

Coral farming as means of sustaining livelihoods and promoting resource management

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Introduction

Along the north coast of Manus Province, Papua New Guinea (PNG), the Andra community has a traditional monopoly on the production of coral lime for chewing with betel nut (*Areca catechu*). Studies by the Wildlife Conservation Society have revealed that compared with similar sites nearby and in other parts of PNG, the reefs surrounding Andra Island are virtually denuded of Acroporid corals, most likely due to the community's economic dependence on the harvest of live Acroporid corals for lime production. A coral farming project was implemented with the aim of providing a sustainable means for maintaining the coral lime trade and relieving the pressure on wild coral populations.

Cultural Context

Betel nut (*Areca catechu*) chewing is ubiquitous in PNG, practiced by an estimated 88% of the population and forms an intricate part of social and cultural customs and rituals (Gupta & Warnakulasuriya 2002).

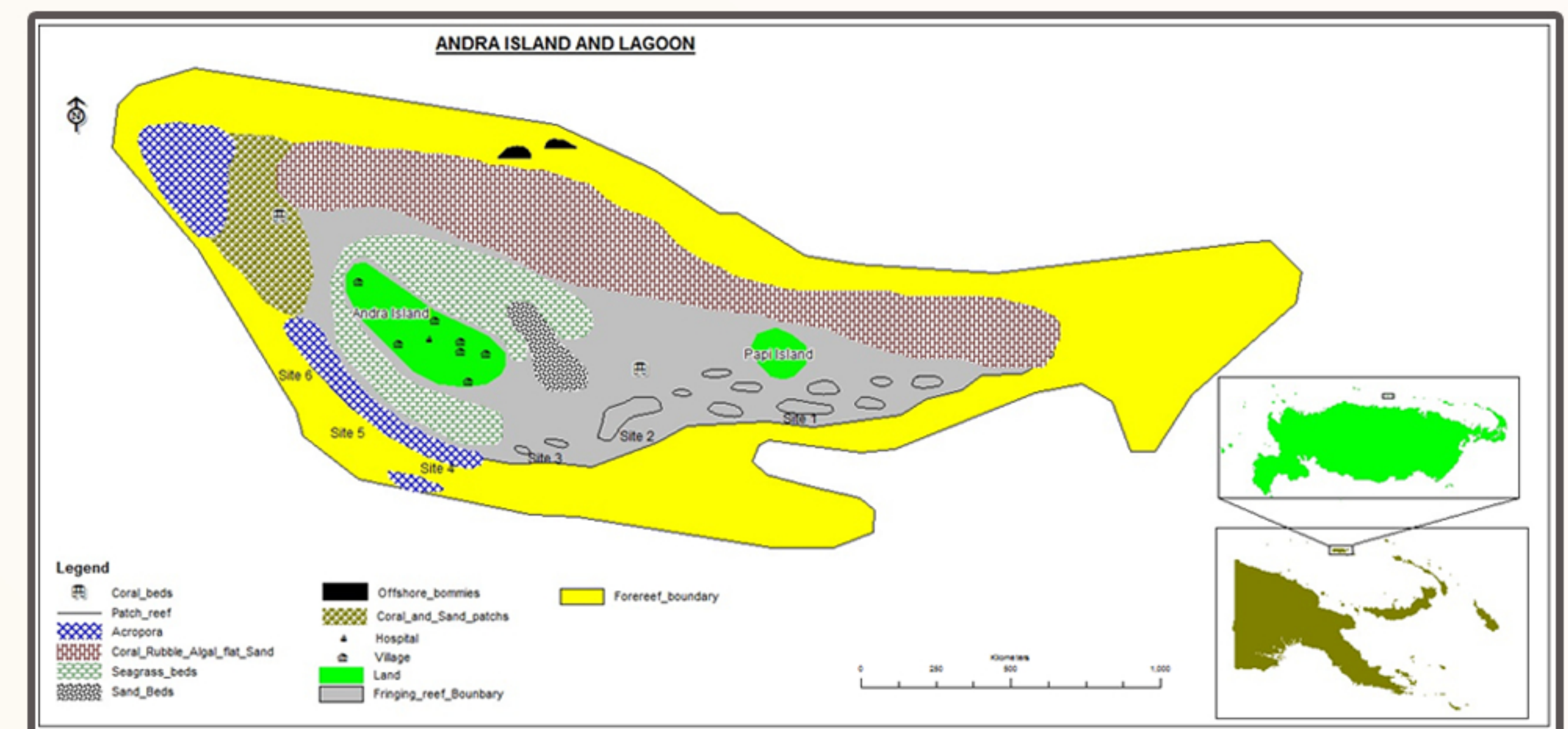


In PNG, betel nut is chewed with the leaf or flower of *Piper betel* and lime (calcium hydroxide).



Andra lime is sold at Lorengau market, Manus Province. Each pack is sold for 1 PNG Kina (~0.30 USD).

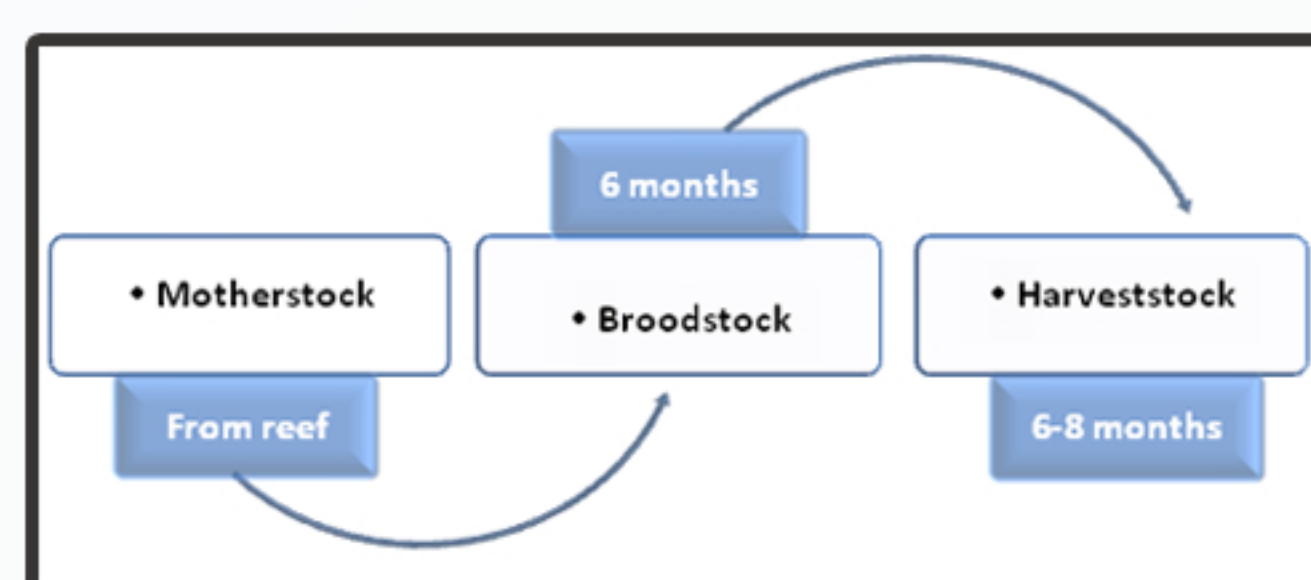
Location



Andra Island, located along the north coast of the main Manus Island covers an estimated area of 0.26 km² with a reef area of 5.6 km². As of 2008, the island had a population of 450 divided into two main clans and six sub clans.

