



## CONSERVATION IN TROPICAL PACIFIC ISLAND COUNTRIES: CASE STUDIES OF SUCCESSFUL PROGRAMMES

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### ABSTRACT

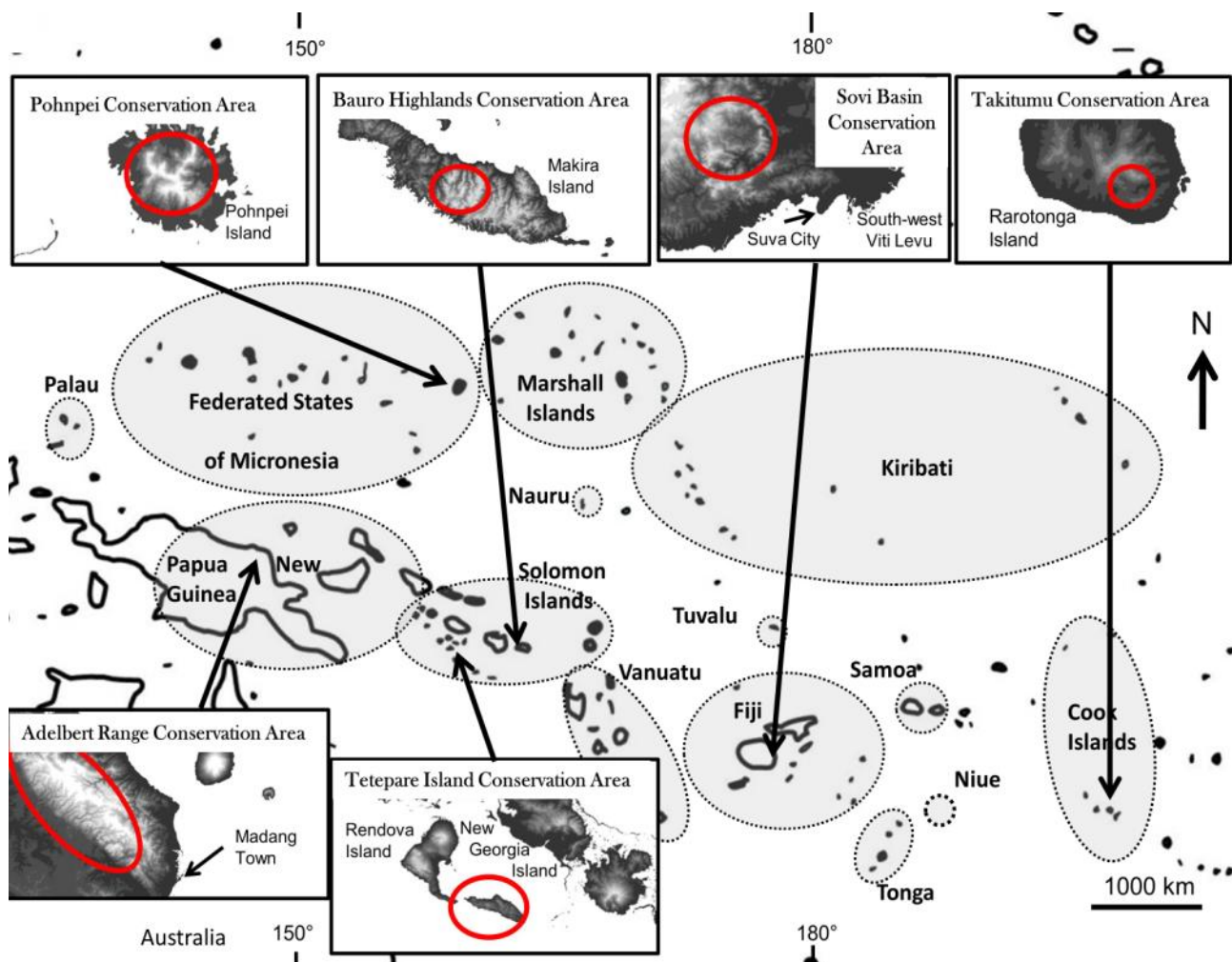
Biodiversity in the tropical Pacific is seriously threatened as a result of decades of habitat destruction and degradation. Intensive conservation efforts and considerable financial investment have failed to stem this crisis. To understand better how to achieve conservation success, this paper examines six case studies of conservation area programmes in five independent Pacific Island nations: Sovi Basin Conservation Area (Fiji), Tetepare Island and Bauro Highlands Conservation Area (both Solomon Islands), Takitumu Conservation Area (Cook Islands), Pohnpei Island (Federated States of Micronesia), and Adelbert Ranges (Papua New Guinea). Four common themes emerge from these case studies: active participation of landowning communities; involvement of all relevant stakeholders; the generation of tangible benefits for landowning communities, and external support for the project over long (five years or more years) time periods. Although the socio-cultural situation differs among locations, these themes should be considered when conservation projects in the Pacific are initiated.

