

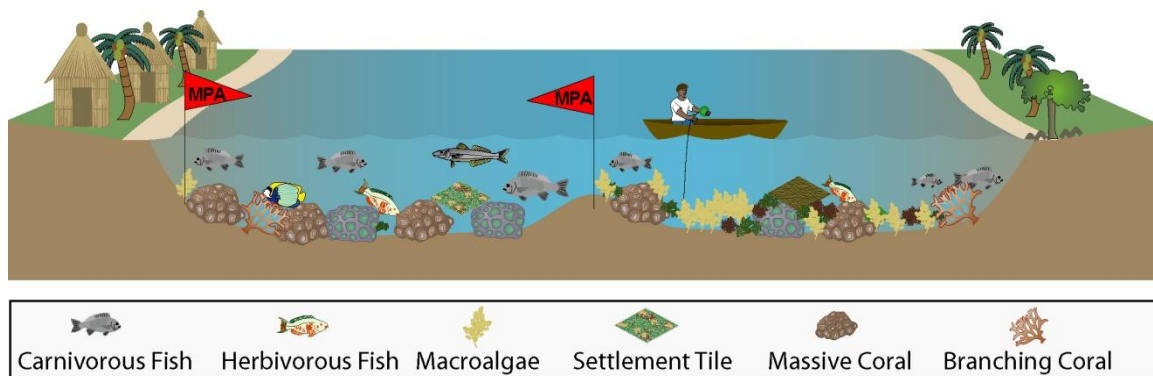
## Case study for Conservation

### Roviana Conservation Foundation

#### *Background*

- **Western Solomons Conservation Program:** Project initiated by academic, Professor Shankar Aswani, Professor at Department of Anthropology, University of California
  - The ongoing Western Solomons Conservation Program (WSCP, previously known as the RVRMDP) in partnership with island coastal communities has established the largest community-based Marine Protected Area (MPA) network in the Solomon Islands and one of the most extensive marine conservation programs in the Western Pacific.
  - Their program focuses on riparian and marine habitats in southwestern New Georgia, including outer-lagoon and shallow inner-lagoon coral reefs, inner-lagoon seagrass beds, mangroves, coastal swamps, and strand vegetation. They also targeted for protection the critical habitats for flagship species such as bumphead parrotfish.
  - The approach is to set conservation goals while also addressing such local needs as the funding of infrastructure development and educational initiatives. Through the program, they have assisted with various development enterprises (e.g. a clinic, two health posts, two schools, a school renovation, three community halls, and two women's halls), and have supported local students with grants and capacity building.
  - The project involves establishment of a network of smaller Marine Protected Areas (MPAs) in the southwestern New Georgia area. The advantages of establishing a large number of smaller MPAs include:
    - Sea tenure: MPAs must go where there is no dispute over landownership, and there is a strong traditional authorities (eg tribes)
    - If smaller, reduces chances of disputes between neighbours where some landowners want the MPA and others don't
    - Allows fishermen access to alternative fishing grounds near the MPAs – reduces impact on subsistence lifestyle, and reduces chances of poaching in MPAs
    - Easier for villagers to spot poachers and enforce the MPA
  - Today this MPA system is composed of around 29 MPAs under customary marine tenure, which is still expanding across the region.
  - The “no-take” and spatio-temporal MPAs protect critical habitats and species, in particular, the prime habitats of vulnerable or endangered species such as bumphead parrotfish, Maori wrasse, coconut crabs, green and hawksbill turtles, and dugongs among others.
  - Many MPAs are also protecting the spawning aggregations of various groupers, which are targeted in Indo-Pacific LRFFT operations.
- Did background studies in late 1990s to determine best areas for marine conservation, based on security of land tenure (less disputes over landownership)

- Worked with local communities to identify areas for MPAs. This information was incorporated into a GIS database (Geographic Information System), and then combined with scientific information and traditional ecological knowledge about the location and distribution of fish species and the underwater environment
- This information was used to determine the best boundaries for MPAs in order to protect certain species of fish, eg the bumphead parrotfish
- Then they incorporated into this information about fishing habits of local people to determine where and when the most marine exploitation was taking place. This information was needed to reduce the impact of the MPA on the subsistence needs of the local communities. In other words, so that people who needed to fish to survive wouldn't be negatively affected by the MPA.

