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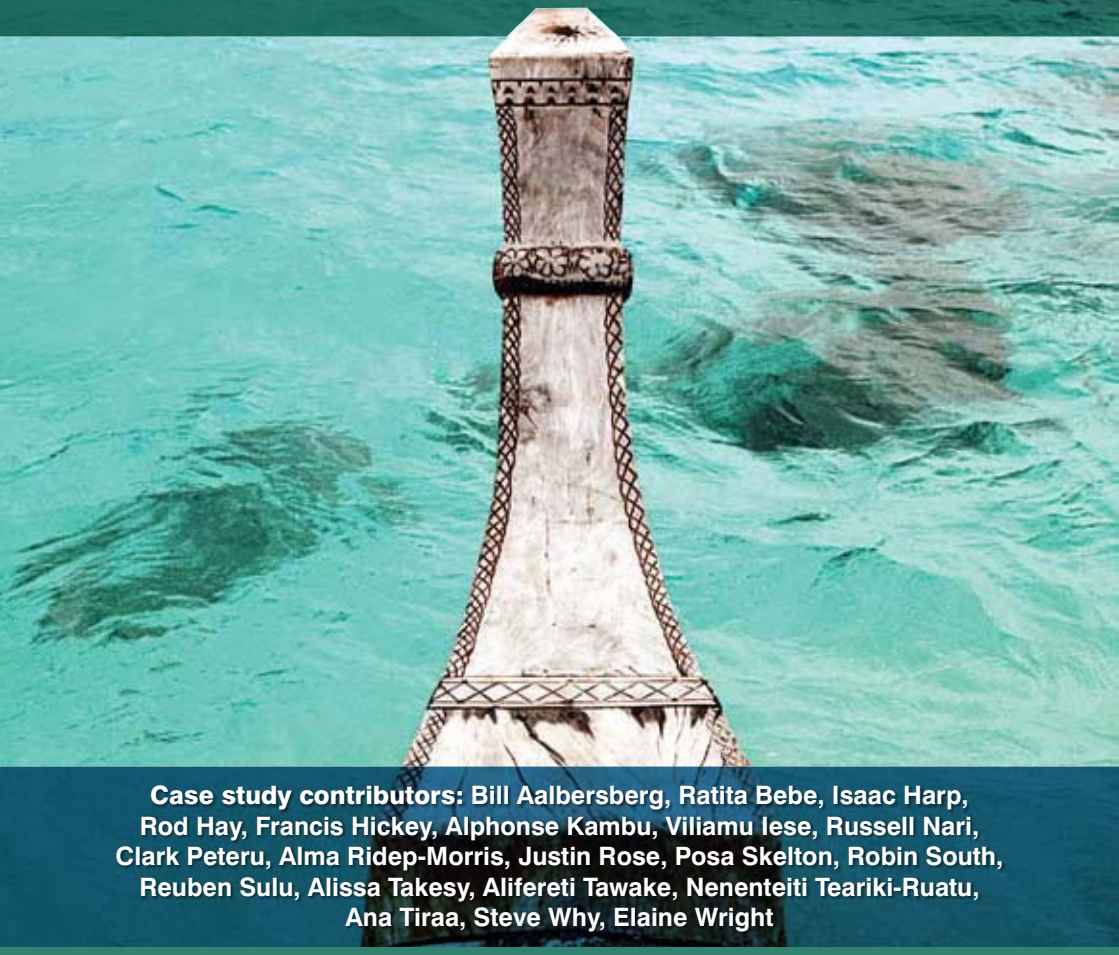
Traditional Marine Management Areas of the Pacific in the Context of National and International Law and Policy



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Blue Giant Design. Cover photo: Mlenny Photography, iStockphoto Bow of traditional canoe, Aitutaki, Cook Islands. Back cover photo: Annetje, Shutterstock, Horizon with reef.