### INTRODUCTION

Oceania has high terrestrial diversity and endemism (Keast & Miller, 1996, Kier et al., 2009), including more than 30,000 plant and 3,000 vertebrate species (Legra et al., 2008, Mittermeier et al., 2004). More than half of this diversity is found in the 14 independent developing island nations of the tropical Pacific (Keppel et al., 2012, Mittermeier et al., 2004). However, much of this rich and unique biota is poorly known and afforded little protection (Wardell-Johnson et al., 2011). The government departments dealing with the environment and conservation in these countries are poorly funded (Axlford et al., 2008; Lees & Siwatibau, 2009) and protected area systems fail to protect major components of the biodiversity (Lees, 2007, Shearman & Bryan, 2011). As a result, habitat loss and degradation remains the biggest threat to biodiversity, and an increasing

number of invasive species and anthropogenic climate change are likely to exacerbate the effect of these stressors (Wardell-Johnson et al., 2011).

To address this biodiversity crisis, developed nations have invested considerable funding into the conservation sector of these 14 countries over the last three decades, either through support for local and regional conservation organisations and projects or by an increasing presence of international non-government organisations. Despite these efforts biodiversity continues to decline and most conservation programmes have been considered unsuccessful (Hunnam, 2002; Lees & Siwatibau, 2009). In fact, environmental degradation has continued at similar rates or even accelerated in some Pacific Island countries (Lees & Siwatibau, 2009; Shearman & Bryan, 2011).



**Figure 1.** Location of the 14 independent Pacific Island nations and the six conservation areas (red circles in insets) used as case studies

Keppel et al. (2012) suggest that the lack of conservation success can also be attributed to the differences in cultural, economic, landownership and social situations in developing Pacific Island countries compared to developed nations that are often the source of conservation funding and programme planning. They argued that increased and improved landowner involvement and participation, creation of alternative (to resource exploitation) income generating strategies, better socio-cultural-political understanding of stakeholders, improved management of conservation funding, increased stakeholder collaboration, capacity building at all levels, and a commitment to longer project funding cycles would greatly improve conservation efforts in the region.

In this paper we present six conservation projects (see Figure 1 for locations) that have successfully implemented several of these strategies. A common theme for success is the active involvement of landowners and stakeholders at all stages of the

conservation programme and the generation of tangible benefits for landowners from conservation, often using highly innovative approaches. However, these case studies not only illustrate the successful implementation of these strategies but also document that each conservation project is unique with regard to the challenges and stakeholders involved.

#### **CASE STUDY 1: SOVI BASIN CONSERVATION AREA, VITI LEVU, FIJI**

The Sovi Basin Conservation Area (SBCA) covers 20,421 mostly forested hectares and consists of the gently sloping Sovi Basin (100–600 m in altitude) surrounded by the Medrausucu, Korobasabasaga and the Nakeva-Naitaradamu ranges (the highest peaks rising to more than 1,100 m). The basin drains several rivers and streams and harbours the largest remaining lowland tropical rainforest in Fiji (Keppel et al., 2011). The streams, rivers and rugged landscape make the SBCA one of the most scenic places in Fiji.





**Sovi Basin Conservation Area, Fiji © Gunnar Keppel**

The SBCA contains several forest types, ranging from tropical lowland rainforest to tropical montane cloud forest, and high species diversity. More than 700 vascular plant species have been recorded from the conservation area (Keppel et al., 2011; Tuiwawa, 1999), comprising about half of the total native flora known from Fiji (Heads, 2006). More than 50 per cent of the SBCA flora is endemic to Fiji. Several IUCN red-listed species (IUCN, 2011) have also been reported, including the critically endangered long-legged warbler (*Trichocichla rufa*, *Sylviidae*) and *Acmopyle sahniana* (Podocarpaceae), a conifer.

While the basin is currently uninhabited, landowners are largely dependent on natural resources and utilise the basin for hunting. A total of 13 landowning family clans (mataqalis) located in six villages of two different provinces own land in the SBCA. As a result, the needs of mataqali members and two provincial governments must be considered in conservation planning. Furthermore, the involvement of several government departments, including the iTaukei Land Trust Board, Department of Forests, Department of Environment and the National Trust of Fiji, is critical for achieving protection of the Sovi Basin.

The importance of protecting the Sovi Basin has been highlighted several times, including a Maruia Society report (Lees, 1989), the National Environment Strategy (Watling & Chape, 1993), and the Fiji Biodiversity Strategy and Action Plan (Government of Fiji, 2007).

After initial multi-organisational biodiversity surveys confirmed the environmental importance of the Sovi Basin, a steering committee and working group were formed in 2005. These represented all major stakeholders, including the Department of Forests, National Trust for Fiji, University of the South Pacific, iTaukei Land Trust Board, Conservation International and landowners.