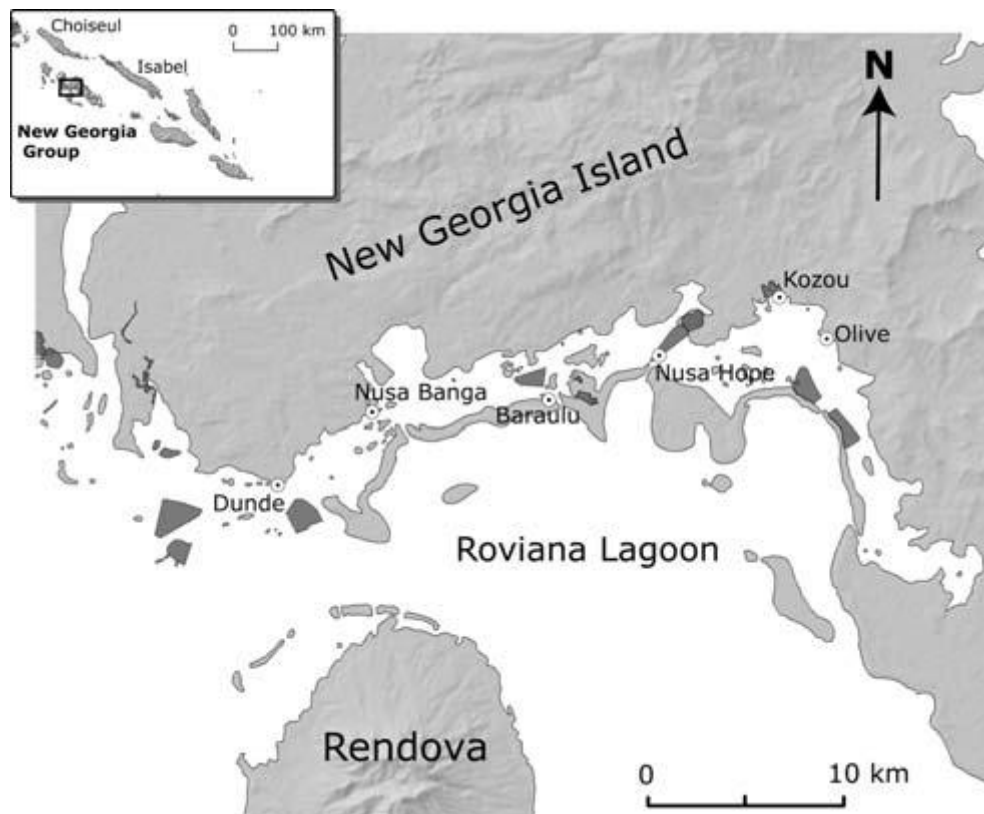


### ***Formation of Roviana Conservation Foundation***

- Originally called the Tiola Conservation Foundation (TCF).
- The Tiola Conservation Foundation (TCF) was a 'Home Grown NGO' that was working in association with the Roviana & Vonavona Resource Management and Development Program (RVRMDP-UCSB) to safeguard the interest of the Roviana and Vonavona Lagoon communities in marine conservation and sustainable rural development.
- In 2006, TCF signed an MOU with the Roviana-Vonavona Resource Management & Development Program (RVRMDP) headed by Professor Shankar Aswani, University of California. MOU was to work together for conservation, development, education and research activities of the RVRMDP. Also for RVRMDP to continue to provide operational support for TCF until such time as their own funds become available, being in the following areas:
  - function in close consultations with the TCF Executive Board in areas of research, Education (Field School), MPA establishment and completing of outstanding sustainable rural developments projects within Roviana & Vonavona Lagoons.
  - facilitate TCF where/when possible in the functions of MPA field Rangers, RMC Networking, RMC Community awareness workshops, capacity building & training of local TCF personnel and office administrative work which would/could enable TCF gain momentum during this interim phase.
  - assist in ensuring that TCF operates and/or functions in a most democratic, transparent and accountable way by facilitating the amendments/review of TCF's current constitution/structure and the legalizing of MPA by-laws.
  - assist TCF in securing funding sources for its eventual financial independence

- use the RMC Networking functions to assist/facilitate TCF with capacity building, training, workshops and media promotions. This would/should enable TCF as a local NGO, to functions/operate with integrity.
- In early 2007, TCF was replaced by the Roviana Conservation Foundation (RCF) and our program (RVRMDP) was renamed as the Western Solomons Conservation Program (WSCP). These new organizations have taken over the roles of TCF and RVRMDP respectively to manage the program.
- Because RCF is still incapable of managing the whole program autonomously, we continue to act as a sister organization and assist in program management until RCF can manage the program and seek funds independently.