Coral Farming

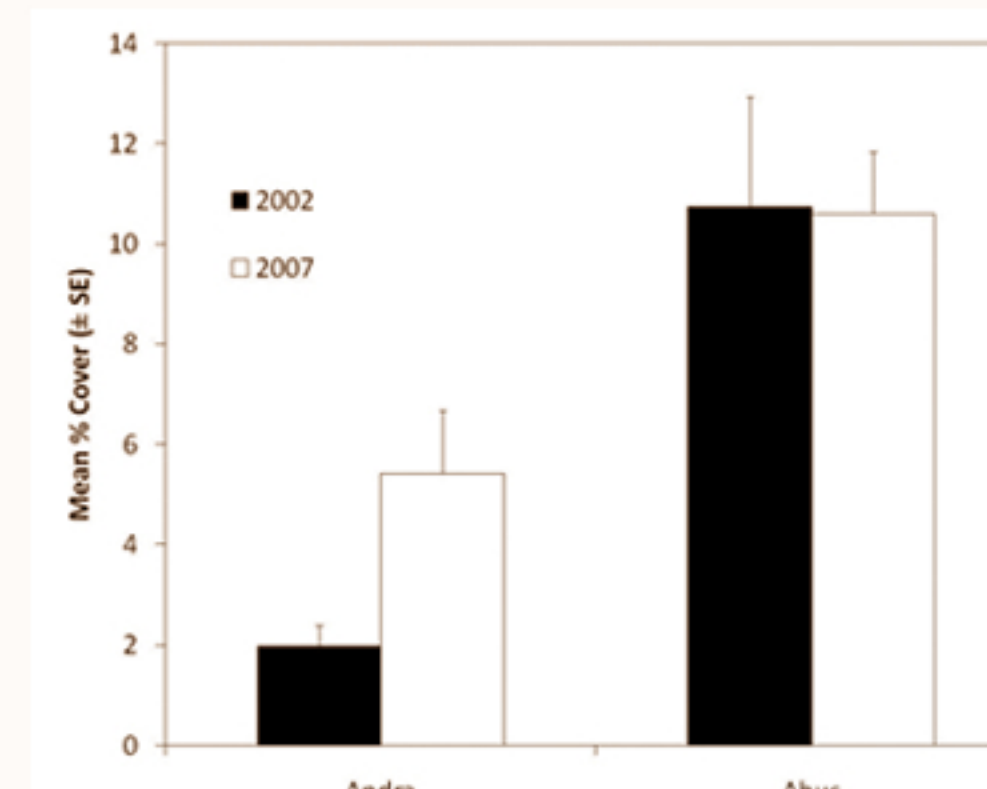
The coral farming process



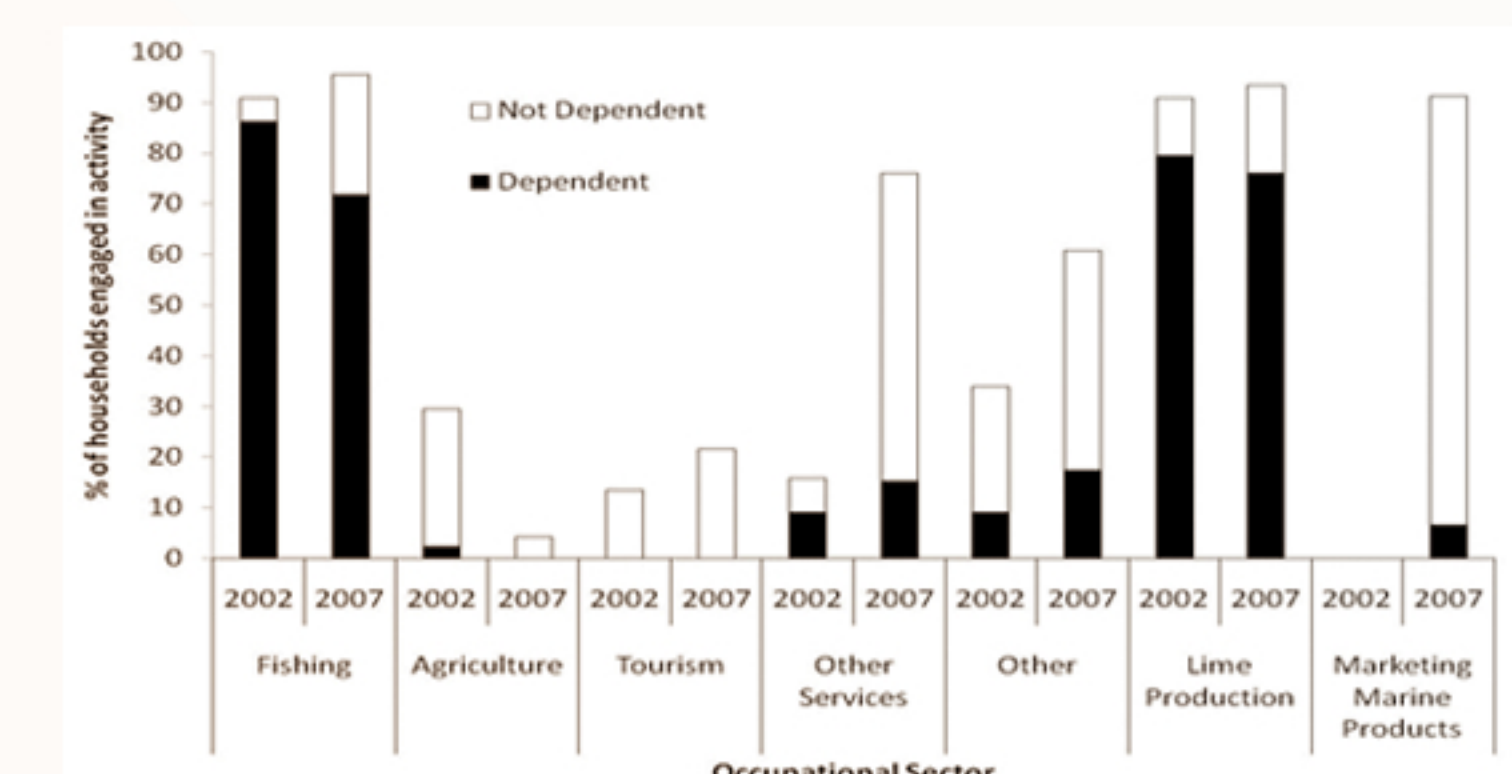
Depending on the size of the coral pile, post-harvest processing may involve up to a month of sun-drying; baking of the coral skeletons; and storage for 2-3 month during which the fragments crumble to form the lime powder. The final product is sold in batches over several months.

Results

Post-transplantation mortality rates were ~15% for the first three months, decreasing to between 5 and 8% in each subsequent quarter. Production from the experimental farms (1.23 m³ by 11 tables over 6 months) was approximately equivalent to the mean coral volume for each burn by each household within the community (1.15 m³ per household/burn, 44 households in 2002, 46 in 2007), and is produced at roughly the same rate that coral is harvested.



Nearby Ahus Island had higher percentage cover of live Acroporid corals compared to Andra.



The main sources of income and food for households in Andra are fishing and lime production.

	2002	2007
Burns per year (by Household)	1.65 ± 0.19	1.65 ± 0.39
Burns per year (Community)	152 ± 26	137 ± 32
Value of lime/year/household (USD)	1113 ± 301	1208 ± 143

In 2002 the coral lime producing industry in Andra was valued at USD102,000 ± 28,000 (SE) per year (Cinner et al. 2005). The 2007 survey of Andra lime producers reported a similar value for the industry of USD100,413 ± 13,367.