The biodiversity surveys and formation of the steering committee resulted in a five-year short-term conservation lease over the Sovi Basin, after landowners and the iTaukei Land Trust Board decided to revoke a previously awarded logging concession. During this short-term lease, a management plan for the Sovi Basin was developed, the timber value of the forests determined, and the terms for a 99-year, long-term lease established. This process was facilitated by Conservation International in close collaboration with the Department of Forestry, University of the South Pacific, iTaukei Lands Trust Board and landowner representatives. Under the management plan, landowners may use the protected area for traditional harvesting and fishing purposes and will be involved with the implementation of the management plan at all levels.

To generate revenue for the landowners, a trust fund was created and endowed by the bottled water company Fiji Water. The interest accumulated by this trust fund facilitates the payment of lease premiums, compensates foregone timber royalties, provides community



*Tetepare Island Conservation Area © TNC*

development opportunities, and implements the management plan for the SBCA. In addition, a scholarship programme was created for landowning communities and has supported more than 150 students. Since the initiation of the scholarship programme in 2005, the number of students from the Sovi Basin in tertiary institutions has grown from two to over 20.

## **CASE STUDY 2: TETEPARE ISLAND COMMUNITY CONSERVATION AREA, WESTERN PROVINCE, SOLOMON ISLANDS**

Tetepare is a 120 km<sup>2</sup> forested island in the New Georgia group in the Solomon Islands. It is a raised coral island with rich biodiversity and has received international recognition for its conservation and archaeological significance (Morrison & Buckley, 2010). A total of 73 bird, 24 reptile, 13 mammal and four frog species have been recorded on Tetepare, including several rare and endemic bird and bat species (Read & Moseby, 2006). In the marine reserve area, three species of marine turtles – the critically endangered leatherback and hawksbill turtles and the endangered green turtle – nest on the volcanic black sand beaches. Sharks, dolphins,

crocodiles, dugongs and a high diversity of fish species are found on the reefs and in the seagrass lagoons (Farrington, 2009; Filardi & Pikacha, 2007). The coral reefs of the region are part of the Coral Triangle – the global centre of coral diversity, and support one of the highest diversities of fish and coral in the world, second only to Raja Ampat in Indonesia (Allen, 2008).

Although Tetepare has been largely uninhabited since the mid-1800s (Read & Moseby, 2006), the traditional landowners, now living across the entire Western Province, established the Tetepare Descendants Association (TDA) when the island was threatened by logging in 2001. They converted the entire island to a community conservation area, including marine as well as terrestrial ecosystems (Read et al., 2010). Their goal was to protect and conserve the island for the benefit of all descendants and future generations. Since its formation, the TDA has transformed from a local landowners organisation to a world-class community-based conservation organisation responsible for one of the largest integrated land and marine conservation initiatives in the South Pacific.



The Tetepare project, supported by the Sustainable Forestry Conservation Project of the European Union, WWF, Australian Volunteers International and others, is a leading example of how a conservation programme promoted by a dedicated local community can succeed in the Pacific region. The success of the Tetepare project primarily lies in its strong local leadership, the inclusion of local communities at all stages of development and implementation, and its ability to provide real economic benefits.

To support the conservation work on Tetepare, the TDA in collaboration with the European Union set up the Tetepare Island Ecolodge that attracts international visitors and provides employment for the local community. Profit from all revenue collected from visitors for accommodation, transport and activities is channelled directly to conservation efforts on the island and to support local communities. The lodge employs 30 casual staff and a further 12 rangers are employed to run the conservation programme resulting in increased local capacity in the conservation management and practice field. Many more local community members have benefited from the project through casual work in construction on the island, and through the sale of fruit, vegetables and fish to the Ecolodge. The TDA also runs a scholarship programme for school aged children and have ensured that women are actively involved at all levels of the project. The TDA is currently exploring sustainable finance mechanisms to capture current revenues for long-term conservation and development activities.

### **CASE STUDY 3: BAURO HIGHLANDS CONSERVATION AREA, MAKIRA, SOLOMON ISLANDS**

The Bauro Highlands Conservation Area (BHCA) is a 630 km<sup>2</sup> forest reserve in the central highland forest region of Makira Island. It contains some of the Solomon Islands last extensive lowland forest tracts and reaches tropical montane cloud forest at the highest peaks of about 1200 m, encompassing the full elevation gradient of forest zones. The Raro and Warihito River catchments within the BHC are bounded by steep-sided wide valleys, with numerous streams and waterfalls and small perched floodplains as high as 400 m in elevation.

While this spectacular landscape provides some of the most dramatic rainforest vistas in the Solomon Islands, it is the BHCA's unusual ecology, influenced by its separation from the rest of the Solomons archipelago by deep water, which results in its international significance. The forests of Makira support the highest

levels of vertebrate endemism in the Solomon Islands with the lowland and montane forest home to 12 locally endemic bird species (out of 70 recorded species), as well as two endemic fig species.