### ***MPAs under the Roviana Conservation Foundation and University of California partnership***



**Fig. 1** The Roviana Lagoon, New Georgia, Solomon Islands [marine protected area (MPA) sites shown in dark gray]  
 Source: S. Aswani · S. Albert · A. Sabetian · T. Furusawa, Customary management as precautionary and adaptive principles for protecting coral reefs in Oceania, *Coral Reefs* (2007) 26, pp1009–1021

#### **The environment**

- The Roviana Lagoon (Fig. 1) is formed by raised offshore coral islands and consist of mangroves, freshwater swamps, river estuaries, seagrass beds, sand channels, shallow coral reefs, and outer reef drop habitats
- This part of the Solomon Islands is one of the world's marine hotspots, because it has a large diversity of marine life, its productivity, and the fact that it has been relatively unspoilt by human activities.

- The most direct threats to the reef and marine resources here are sedimentation from logging, and overfishing. Population growth (about 3% pa) as well as multinational fishing and logging companies have begun to have an impact on this area.
- In 1999, Professor Shankar established a marine conservation and development program in Roviana and Vonavona Lagoons.
- The Nusa Hope-Heloro MPA was established in Nusa Hope Village, Roviana Lagoon, in 2002. The reserve covers 83 ha of diverse coral reef, seagrass, and mangrove habitat typical of the Roviana Lagoon region. The general biological objectives of the reserve are to enhance Wsheries productivity locally, protect vulnerable species and habitats (biodiversity and ecosystem functioning), and to protect susceptible life history stages (spawning and nursery grounds).
- Between 2005 and 2006 a series of biological and social impact assessments of the MPA system and associated villages were conducted to evaluate the strengths and weaknesses of the MPA design and implementation approach. Nusa Hope was the main target community for monitoring because it has one of the oldest MPAs (hence suitable for monitoring) and is one of the most effective villages in terms of containing poaching by inclusive residents and neighbouring villages.
- Between 1999 and 2008, 29 MPAs had been established in the Western Solomon Islands, covering over 5,000 hectares of protected marine habitat. Includes areas such as Morovo, Rendova and Vella Lavella.
- Examples include Dundee (Roviana) (Fig. 1) and North Marovo Lagoon (Fig. 2).
- The MPA at North Marovo Lagoon is the largest MPA, covering an area of 1022 hectares.