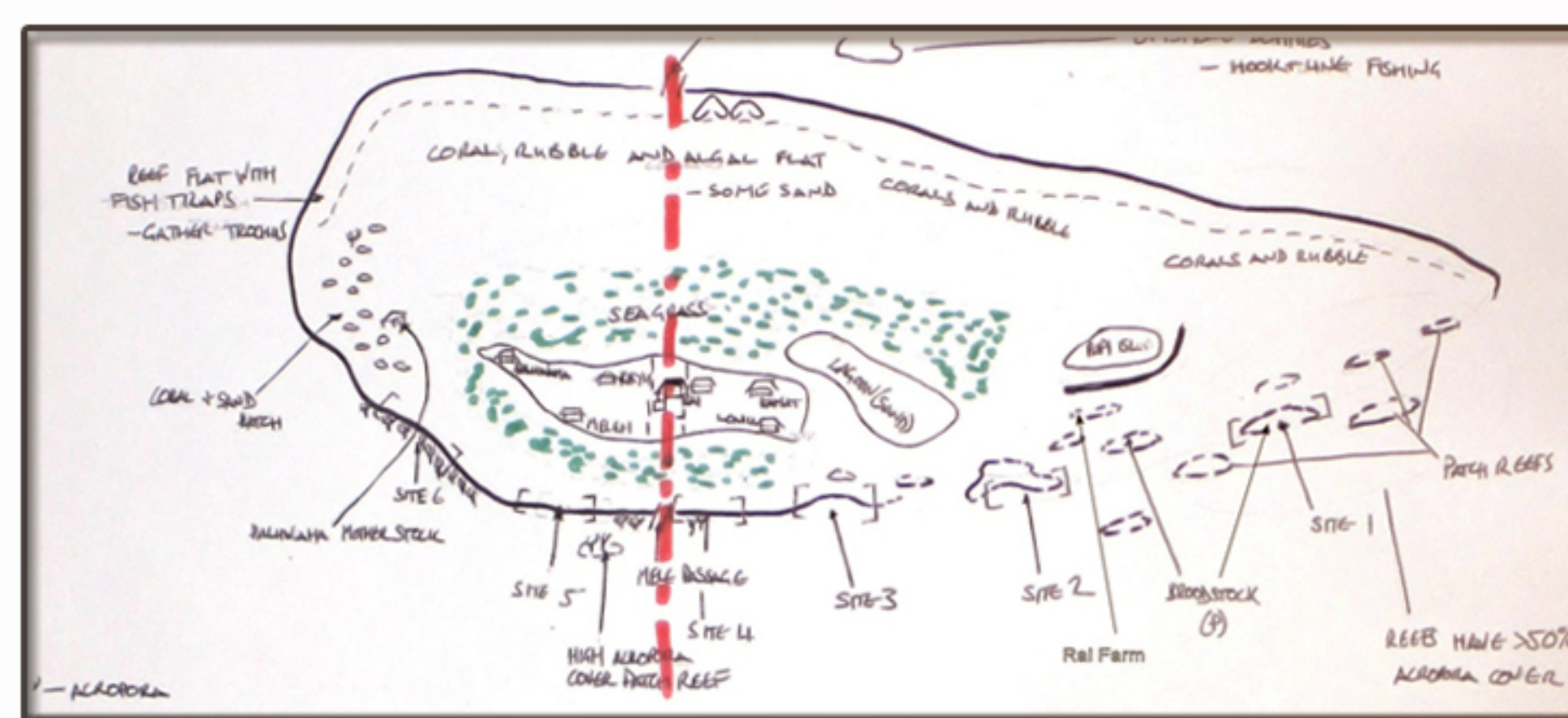
Community Engagement



Community members identified resource use issues that were incorporated into a management plan.



Rachael Lahari demonstrates selective harvesting of corals.



This resource map was generated by Andra's community members. It indicates reef areas and resource use activities as well as the location of coral farms around Andra Island. The red line indicates the division of resources between the two main clans (Rai and Paluwaha).

Conclusions

Once established, these coral farms can be maintained with little to no input from technical experts, and local communities can easily be trained to establish more similar farms. Because the corals grown by the farms are consumed locally, many of the issues that are problematic to other regional coral farming projects, such as those that provide live corals for the international aquarium trade, are avoided. Further work is being done on the capital costs of establishing and maintaining farms for each family harvesting coral. Through knowledge and information exchange with interested communities, such an initiative can be replicated throughout coastal PNG and perhaps the wider region where corals are harvested.



Acknowledgement

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