The BHCA was established in 1995 by the Conservation in Development (CID) consortium which included Conservation International, the Solomon Islands Development Trust (SIDT) and a small former New Zealand NGO, the Maruia Society, in conjunction with local landowners to resist the threats posed by logging on Makira Island. At the time, it represented the second largest protected area in the South Pacific.

The programme worked with the Bauro communities to define the conservation area and to identify enterprises whose viability was linked to the need to conserve the area's biodiversity (Russel & Stabile, 2003). Several upland villages were situated deep within the conservation area, which made it a true community-based conservation effort.

An ecotour trail was established to provide an income for local communities which received several international ecotourism awards. However, while local guides and communities were paid directly by visitors for tours, the BHC Programme itself was heavily subsidized by Conservation International. When Conservation International withdrew its financial support in late 2008, the BHC Programme itself dissolved, despite the success of the conservation area (Morrison & Buckley, 2010).

### **CASE STUDY 4: TAKITUMU CONSERVATION AREA, RAROTONGA, COOK ISLANDS**

The Takitumu Conservation Area (TCA) is a private tropical forest reserve managed by three landowning clans – the Kainuku, Karika, and Manavaroa families. It lies approximately 800 m from the main coastal road on Rarotonga, extends over 155 hectares of forested ridges and valleys and contains 70 per cent of all Rarotonga's inland plants. It includes the headwaters of two major streams and basins of a third. Located on the wettest part of the island, the TCA catchment provides 30 per cent of Rarotonga's drinking water.

The TCA was established in 1996 by the landowners and the Cook Islands Government, assisted by South Pacific Biodiversity Conservation Programme (SPBCP) to preserve the endemic endangered Rarotonga flycatcher or Kakerori (*Pomarea dimidiata*, Monarchidae) and built on an existing government programme, the Kakerori Recovery Project, initiated in 1987 (Morrison &



*Watershed Community Action Group delineating boundaries and zones within the forest, Pohnpei, Federated States of Micronesia © Patterson Shed / CSP*

Buckley, 2010). Throughout 1995 the Cook Island Environment Service discussed the idea of creating a Conservation Area in the Kakerori's core breeding area with traditional landowners and community leaders. Initially the landowners were reluctant to designate their land as a conservation area as they believed this would change its legal status and threaten their continued ownership of the land. Consequently, it was agreed that the designation as a conservation area would not formally be made part of legislation or officially recorded (Tiraa & Wilmott, 2001).

The TCA was initially funded by the SPBCP with follow-up funding from the Cook Island Environmental Protection Fund and the New Zealand Overseas Development Agency (SPREP, 2003). TCA planning and management is carried out by a committee consisting of representatives from the landowning tribes, which discuss issues and make all major decisions relating to the TCA. Up to 2001 the TCA contained the only protected population of the endangered Kakerori and its

conservation success since its establishment has been dramatic. In 1989 only 29 Kakerori individuals remained in the wild. Since the establishment of the TCA and subsequent conservation actions, the numbers had recovered to 370 in 2011 (TCA, 2011). From 2001 to 2003, 30 Kakerori were translocated by the TCA project to the island of Atiu, and in 2011 more than 100 birds were recorded there.

To help the TCA become financially self-reliant and to provide reliable income for the Kakerori Recovery Programme following the end of SPBCP funding in 2001, a nature walk/bird-watching venture and gift store run by local landowners were established (Tiraa & Wilmott, 2001). Guided nature walks were an obvious choice for alternative income generation as there was already a well established tourism industry in the Cook Islands with more than 100,000 annual visitors in 2009 (Morrison & Buckley, 2009). The TCA's conservation and economic success has prompted active interest from other places in the Cook Islands. Residents of both Mangaia and Mitiaro





*Adelbert Range forest landscape, Papua New Guinea © Francis Hurahura / TNC*

Islands have visited the TCA to get ideas for protecting their own endemic species, and the Cook Islands Tourism Department frequently uses the TCA nature walk and bird-watching business as a case study in its ecotourism workshops. Of the 17 Conservation Areas funded by the SPBCP, the TCA is one of only two projects that were considered a success based on conservation achievements and project sustainability, which were attributed to extensive landowner involvement and capacity building, the generation of real economic benefits, relatively long-term supportive funding, and the successful conservation of the Kakerori (~10 years) (Hunnam, 2002).

#### **CASE STUDY 5: POHNPEI WATERSHED FOREST RESERVE, FEDERATED STATES OF MICRONESIA**

Pohnpei is the highest (791 m) and second largest (334 km<sup>2</sup>) island of the Caroline Islands and is part of the Federated States of Micronesia (Merlin & Raynor, 2005). It is home to some 35,000 people residing in 200 villages (kousapw) that are divided into five traditional kingdoms (wehi). A complex hierarchical organisation exists within these traditional entities, headed by paramount chiefs (nahmwariki) and traditional title holders. On top of these traditional administrative systems are various, more recent, government levels, including the federal, state and municipal governments (Raynor & Kostka, 2003).