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Foreword

With continuing worldwide degradation of both marine and coastal biodiversity, and the wonderfully complex and unique relationship between this biodiversity and local communities, we need to improve and accelerate efforts to protect our oceans to ensure that they will be able to meet the needs of both present and future generations. There are many different ways to enhance marine biodiversity, and the best and most successful solutions are often local. These traditional, community-led approaches are embedded in local knowledge and have been developed as part of a unique social and cultural context. Thus, they are most likely to result in not only ecological benefits but also socioeconomic, cultural and even spiritual benefits for the communities that apply them.

This report deals with such local management approaches in the Pacific Islands. Traditional marine management in the Pacific Islands region predates Western models for marine protection and offers a culturally appropriate, community-driven approach to sustainable resource use. While we may think of Western concepts such as the ecosystem approach, adaptive management and marine protected areas as relatively recent science-based inventions, these concepts have been put into practice in the Pacific Islands long before they became part of the international conservation dialogue. There is much we can learn from how communities in Pacific Islands have traditionally used and protected their marine resources, and this knowledge may help the rest of the world find appropriate solutions for reaching outcomes that benefit both the cultural and biological diversity that ensure the resilience and richness of our lives.

It is important that national governments and the international community recognise, support and build upon the successes of traditional marine management in the Pacific Islands. There is no doubt that these traditional management methods contribute to the attainment of international targets related to protected areas and marine conservation, and thus their role in this regard should be fully recognised. It is also important that traditional marine management be afforded full governmental and intergovernmental support, and that information about these local success stories be shared in order to provide new ideas for coastal managers worldwide. Care needs to be taken to ensure that traditional and customary practices and rights to land and marine areas are recognised and revitalised on their own merits, avoiding whenever possible the trend to transform traditional tenure systems into often exclusionary and restrictive Western legal categories.

I am proud to support efforts by the UNU-IAS Traditional Knowledge Initiative and the Christensen Fund to build greater awareness of the diversity of marine management approaches practised in the Pacific Islands, including how such approaches can promote ecological, cultural and social wellbeing in the Pacific and the rest of the world.

Jeffrey Y Campbell
Director of Grantmaking, The Christensen Fund

Navigating the waters in Vanuatu with sail canoes that incorporate considerable traditional knowledge

Children playing in Papua New Guinea

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Executive Summary

Many Pacific Island communities have traditionally used area- and time-based restrictions to facilitate the recovery of marine resources. Although there is increasing recognition of the value of these management systems in conservation programmes, government legislation is often in conflict with community resource allocation systems, and traditional community-based efforts may not be recognised for their contribution to national and international marine protected area (MPA) strategies and targets.

This report explores the role of traditional marine resources management in meeting both the goals of communities and those of national and international conservation strategies. Specifically, it aims to inform policy-makers and those working for international organisations and donor agencies about how traditional practices are applied in various Pacific Island countries, how concepts such as the ecosystem approach and adaptive management are incorporated, whether traditional marine managed areas (MMAs) are recognised by national law, and how and whether they are seen to contribute to national and international protected areas and conservation targets. The report also reflects on the issue of marine genetic resources, and access to and benefit-sharing of these resources.

This report is the end result of a process coordinated by the Traditional Knowledge Initiative (TKI) of the United Nations University – Institute of Advanced Studies (UNU-IAS) to foster dialogue on traditional marine management areas of the Pacific in the context of national and international law and policy. It incorporates information from two dialogue sessions and four workshops organised by UNU-IAS with a number of partner organisations between 2003 and 2007. All workshops were sponsored by the Christensen Fund and included expert participants from Pacific Islands. A full list of workshops and participants is available in the Annex.

Each workshop relied on the presentation of case studies to discuss achievements and issues relating to traditional management of marine and coastal resources in Pacific Islands, and the source material is thus based on discussions and often oral in nature. The case studies originated from islands in Melanesia, Polynesia and Micronesia, and addressed issues such as legal recognition of traditional practices and customary tenure; the contribution of traditional management methods to international biodiversity policies; the compatibility of traditional practices with the

ecosystem approach; and the use of marine genetic resources originating from the Pacific Islands. This report presents case studies compiled at each of the workshops, and uses them to explore the relationships between customary marine resource management practices in the Pacific, legally established MPAs, and national and international law and policy. It draws on lessons learned and good practices from the case studies to examine ways in which traditional resource management methods can contribute to reaching national and international MPA targets in the context of national law and a regional framework for MPAs, which is currently under development in the Pacific.