#### **Dunde-Shark Point MPA**



**Figure 1.** Dundee MPA

**Site Name:** *Shark Point* MPA

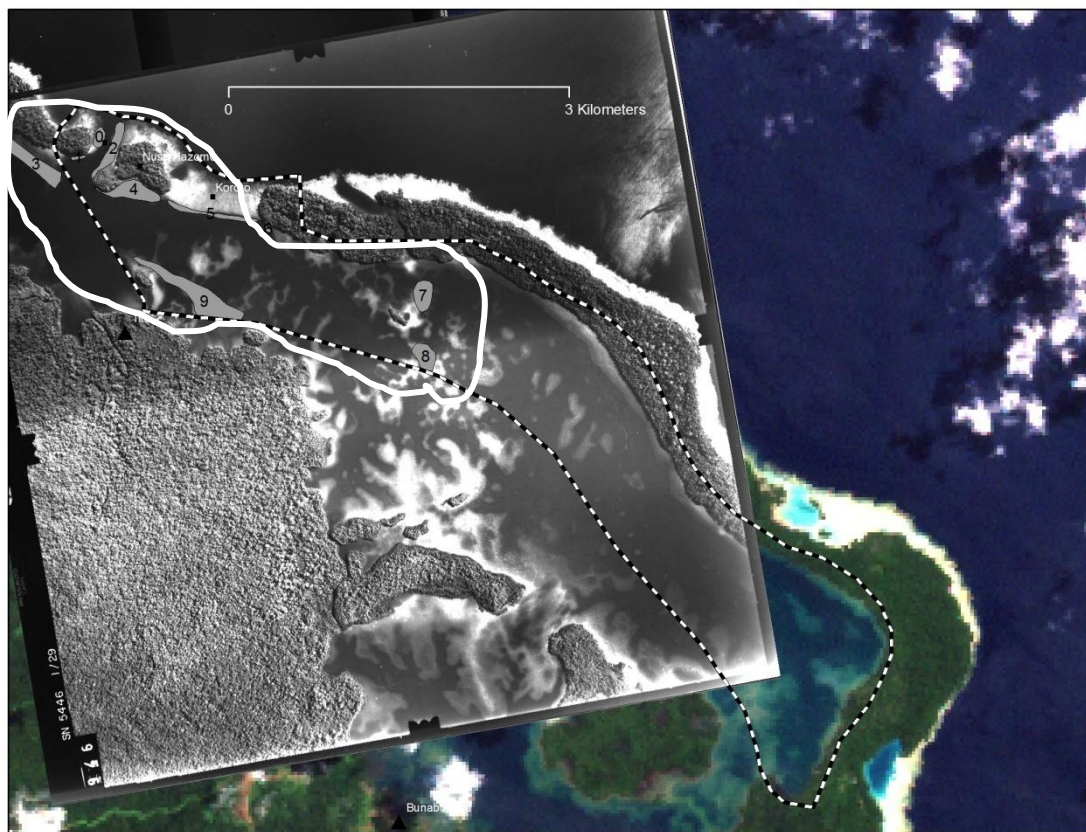
**MPA Size:** Around 100 Hectares

**Habitat Types:** The area is represented by various marine habitats including shallow and mid depth reefs and reef drops.

**Targeted Species:** The MPA is designed to protect the largest known spawning aggregations of the following Serranidae species: the squaretail coral grouper *Plectropomus areolatus* (*pazara Haquma*), the brown-marbled grouper *Epinephelus fuscoguttatus* (*pazara veata*) and the camouflage grouper *Epinephelus polyphkadion* (*pazara*).

**Management Regime:** The Dunde Council of Elders declared a “no take” marine reserve in this area. Such management regime closes off all fishing and collecting activities (including line-fishing, netting, diving, etc) for an indefinite period of time. This closure was effective July 30<sup>th</sup> 2006.

### Marovo Lagoon MPA



**Figure 2.** Pipa-Kororo MPA, North Marovo Lagoon. The grey/black line illustrates the original MPA proposed boundary. The white line illustrates the actual MPA boundary re-established in March 2008

**Site Name:** From *Pipa* Passage to *Bunabunasa* area (Pipa MPA)

**MPA Size:** 1022 Hectares (boundaries still being adjusted by local communities)

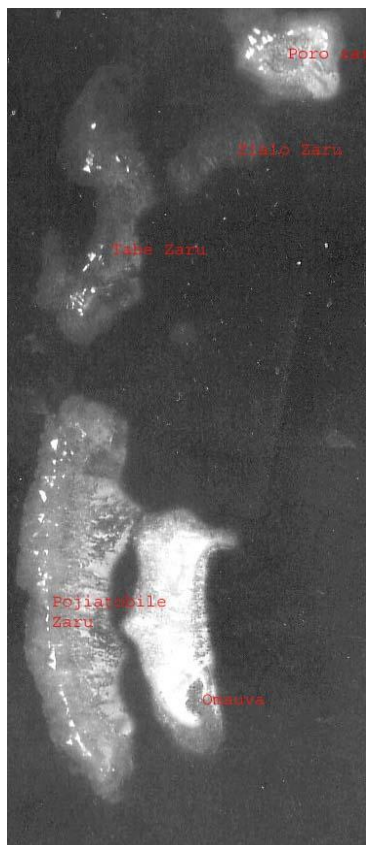
**Habitat Types:** The area is represented by various marine habitats including inner-lagoon inshore habitats such as grass beds and estuarine environments, mid-lagoon habitats including sand banks and shallow and mid depth reefs, and barrier island environments including passages and reef drops. The MPA also covers part of the terrestrial habitat of *Kororo* Island, particularly the fringing mangrove forest in the inner lagoon side of the MPA (*Koqu*). In fact, the CFC church is debating whether or not all *Kororo* and the entire adjacent Island (name?) should be protected from human activities including logging and plantations. If include the MPA/land reserve would increase to more than 2000 hectares.