Pohnpei is of global biodiversity interest, with 110 plant (41 per cent of the flora), eight bird (16 per cent of the avifauna), about 25 snail, three fish and one skink species being endemic to the island (Merlin & Raynor, 2005). Ninety per cent of these endemics are now restricted to montane rainforest, as rainforest at lower

elevations has been replaced by secondary vegetation types (Mueller-Dombois & Fosberg, 1998). Although the remaining montane vegetation still constitutes the largest intact inland forest in Micronesia, it is under considerable threat from population growth and kava (*Piper methysticum*, sakau) cultivation and some 70 per cent of native forest is believed to have been lost since 1975 (Merlin & Raynor, 2005).

In an attempt to protect remaining forests, 5,100 hectares of montane rainforest were declared a protected area in 1987. However, this protected area could not be implemented, as it had been established with little community consultation and involvement. Since 1992, efforts to develop community-based management were initiated, resulting in the Pohnpei Watershed Management Strategy and the Pohnpei Community Conservation and Compatible Management Project (Rose, 2004). Landowning communities, the Pohnpei State government, the Conservation Society of Pohnpei, the Nature Conservancy, and the South Pacific Regional Environmental Programme were key players in the conception and implementation of the Strategy and Project, with landowner consultation and involvement a major component.

The Pohnpei Watershed Forest Reserve now protects biodiversity and important food and cultural resources. It also provides important secondary benefits such as reducing erosion, cleaner water, water for lower-lying habitats, and maintenance of microclimatic effects. Several ongoing programmes have been and are continuing to protect the reserve, including community education, media campaigning, employment of 20 local rangers and two police officers, promotion and support of lowland kava farming, and invasive species control.

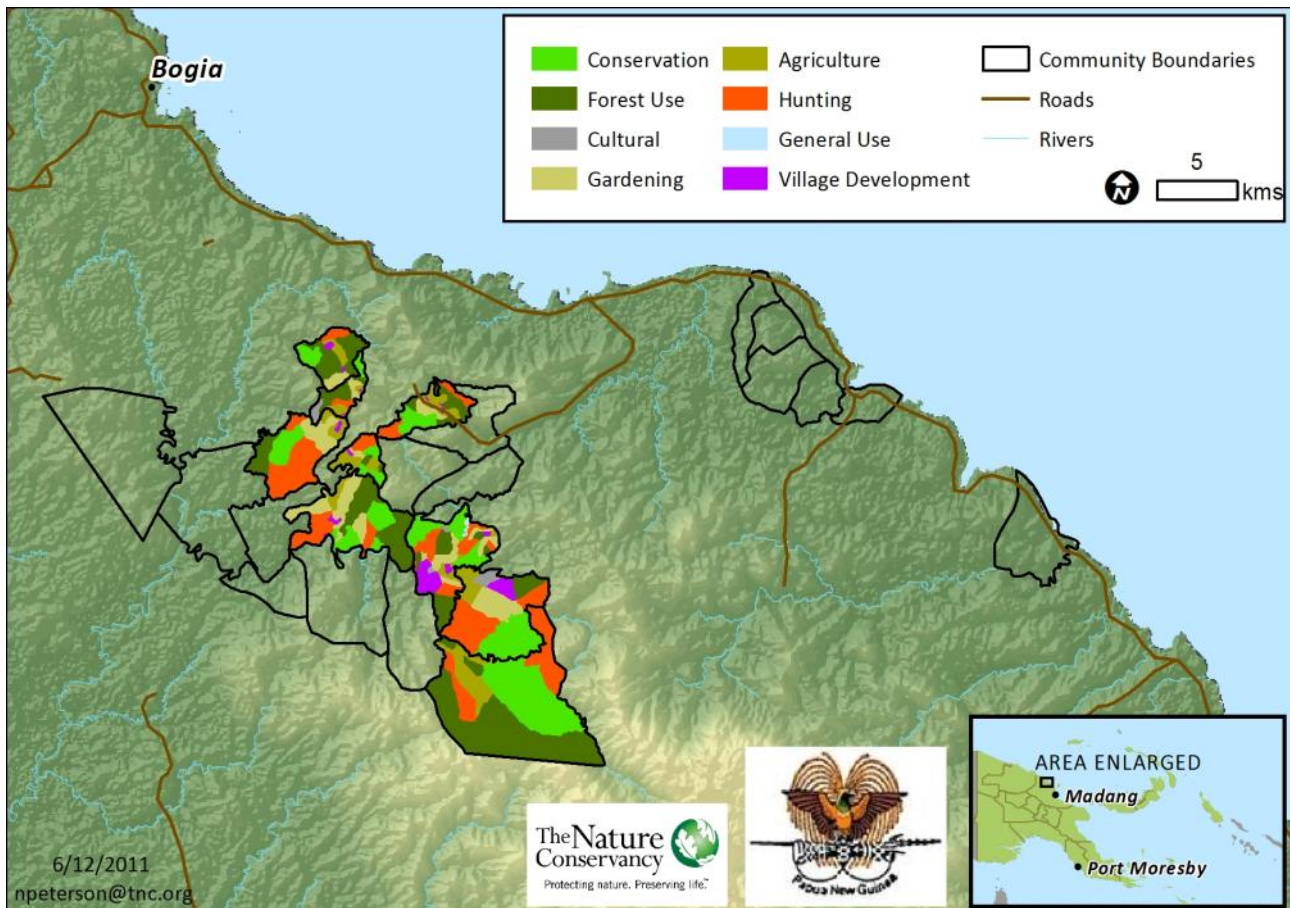


Figure 2. Consolidated conservation land use map from communities in the Adelbert Range, Papua New Guinea