The report concludes that traditional marine management contributes to the attainment of international targets related to protected areas and marine conservation, and that its role in this regard should be fully recognised. Such recognition should include support for and reinforcement of pre-existing systems of traditional resource management, while allowing the incorporation of cooperative management strategies in adapting to contemporary circumstances. Recognition of community ownership and control of marine areas and resources, as well as the importance of local and traditional knowledge, are essential components of best management practice in the Pacific Islands.

Colourful coral reef in Papua New Guinea

1. An Overview of Customary Marine Resource Management Practices in the Pacific

This chapter looks at:

- How traditional marine management practices are applied in various countries, and how effective they are in reaching community and conservation goals in the short and long term
- Whether traditional practices are used in combination with Western science-based conservation measures
- Whether monitoring and adaptive management are undertaken as part of traditional practices, and whether enforcement is successful
- A case study from the Cook Islands.

Customary marine resource management practices have long been used in some Pacific Island communities in accordance with traditional spiritual beliefs. In most cases they have been established by traditional leaders to provide an opportunity for depleted marine resources to recover.

Customary management practices include seasonal bans on harvesting, temporary closed (no-take) areas, and restrictions being placed on certain times, places, species or classes of persons. Closed areas include the *tabu* areas of Fiji, Vanuatu and Kiribati, the *ra'ui* in the Cook Islands, the *kapu* in Hawaii, the *tambu* in PNG, the *bul* in Palau, the *mo* in the Marshall Islands, the *tapu* in Tonga and the *rahui* in New Zealand (Māori).

In Palau, the *bul* can be put in place to close an area of reef to harvesting on a short-term basis, such as during periods of fish spawning. Vanuatu also has networks of spatial-temporal *refugia*[1] created as part of a range of customary practices, such as the ordination or death of a traditional leader, the death of a clan member, grade-taking rituals[2], and agricultural and ritualised exchange cycles (Hickey 2006, 2007). Such area closures may be

[1] Fisheries reserves where harvesting is prohibited.

[2] A system found in central-northern Vanuatu whereby traditional leaders increase social and spiritual status through the sacrifice of tusked boars.

off limits to fishing for as long as seven years. Hawaiians also used a variety of traditional marine resource management practices, which included *kapu* (fishery closures). These closures were often imposed to ensure catches for special events or as caches for when resources in the regular fishing grounds ran low.

Today, customary practices are employed on many Pacific Islands to varying degrees, even though many have been eroded over time due to a decline in the traditional authority of chiefs and the loss of respect for customary laws and knowledge during the colonial era. For example, in Kiribati many of the traditional or customary marine management practices were abandoned during the colonial era, and customary marine management is now uncommon on most islands of Kiribati. However, it is known that there are two islands at the southernmost end of the Gilbert Group in Kiribati that communally practise community-based customary marine management. In Guam, traditional marine management is not practised, and many people would suggest that heavy US influence on Guam has degraded much of the customary knowledge and practice in favour of a political system reflecting Guam's status as an organised, unincorporated territory of the United States.

In Fiji, traditional marine practices still exist, even though they have been eroded to some degree over the years. For example, when a high chief dies, certain marine areas are restricted for approximately 100 nights. Moratoriums are also put in place for traditional ceremonies or funerals; once the restriction period has ended, the area is reopened for public use. Bans also exist for seasonal harvesting; for example, when the traditional Fijian beach trumpet tree (*Cordia subcordata*) turns yellow, this indicates octopus mating and spawning season, at which time a temporary ban on catching octopus is put in place. Recently, traditional practices have been strengthened through the codification of traditional ownership rights to fishing grounds in Fiji.

Vanuatu has a strong heritage of traditional marine resource management, including legally recognised customary marine tenure systems that allow reef custodians to control activities on their fishing grounds. In addition, there are traditional seasonal and species closures, tabu areas, behavioural prohibitions, food avoidance, and *refugia* created as part of, and as a reflection of, the cultural diversity found throughout Vanuatu (Hickey 2006, 2007).