**Targeted Species:** The area includes a number of sites of biological significance (according to indigenous ecological knowledge), which include spawning aggregation sites and schooling areas for various fish species of economic and subsistence importance for local peoples (e.g., *pazara haquma*, *pazara veata*, *makoto*, *mihu*, *topa*, etc.) (Table 2).

**Management Regime:** The CFC leadership has declared a “no take” marine reserve in this area. Such management regime closes off all fishing and collecting activities (including line-fishing, netting, diving, etc) for an indefinite period of time. The communities of Tita, Keru, Duvaha, and Tamaneke still have a number of areas, particularly mid-lagoon reefs, to fish. This MPA was schedule to take effect in October 1st 2007.

### Vella Lavella (Leona) MPA



**Figure 3.** Onauva MPA-Vella Lavella

**Site Name:** From *Zialu Zaru* to *Onauva* Island

**MPA Size:** Undetermined yet

**Habitat Types:** The area is represented by various marine habitats including outer-lagoon barrier reefs, reef drops, shallow and mid depth reefs, and sand banks.

**Targeted Species:** The area includes a number of sites of biological significance (according to indigenous ecological knowledge), which include spawning aggregation sites and schooling areas for various fish species of economic and subsistence importance for local peoples (e.g., *sina*, *kaburubanga*, *pazara haquma*, *pazara veata*, *mihu*, *topa*, *heheoku*, an numerous other species) (Snappers, Emperors, Groupers, Parrotfishes, etc).

**Management Regime:** The communities of Leona, Paramata, and Tiberius were to declare this area a “no take” marine reserve in January-February of 2007. However, there were some delays in implementing the MPA and then the area was struck by a devastating tsunami in April of 2007; thus paralyzing all conservation and development plans.

**Future MPAs:** An important development has been the recent reconfirmation of endorsement (2006 and again in 2007) by the CFC spiritual Authority, who has blessed our work in North Marovo Lagoon and asked our team to establish a permanent base there. In fact the Committee for Development Projects (CFC Church) has integrated our conservation program into its program and general objectives.

Many conservation programs have failed in Marovo due to a misunderstanding of local expectations and cultural traditions. This is an opportunity to correct those problems and expand conservation efforts across Marovo in a culturally sound fashion. In sum, this is a step towards full expansion of our program across the Western Solomon Islands and towards the long term sustainability of the program (due to the moral authority of the church). This last statement is of paramount importance as a successful CFC-MPA Program in North Marovo (the heartland of the CFC Church) would strengthen MPA governance across all CFC Communities (e.g., Roviana), as the church has remarkable influence in the region.

## ***Enforcement***

- We understand that enforcement has proved to be difficult for the landowners and the University.
- It was originally hoped that enduring legislative enforcement of management initiatives to protect bumphead parrotfish and other species would be achieved through the Western Province ‘Customary Land Resource Management Orders’ statute. The order can be requested by a community to protect their forest and marine resources in a particular area of customary land.
- However, we understand that it has not been possible to have such an order implemented during the time the project has been running. Therefore, communities rely on two types of enforcement mechanisms:
  - Resource Management Committees
  - Christian Fellowship Church, the members of which have customary control over huge areas of New Georgia Island

## **Resource Management Committees**

- With the assistance of the University, villages are establishing Resource Management Committees (RMCs), each formed by various village constituencies, including chiefs, church authorities, and women’s representatives.
- The responsibilities of the RMCs are to:
  - 1) ensure that the MPAs are secured and free from disputes;
  - 2) enforce all agreed-upon regulations by warning, educating, and fining offenders if necessary;
  - 3) run awareness workshops detailing the objectives of the MPAs;
  - 4) organise workshops that will bring together other RMCs to discuss successes/ problems/issues related to MPAs; and
  - 5) encourage exchange and educational programmes with outside institutions.