### CASE STUDY 6: ADELBERT RANGE MOUNTAINS, MADANG PROVINCE, PAPUA NEW GUINEA

The Adelbert Range runs parallel to the north coast of New Guinea covering more than 300,000 hectares and reaching to 1,672 m (Mt. Mengam) (Webb et al., 2005). The mountain range is a deeply dissected plateau that is mostly less than 1,000 m in altitude (Pratt, 1982). It is biodiverse and, together with the adjacent Huon Peninsula, has been considered a distinct biogeographic zone (Shearman & Bryan, 2011). More than 700 species of birds, including 38 species of bird of paradise have been recorded from the Adelbert Range. Several rare and endemic plant species have also been reported from the mountain range (Takeuchi, 2001), with a rich species diversity existing in at least 15 different vegetation types (Webb et al., 2005).

The Huon Peninsula and Adelbert Ranges region has undergone one of the highest rates of deforestation in Papua New Guinea (Shearman & Bryan, 2011). While much of this has occurred outside the Adelbert Mountains, 15,000 hectares of the northern part of the range was under logging concessions, with some logging occurring in the Josephstaal Valley. However, in 2001 local leaders managed to overturn this concession

through a court decision, demonstrating illegal means in obtaining the concession and potential environmental damage.

Numerous family clans and villages are located in the Adelbert Mountains. Although population density is relatively low, subsistence agriculture and hunting are important for livelihoods and occur in many parts of the mountain range. This subsistence agriculture and harvesting, in combination with increasing cocoa and vanilla plantations, has led to decreased availability and quality of important forest and aquatic resources in some communities. In response to these challenges, the Almami Local Level Government Ward in conjunction with local communities and the support of The Nature Conservancy developed land use management plans to improve food security and environmental sustainability.

Land use management involved the zoning of land into conservation, subsistence agriculture, cash-crop production, hunting, forest use and general use areas, placing ecosystem services as a key element in the planning process. Furthermore, new legislation was established that allowed formal recognition and management of the conservation areas. This allowed