These practices were employed in the context of customary marine tenure, which exists in some form on most Pacific Islands. In some cases

customary tenure systems are recognised in national law, while in others their recognition is informal. In Fiji, coastal areas belonging to a certain community or clan are called *qoliqoli* (pronounced “ng-go-lee, go-lee”). Qoliqoli are traditionally-owned fishing grounds that are passed down from generation to generation. In PNG and Vanuatu, land tenure and ownership is generally based on clan groups, with reefs considered to be extensions of the land under customary tenure in some areas.

Traditional management systems help ensure that benefits from marine conservation efforts will accrue to the local community, generally in an equitable manner. Unlike in Western MPAs, which are geared for biodiversity conservation, traditional management systems aim to benefit the community: marine resources are seen as the basis of spiritual, cultural, communal, social and economic wellbeing, and therefore critical to the long-term survival of the community. Thus, while not all traditional systems have provided optimal biological outcomes, they have generally been successful in delivering benefits to both communities and ecosystems.

During the last decade, many Pacific Island countries have experienced a revitalisation of traditional management systems and traditional tenure (Johannes, 1998, Govan et al, 2008). This is the case, for example, in the context of the Locally Managed Marine Area (LMMA) approach (see case study in section 4). Vanuatu has also seen a revitalisation of village-based resource management (Johannes 1998a; Johannes & Hickey 2004; Hickey 2007). These revitalised customary practices have not remained static but instead have changed through the years in response to societal and economic changes. The transition into modern-day practice has not always been easy, as demonstrated by the sometimes challenging fusion between traditional knowledge and Western scientific knowledge.

At the same time, there is a recognition that many Western-style sectoral and top-down approaches for managing marine resources have not always adequately protected species and ecosystems. Many traditional practices offer selective and flexible restrictions, as well as other environmental techniques that can be applied either on their own or together with Western science-based tools and approaches (e.g. permits). These practices can be flexibly applied according to time, space and season, and can be subject to monitoring and review, making adaptive management possible. They are governed by customary institutions and laws that incorporate local socioeconomic considerations (Johannes 1998b; Johannes & Hickey 2004). In several cases, customary

laws can provide more diverse and culturally appropriate approaches to enforcement, compliance, monitoring and restitution.

The effectiveness of traditional practices is often a reflection of the strength and the viability of the customary law regime. There may also be issues regarding enforcement, the viability of a closed area in the long term, and the roles taken by governments, communities and traditional leaders. For example, in Vanuatu the factors found to affect village-based resource management include legal and local recognition of customary marine tenure systems, the strength of traditional leadership and social cohesion, the level of respect for customary practices, fishing ground geography, ease of surveillance, and whether there are tenure or leadership disputes (Johannes & Hickey 2004). Traditional practices are generally accompanied by strategies and resources to support sustainable use, viable livelihoods and equitable sharing of benefits.

The Cook Islands case study below examines how customary practices have evolved over time and highlights some of the issues and problems encountered. It also raises key questions relating to the use of traditional marine management areas in the context of national law.

Cook Islands Traditional *Ra'ui* and their Modern Equivalent – Protected Areas[3]

Ana Tiraa, Cook Islands

For many years the concept of *ra'ui* – a traditional area set aside for conservation – mostly fell out of use in the Cook Islands' main island, Rarotonga. But in the last decade or so it has received considerable publicity due to the Koutu Nui (Council of Traditional Leaders) reintroducing it in 1998 around Rarotonga's lagoon. In most of the outer islands, the practice of *ra'ui* never fell out of use and continues today.

In the past, areas would only be considered protected if the Aronga Mana (traditional leaders) declared them *ra'ui*, but today the situation is more complex with their modern equivalent, Protected Areas (PAs). In recent

[3] The traditional term "ra'ui" and the modern term "Protected Areas" can essentially be considered synonymous and are used interchangeably in this case study. However, there is a slight difference: most but not all Protected Areas (e.g. Suwarrow National Park, Takutea Wildlife Sanctuary) are ra'ui in the traditional sense.

years, traditional owners, island councils, landowners, communities and government have all played roles in establishing and managing PAs.