### **Church Run Program**

- University came to the realization that the greater moral authority in the region is vested in the CFC church and to a lesser extent in the United Church.
- They are working with leadership of the CFC church to form a “Department of the Environment” to be administered by the FRDC (Finance and Rural Development Committee)
- The basic idea is that each MPA RMC will respond to the “Environment Office” of the church, just like the education committee does in all CFC villages.
- Hence, day to day management will be conducted by the RMC under the auspices of the Church in tandem with RCF, and not the University program directly (as currently done).
- Once vested with the moral authority of the church, the RMCs will need almost no funds to self-sustain and the responsibility to organize their structure in each CFC village (where a majority of MPAs are located) will be vested in the church.
- In United Church Villages a similar structure is being worked out, albeit these RMCs will be looked after more directly by RCF in tandem with the University’s program.
- The University’s program, through RCF, will provide small financial assistance to each RMC to buy minor materials for the rangers and RMC officers (paper, pens, batteries for torch lights, etc).
- Because the RMCs will be looked after the church they will organize their own money gathering events, such as bazaars, researcher fees, etc

### **Sustainability strategy**

- Overall, the sustainability of the program has two parallel strategies:
  - (1) a self-sustaining CFC/United Church directed RMC program; and
  - (2) the continuing search for an exterior funding source mechanism such as an endowment to sustain the NGO and operational budgets of the RMCs.

### ***Benefits and Challenges***

- Using the Nusa Hope-Heloro MPA as an example. The Nusa Hope-Heloro MPA was designed using local knowledge and sea tenure (customary management practices).
- Indigenous informants can recognize local ecological processes, including habitat structure (habitat delineation), species composition and distribution, and spatio-temporal biological events (spawning aggregations).
- This information, in turn, can be used to identify sites that incorporate the ecological processes that support biodiversity, including the presence of exploitable species, vulnerable life stages, and inter-connectivity among habitats.
- Secure sea tenure governance—i.e., circumscribed territorial boundaries, centralized traditional political authority, and regionally recognized and uncontested sea entitlements—can offer an institutional context that is pre-adapted to resource management schemes such as MPAs.
- In the Nusa Hope case, the strong emphasis on customary management practices when designing the MPA has had a number of early benefits, although the long-term outcomes of this strategy are still uncertain.
- First, at present this effort has produced a conservation area that represents an indigenously cognized and delineated natural and social seascape. Community members have been better able to understand the biological value and the use restrictions of the MPA because this builds



upon local cultural practices with which the community members are familiar—a situation that facilitates MPA rule enforcement and monitoring.