Table 1. Summary of key conservation factors in the six case studies

Site	Conservation Highlights	Stakeholders	Landowners	Benefits to landowners	External Support
Sovi Basin Conservation Area (Fiji)	<ul style="list-style-type: none"> <li>• Largest intact lowland rainforest in Fiji including half vascular flora of Fiji</li> <li>• Numerous endemic and threatened species</li> <li>• Full elevation gradient from lowland rainforest to tropical montane cloud forest</li> </ul>	<ul style="list-style-type: none"> <li>• Landowners</li> <li>• Local &amp; international NGOs</li> <li>• Government (national &amp; provincial)</li> <li>• Academia</li> <li>• Business</li> <li>• Utility company</li> </ul>	<ul style="list-style-type: none"> <li>• Involved at all stages</li> </ul>	<ul style="list-style-type: none"> <li>• Trust fund for lease payments &amp; harvesting compensation</li> <li>• Scholarships for local children</li> </ul>	Continuing
Tetepare Island Community Conservation Area (Solomon Islands)	<ul style="list-style-type: none"> <li>• One of the largest integrated land and marine conservation initiatives in the South Pacific</li> <li>• Largest uninhabited island in the Pacific</li> </ul>	<ul style="list-style-type: none"> <li>• Landowners</li> <li>• Local &amp; international NGOs</li> <li>• Government</li> <li>• European Union</li> <li>• Academia</li> </ul>	<ul style="list-style-type: none"> <li>• Initiated conservation efforts</li> <li>• Involved at all stages</li> <li>• Run ecotourism operation</li> </ul>	<ul style="list-style-type: none"> <li>• Income from ecotourism lodge</li> <li>• Employment as lodge staff or rangers</li> <li>• Supply of materials and food to lodge</li> </ul>	Continuing, local finance mechanisms being sought
Bauro Highlands Conservation Area (Solomon Islands)	<ul style="list-style-type: none"> <li>• Highest levels of vertebrate endemism in the Solomon Islands</li> <li>• At time of establishment (1995) was second largest protected area in the South Pacific</li> <li>• Full elevation gradient from lowland rainforest to tropical montane cloud forest</li> </ul>	<ul style="list-style-type: none"> <li>• Landowners</li> <li>• International NGOs</li> <li>• Government</li> <li>• Development aid programmes</li> </ul>	<ul style="list-style-type: none"> <li>• Involved at all stages</li> <li>• Involved in ecotourism operations</li> </ul>	<ul style="list-style-type: none"> <li>• Income from internationally recognised and awarded ecotour adventure trail</li> </ul>	Withdrawn in 2008
Takitumu Conservation Area (Cook Islands)	<ul style="list-style-type: none"> <li>• Only protected population of Rarotonga flycatcher</li> <li>• Contains 70% of Rarotonga's inland plants</li> <li>• Catchment provides ~30% of Rarotonga's drinking water</li> </ul>	<ul style="list-style-type: none"> <li>• Landowners</li> <li>• Regional &amp; International NGOs</li> <li>• Government</li> <li>• Development aid programmes</li> </ul>	<ul style="list-style-type: none"> <li>• Involved at all stages</li> <li>• Run ecotourism operation</li> </ul>	<ul style="list-style-type: none"> <li>• Income from ecotourism – nature-based walks</li> <li>• Souvenir/gift store</li> </ul>	Continuing
Pohnpei Wildlife Forest Reserve (FSM)	<ul style="list-style-type: none"> <li>• Largest intact inland forest in Micronesia</li> <li>• High floral and faunal endemism</li> </ul>	<ul style="list-style-type: none"> <li>• Landowners</li> <li>• Local &amp; international NGOs</li> <li>• Government (national &amp; local)</li> </ul>	<ul style="list-style-type: none"> <li>• Limited involvement in initial, failed conservation attempts</li> <li>• Involved at all stages in ongoing project</li> </ul>	<ul style="list-style-type: none"> <li>• Employment as rangers</li> <li>• Food and water security</li> </ul>	Continuing, but decreasing
Adelbert Range (Papua New Guinea)	<ul style="list-style-type: none"> <li>• High diversity in vegetation types, flora and fauna</li> <li>• Numerous endemic and threatened species</li> </ul>	<ul style="list-style-type: none"> <li>• Landowners</li> <li>• Local &amp; international NGOs</li> <li>• Government (national, provincial &amp; local)</li> <li>• Development aid programmes</li> </ul>	<ul style="list-style-type: none"> <li>• Involved at all stages</li> <li>• Contribute land to conservation pool</li> </ul>	<ul style="list-style-type: none"> <li>• Income from development and sale of Fair Trade cocoa</li> <li>• Improved livelihoods through partnerships with aid organisations</li> </ul>	Continuing

individual landowners to contribute land into a general “conservation area pool”. This concept has been so successful that it is considered a possible mechanism for REDD+ in Papua New Guinea and the Adelbert Ranges were declared a national pilot site for the scheme (ITTC, 2011; TNC, 2011).

To create tangible benefits for landowning communities dedicated to conservation, partnerships were established with aid organisations to improve livelihoods and ways of value-adding farming products were considered (ITTC, 2011). In 2007 a coalition of farmers from communities with land use management plans, the Adelberts



**Community rangers monitoring turtle populations, Tetepare Island Conservation Area © TNC**

Conservation Cooperative Society (ACCS), was established with the help of TNC. They achieved Fairtrade certification for their low-impact cocoa production. Selling fair-trade products provides more stability to farmers, as it guarantees a minimum price for the produce, and also provides a benefit premium to the whole community.

## DISCUSSION

The above case studies demonstrate that successful conservation is feasible in Pacific Island countries, despite a history of failure and the difficulties and complexities involved (Hunnam, 2002; Keppel et al., in press; van Helden, 2005). Each case study illustrates a unique response to the forces of commercially-driven land-use change, principally logging (Bauro, Tetepare and Adelbert Range). Four common themes emerge in successful projects: active participation and leadership of landowning communities, involvement of all relevant stakeholders, the generation of tangible benefits for landowning communities, and external support for the project over long (5 years or more) time periods. It therefore appears that these themes are important for success (see table 1).

Our study provides further evidence that intensive participation of landowners is essential for successful conservation projects in the Pacific, as it is in other community-based conservation projects in other parts of the world (Blom et al., 2010; Chase et al., 2000). Indeed, active landowner involvement has been considered a key

to success or, conversely, a reason for failure (if absent) of conservation programmes (Hunnam, 2002; Keppel et al.; 2012, van Helden, 2005). Landowner participation needs to occur at all stages of the programme: planning, implementation, monitoring and evaluation. It has been argued that the chances for a programme to be successful are higher, if the initiative to conserve originates from the landowners (van Helden, 2005). Strong local leadership is a factor in each of the case studies, and the evolution of Tetepare Island from a community initiative into one of the largest and most successful conservation projects in the region supports this assertion.

