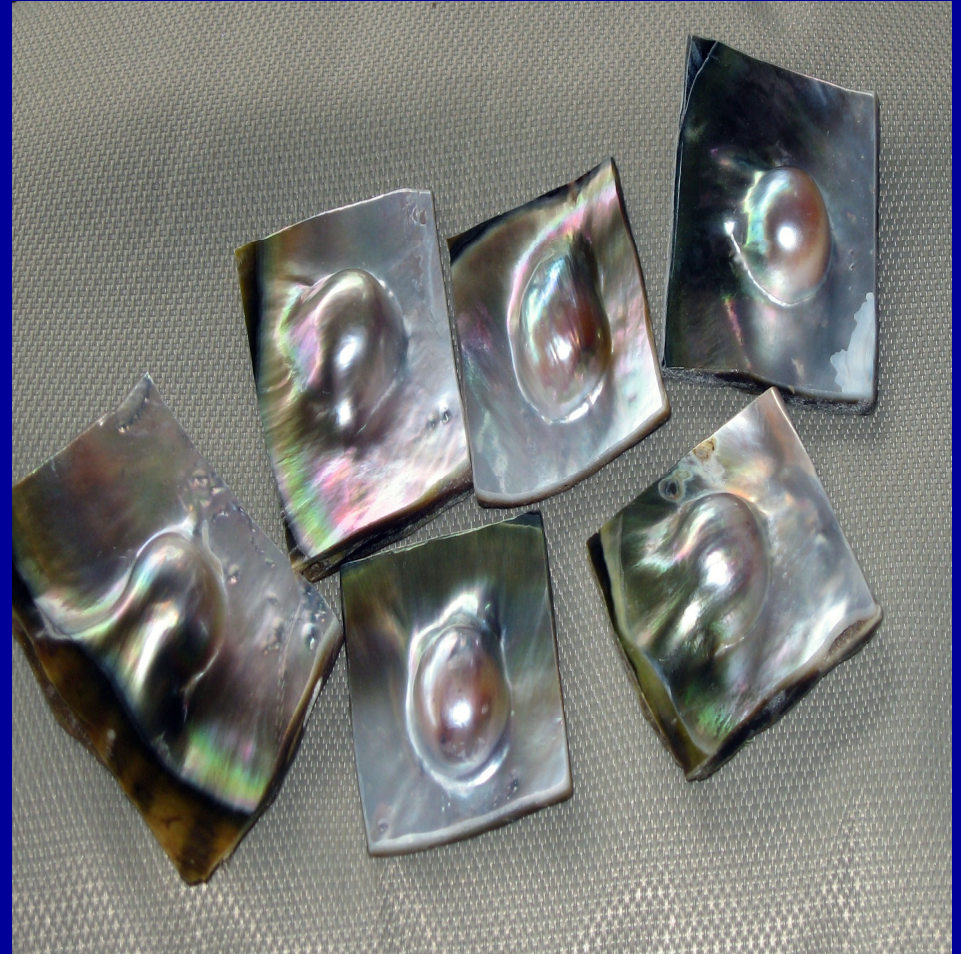
Rafts established within the MIMP are used to house 'seeded' oysters and are maintained by local fishermen



Half pearls are harvest after 6-8 months



Local fishermen (trainees) cutting half pearls from shells for processing



Half-pearls cut and polished

# Finished product

- Local silver-smiths add pendant setting (~\$10)
- Pendants sell for ~US\$100 at resorts within MIMP and outlets in Dar-es-Salaam
- Sales merchandise explains community input/benefits
- Excellent market
  - large tourist industry
  - High-end jewellers/hotel
  - handicraft outlets
  - excellent jewellery network in Tanzania (gemstones)



Long-term supply of oysters used for pearl culture relies on collection of juveniles (spat) using spat collectors

Spat recruit to collectors deployed on rafts with the MIMP. They are then grown in nets to a size suitable for pearl production

Spat collection programs are maintained by local fishermen/villagers



Local fisherman makes spat collectors

# Ongoing activities

- 3 year Recomap (EU) funding (2009-2011)
  - extension of spat collection and pearl culture activities to other communities within MIMP and adjacent mainland coast
  - training of more WWF trainers and extension to other communities
  - involvement of University of Dar-es-Salaam and post-graduate training (oyster survey and spat collection etc)

# Take home message

- Appropriate forms of Aquaculture can be compatible with marine conservation efforts. Longer term goals of WWF include:
  - extending this model to other WWF sites in east Africa (Kenya, Madagascar, Mozambique) using MIMP as regional training centre
  - investigate other forms of low impact aquaculture (seaweed, sponges, etc) to support local livelihoods and income generation in support of marine conservation