- Second, using local knowledge and practices has reinvigorated traditional authority over peoples' marine resources and has generated innovative governance institutions, which are being articulated with customary and statutory law. For instance, Nusa Hope villagers have established an RMC that is constituted by different village constituencies including chiefs, church authorities, and women representatives.
- The Nusa Hope RMC not only supervises the conservation program but has also encouraged neighboring villages to establish their own management regimes. When a local group closes a reef, the benefits of their MPA are potentially reaped by neighboring groups because larvae produced in the closed site are expected to recruit in neighboring or distant reefs that often belong to other groups (who may not be bounded by the same management restrictions). However, by encouraging neighboring communities to design and establish management regimes modeled after their ecological knowledge and governance institutions (e.g., Kozou and Olive villages), Nusa Hope and the neighboring villages are sharing the costs (e.g., spatial relocation of effort) and benefits (e.g., possible spillover effects) of the MPAs more equitably.
- Third, the inclusion of local knowledge and institutions has been a low-cost adaptable and flexible method for designing the Nusa Hope MPA. For instance, following the establishment of the MPA in 2002, the RMC realized that a spawning aggregation (as locally recognized) of various species of grouper (e.g., *Epinephelus polyphekadion*) had not been included in the original boundaries of the MPA.
- Following several meetings, the community rapidly extended the MPA to cover this aggregation. To compensate for the loss of additional fishing grounds, it created a buffer zone between Nusa Hope Island and the MPA to allow children to forage and fishermen to collect bait. Furthermore, the RMC extended the no-take MPA to cover an adjacent mangrove, which was declared an MPA with a spatio-temporal regime. The RMC determined that the opening and closing of this area should follow the ritual cycles of the village (e.g., opening the shell beds for a mortuary feast) rather than relying on biological data (e.g., spawning periodicity of various mollusc species) for determining the management strategy. This kind of adaptiveness and flexibility is seldom found in MPAs designed by science-driven programs implemented by national agencies, which tend to be more inflexible managerially and statutorily, and more expensive.
- Finally, one of the biggest conservation values of the Nusa Hope MPA has been in building social capital. The participatory nature of the summarized MPA designation approach closely involved local stakeholders at all levels of the MPA designation process, thus familiarizing them with resource management and conservation principles, and thus building community good-will toward marine conservation.
- In addition, the MPA has served as a tool for environmental education. By witnessing positive environmental change (e.g., rapid change in the densities of benthic organisms such as *bêche-de-mer*), the Nusa Hope people have been encouraged to participate in keeping their MPA and adopt sustainable harvesting practices more generally. In sum, building upon customary management practices seems not only advantageous but also the most realistic way socioculturally to implement precautionary and adaptive management regimes in this region. The biological and social trends summarized in this paper are encouraging and suggest that the Nusa Hope-Heloro MPA has the potential to protect biodiversity and enhance fisheries in a socially acceptable manner. Additionally, it should be noted that anecdotal evidence and preliminary data of other MPAs in the Western Solomons (currently underway), suggest that communities with strong MPA and customary management are reaping beneficial biological and social outcomes. Indeed, results from a single area cannot be extrapolated to categorically say that customary management practices are a panacea for current environmental woes in the

Pacific Islands. Nonetheless, empirical evidence from other regions (Cinner et al 2005; McClanahan et al. 2006) is increasingly pointing toward the necessity to create hybrid institutions, which combine customary management with western models of resource management. Management of coral reefs is a complex interaction of active management, ecological knowledge and institutions, and regular monitoring. The relative importance of each of these factors must be adapted to the social and ecological context in which they are applied. The Nusa Hope case study illustrates how employing straightforward ecological and social research techniques can supplement indigenous ecological knowledge regarding the benefits that are occurring as a result of the local decision to establish an MPA. For instance, the visual nature of the algal indicator has proved to be an effective means of transferring this ecological information to the community. This experience has shown that it is essential to incorporate local concerns, interests, and knowledge into a project's research design more genuinely, especially because scientific studies are increasingly being intended for biodiversity conservation. This paper does not suggest that customary management practices should be an absolute substitute for conventional scientific methods for designing MPAs. Rather, the idea is to combine Western and indigenous forms of knowledge and governance and to make sure those management regulations that include indigenous practices are sanctioned by the local people and ultimately designed to benefit local communities. In the process, the socioeconomic and cultural factors that lead to success or failure of customary management should also be evaluated carefully (Aswani 2005; Cinner and McClanahan 2006). Simply, when designing conservation programs, biological success will be difficult to achieve unless the socioeconomic and cultural precepts that are important to people are considered carefully.

- In conclusion, finding alternative ways for designing MPAs is particularly pressing given the dearth of reliable quantitative scientific data on life history patterns of fish in tropical multi-species fisheries—knowledge that is essential for designing MPAs using the rigorous scientific biological principles advocated by many marine biologists.
- Given the current rate of marine resource degradation and biodiversity loss, however, it is incumbent upon researchers and conservation practitioners to apply customary management practices as precautionary and adaptive management in community-based conservation programs more systematically.

#### Sources:

- S. Aswani, S. Albert, A. Sabetian, T. Furusawa, "Customary management as precautionary and adaptive principles for protecting coral reefs in Oceania", *Coral Reefs* (2007) 26, pp1009–1021
- Shankar Aswani and Richard Hamilton, "The value of many small vs. few large marine protected areas in the Western Solomon Islands", *SPC Traditional Marine Resource Management and Knowledge Information Bulletin*, No. 16 (March 2004), pp 3-13
- Background information provided by Professor Shankar, Department of Anthropology, University of California, Santa Barbara.