The importance of involving all relevant stakeholders in the conservation programme has often been understated. Although government corruption is a major problem in many Pacific Island countries (Kabutaulaka, 2000; Laurance et al., 2011), the involvement of government departments is often essential or likely to increase the chances for success of the project. The case study of Pohnpei Island demonstrates the importance of comprehensive stakeholder involvement. Only after landowners, traditional leaders and municipal governments were incorporated into the programme, did conservation efforts on the island succeed. Indeed, the involvement of all stakeholders, and the associated concept of co-management, are increasingly recognized as essential components of effective conservation (Chase et al., 2000; Nielsen et al., 2002).

The issue whether to provide landowning communities with compensation or revenue for conservation or to encourage environmental ethics without financial initiatives has been the subject of considerable debate among conservationists (van Helden, 2005). The former can potentially result in unrealistically high expectations and produce a profit-oriented mentality, while the latter can be considered to disregard the developmental needs of communities. The fact that all successful case studies have provided communities with tangible benefits from conservation suggests that community development is an important aspect of successful conservation programmes. None of the projects however, provided cash handouts to landowning communities but designed innovative means to support development, adapted to the local circumstances. Ecotourism was established to generate revenue for the programme and local communities on Tetepare Island and Takitumu Conservation Area; scholarships and a trust fund were established to promote the development of Sovi Basin communities; employment as rangers and food and water security provide benefits to communities on Pohnpei; and Fair Trade produce provides better and



more stable income in the Adelbert Ranges. These results not only support the premise that biodiversity conservation and poverty alleviation can co-exist (Adams et al., 2004), but suggest that the latter increases the chances of the former succeeding.

Finally, all the programmes described differ from most other conservation initiatives in the Pacific in having received some external assistance over periods of more than five years. Indeed, the withdrawal of financial support for one of the projects (Bauro Highlands) led to its ultimate collapse. This reinforces the call for extended funding cycles to allow the adequate establishment of community-based conservation programmes. Indeed it is impossible to establish, implement and evaluate conservation programmes in the Pacific within the usual 3-5 year funding cycles because of cultural, social and political complexities (Keppel et al., 2012). This difficulty has also been realised in other regions (Blom et al., 2010; Lindemayer, 1999).

The above case studies make important contributions to the ongoing debate of how to achieve effective conservation in Pacific Island countries (Hunnam, 2002; Keppel et al., 2012; Lees & Siwatibau, 2009; van Helden, 2005). They suggest that extensive landowner participation, comprehensive landowner involvement, generation of alternative revenue and long-term project support are keys to project success. We therefore hope that these factors will increasingly feature in conservation programmes within the Pacific region.

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## RESUMEN

La biodiversidad en el Pacífico tropical se encuentra seriamente amenazada como resultado de décadas de destrucción y degradación del hábitat. Los intensos esfuerzos realizados en términos de conservación e inversión financiera no han logrado detener esta crisis. Para ayudar a comprender mejor la manera de asegurar el éxito en las iniciativas de conservación, este documento examina seis estudios de caso de diferentes programas sobre áreas de conservación en cinco naciones independientes de las Islas del Pacífico: área protegida de la cuenca de Sovi (Fiji), área de conservación de la isla de Tetepare y las montañas de Bauro (ambas en las Islas Salomón), área de conservación Takitumu (Islas Cook), Isla Pohnpei (Estados Federados de Micronesia), y cordillera Adelbert (Papúa Nueva Guinea). Cuatro temas comunes surgen de estos estudios de caso: la participación activa de las comunidades propietarias de tierras; la participación de todos los interesados; la generación de beneficios tangibles para las comunidades propietarias de tierras; y el apoyo externo al proyecto durante períodos prolongados de tiempo (cinco años o más). Si bien la situación sociocultural difiere entre localidades, es preciso considerar estos temas al ejecutar proyectos de conservación en el Pacífico.

## RÉSUMÉ

La diversité biologique dans l'océan Pacifique tropical est gravement menacée par des décennies de destruction et de dégradation des habitats. Des efforts importants de conservation et un investissement financier considérable ont échoué à enrayer cette crise. Pour mieux comprendre comment avoir des résultats positifs en matière de conservation, ce document analyse six études de cas, six programmes de conservation par zone dans cinq îles indépendantes du Pacifique : zone de conservation du bassin de Sovi (Fiji), zones de conservation de l'île de Tetepare et des hautes-terres de Bauro (toutes deux situées dans les îles Salomon), zone de conservation de Takitumu (îles Cook), île de Pohnpei (États fédérés de Micronésie), et Monts Adelbert (Papouasie Nouvelle-Guinée). Quatre observations communes ressortent de ces études : la participation active des communautés propriétaires des terres ; l'implication de toutes les parties prenantes ; la génération de bénéfices tangibles pour les communautés propriétaires des terres ; et un soutien externe au projet sur des longues périodes de temps (cinq ans ou plus). Bien que la situation socioculturelle diffère selon les zones, ces observations doivent être prises en compte lors de la mise en place de projets de conservation dans la région Pacifique.