The introduction of legislation and legislative authorities, such as the Island Council and Environment Service, to regulate PAs has weakened the authority of the traditional leaders to control *ra'ui*. This has created confusion over the roles and jurisdiction of various entities in relation to PAs, in particular the Island Council and Environment Service and national government. The majority of PAs in the Cook Islands, for example, consist of areas not covered by legislation, with Suwarrow National Park, Rakahanga Rahui and Pukapuka Rauwi the only PAs with legal status.

While the reintroduction of *ra'ui* in Rarotonga in 1998 was successful, long-term strategies to ensure effective conservation measures appear to be less than adequate. There are a number of reasons for this, the most obvious being a lack of financial support in certain cases, particularly on Rarotonga.

On the other hand, the more established PAs in the outer islands seem less dependent on financial resources. This is partly because some outer island PAs (such as on Takutea, where nobody lives) are a considerable distance from the main island or are integrated into daily life as a matter of survival, such as on Pukapuka.

Furthermore, despite initial success, community support for *ra'ui* around Rarotonga is perceived to have declined. The leaders of the Pouara *ra'ui*, for example, are seeking legal support under the *Environment Act 2003* and have commissioned a revised management plan to strengthen their *ra'ui*. But while there is a belief that legislation will make the *ra'ui* more effective, this may not be the case: although the *Environment Act* caters for preparing management plans for recognised PAs, it is notably silent about enforcing compliance with such plans.

A lack of a monitoring, control and surveillance capacity is another constraint to enforcing *ra'ui*. Increased poaching in some *ra'ui* areas, for example, suggests that communities lack the capacity to prevent harvesting in these areas. Added to this are changes in customs – the role of *ra'ui* in food conservation is considered less vital today than when society was largely subsistence based, leading to a shift in the way *ra'ui* are governed.

Continued education and awareness are important for maintaining support for the *ra'ui*. They were well supported when intensive public education/ awareness and community meetings were administered, but less so as the publicity and consultations have declined.

Issues for consideration

Recognising that the Koutu Nui has a key role in regard to *ra'ui*, consideration should be given to the following issues:

- Strengthening and maintaining support for the *ra'ui*, including:

– The role of the Koutu Nui and the maintenance of a "register" of *ra'ui* according to customary practices

– The role of customary practices in designation and enforcement of *ra'ui*

– The role of science in *ra'ui* designation – is it achieving objectives?

– Obtaining financial support, and

– Maintaining interest over the longer term – how do we maintain continued focus on *ra'ui* objectives?

- Ways to strengthen monitoring, enforcement and compliance for *ra'ui*, including:

– The possibility of legislating the enforcement role of traditional leaders and customary practices, possibly through Customary Tribunals, and

– Legislating a dual enforcement system whereby if an offender refuses to abide by the decision of a Customary Tribunal the matter is referred to the criminal court.

- Assessing whether traditional penalties can play a role in effective enforcement – if so, what would the appropriate penalties be?

- Strengthening and asserting the role of the Aronga Mana in *ra'ui* – how best can this be achieved?

- Balancing the needs of the different islands – because each island is different, what works for one does not necessarily work for another, so

should there be an accepted procedure for establishing, maintaining and enforcing *ra'ui*, and if so, who should be responsible for developing this.

Dedication: In honour of our traditional leaders for reviving ra'ui *on Rarotonga. For those who have since passed on, you are not forgotten. In memory of my father, Tane Tiraa Tuakana Mataiapo, as well as Tere Ngapare Puati Mataiapo, Philip Tuoro Atata Rangatira, Akaiti Ama Tamaruanui Mataiapo and Mama Maui Cowan Short Teaia Mataiapo. Also Papa Ron Crocombe, who inspired and encouraged many.*

Lagoon in Cook Islands

Photo: Mlenny Photography, iStockphoto

Hawaiian Islands

2. Traditional Marine Resources Management and the Ecosystem Approach

This chapter looks at:

- Whether traditional practices are consistent with the ecosystem approach
- Whether the ecosystem approach is a useful concept for communities
- Case studies from Hawaii, New Zealand, and the Republic of Marshall Islands/Micronesia/Central Pacific.

The Convention on Biological Diversity (CBD) describes the ecosystem approach as "a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way" (CBD 2000). Importantly, the ecosystem approach recognises that humans, with their cultural diversity, are an integral component of ecosystems. The ecosystem approach arose from the need to move from single species management to a more integrated approach, so as to better manage multiple impacts on environments holistically, while maximising long-term economic, social and cultural benefits.

The ecosystem approach is central to the implementation of a number of international and regional agreements, such as the CBD and the Food and Agricultural Organization (FAO) Code of Conduct for Responsible Fisheries. The UN Convention on the Law of the Sea (UNCLOS) and UN Fish Stocks Agreement[4] also contain provisions of relevance to the ecosystem approach. Demonstrating the international commitment to the ecosystem approach, the 2002 World Summit on Sustainable Development in Johannesburg encouraged the application of this approach by 2010.

The interconnected nature of island ecosystems requires a holistic, integrated management approach, such as the ecosystem approach. For those living on islands, this approach is nothing new, though the term

[4] Full name is the "1995 Agreement for the Implementation of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks".

"ecosystem approach" may not have previously been used to describe their actions. The ecosystem approach is complementary with other integrated approaches (such as integrated coastal management and river basin management) that are already commonly applied in small islands. The overall goals in applying an ecosystem approach in the management of natural resources, land and oceans surrounding islands are to ensure that activities based on natural resources: 1) are ecologically and economically sustainable; 2) meet societal needs; and 3) singularly or in combination do not threaten ecosystem integrity and health or compromise marine or biological diversity or intergenerational equity (the right of future generations to a level of wellbeing no less than that of the current generation)(CBD 2007).

This description would indicate that the ecosystem approach is highly consistent with traditional management systems. Due to its human-centric approach, participation is central to the successful implementation of the ecosystem approach. Similarly, in traditional management systems, communities manage ecosystems and resources in a holistic manner, recognising their interconnections. Not surprisingly, some traditional management systems (such as the Hawaiian *ahupua'a* described in the case study below) are highly consistent with the ecosystem approach. As noted by Ruddle and Hickey (2008), the basic ideas contained in the ecosystem approach are inherent in most pre-existing or traditional systems of management that acknowledge ecological relationships, including not only *ahupua'a*, but also the Yap *tabinau*, the Fijian *vanua*, the Marovo (Solomon Islands) *puava* and the Cook Islands *tapere*.

Hawaiian *Ahupua'a* and the Ecosystem Approach

Adapted from www.hawaiihistory.com and www.hawaii.edu

In ancient Hawaii, *ahupua'a* were sections of land that extended from the mountain summits down through fertile valleys to the outer edge of the reef and into the deep sea. The *konohiki*, or caretakers, managed the land and consulted with *kahuna*, who were experts in different specialties. Within the *ahupua'a*, a wise conservation system was practised to prevent exploitation of the land and sea while allowing the people to use what they needed for sustenance.

Ahupua'a contained nearly everything Hawaiians required for survival. Fresh water was managed carefully for drinking, bathing, and irrigation of wetland taro. Wild and cultivated plants provided food, clothing, shelter, household goods, canoes, weapons and countless other products. Land and sea creatures offered food, bones, teeth, skin and feathers for tools, crafts and ornamentation.

The ancient *ahupua'a*, the basic self-sustaining unit, extended elements of Hawaiian spirituality into the natural landscape. Amid a belief system that emphasised the interrelationship of elements and beings, the *ahupua'a* contained those interrelationships in the activities of daily and seasonal life.

Traditional environmental knowledge and practices have been around for thousands of years, and have been effective in meeting community and ecosystem goals by preventing communities from exceeding their local carrying capacity. While the ecosystem approach was not specifically designed for indigenous and local communities, traditional knowledge has a key role to play in its application. However, as a concept derived from the western conservation ethic, what does the ecosystem approach have to offer indigenous and local communities (or conversely, and equally as important, what do traditional management systems have to offer the recent Western 'discovery' of the ecosystem approach)?

According to the CBD ecosystem approach Principle 2, management should be decentralised to the lowest possible level (CBD 2000). This would imply that communities are the designated implementers of the ecosystem approach, as is the case within the context of traditional resource management. As biocultural heritage[5] is local and site specific, implementation at the lowest possible level is consistent with traditional practice. However, if the ecosystem approach is to be applied by indigenous and local communities (as is implied by Principle 2), the ecosystem

[5] Biocultural heritage is the cultural heritage (both tangible and intangible, including customary law, folklore, spiritual values, knowledge, innovations and practices) and biological heritage (diversity of genes, varieties, species and ecosystem provisioning, regulating and cultural services) of indigenous peoples, traditional societies and local communities, which often are inextricably linked through the interaction between peoples and nature over time, and shaped by their socioecological and economic context. This heritage includes the landscape as the spatial dimension in which the evolution of indigenous biocultural heritage takes place. This heritage is passed on from generation to generation, developed, owned and administered collectively by stakeholder communities according to customary law (International Society of Ethnobiology 2006). Essentially all landscapes are subject to cultural influences and, as such, maintenance of ecosystem services and conservation of biological diversity are achievable only when cultural diversity is maintained (Bridgewater et al, 2007)

approach needs to be communicated more clearly to members of those communities, taking into account the cultural drivers of resource use. Locking away resources from use (e.g. through no-take areas) can present a problem that has associations with colonisation and the loss of knowledge.

According to CBD ecosystem approach Principle 1, the objectives of management of land, water and living resources are a matter of societal choice (CBD 2000). This highlights a basic difference in the world view between the ecosystem approach and traditional management systems. The term “societal choice” is not necessarily the most appropriate concept to apply to indigenous and traditional societies in the Pacific. The maintenance of biocultural heritage is considered to be a cultural, intergenerational responsibility, not a choice.

Stakeholder participation is a central concept of the ecosystem approach. However, not all stakeholders are considered equal. Indigenous people consider themselves principal rights holders as resource owners (or resource custodians) rather than stakeholders. Regardless, indigenous people are often the minority on various management committees. It should also be stressed that implementing the ecosystem approach, including the full participatory process that is required, takes considerable time and, usually, financial resources. This lengthy time period should be taken into account in the project planning process and should be factored into donor funding processes.

Governments adopting the ecosystem approach as a central component of their national biodiversity strategies can benefit to a large degree from the contributions of traditional management practices to its implementation. The case study below presents experiences from New Zealand in implementing the ecosystem approach in islands.

Clownfish, coral reef

Learning about the Ecosystem Approach to the Management of Small Islands – Some Experiences from New Zealand

Rod Hay and Elaine Wright, NZ Department of Conservation

The 600 small islands of New Zealand (NZ) contribute enormously to sustaining and restoring the indigenous biodiversity of our country. Many species and ecological communities once characteristic of the mainland are now confined to islands.

The ecosystem approach can be applied at different scales across the range of islands and in the context of an overall biodiversity management strategy for the country. The 600 small islands range from those that are maintained as uninhabited and pristine, through those that are the subject of intensive restoration and are often key sites for the recovery of threatened species, to those where community objectives, including ecotourism and sustainable traditional harvest, take precedence.

Some of the management activities, such as the absolute protection of the subantarctic Snares Islands or restoration of Campbell Island, are government initiatives, whereas other island programmes, such as on Mana and Tiritiri Matangi, are collaborations between community and government. The success of these projects has led to significant growth in the number of community and private island restoration programmes, a number of them in partnership with or initiated by Maori, such as on Ohinau Island. While some island protection and restoration is aimed at minimising and mitigating human impact, other projects are designed around community knowledge and aspirations and provide opportunities for people to interact with our biodiversity.

The Island Strategy provides objectives, procedures, best practice models and standards. The management of NZ islands has evolved from simple pest eradication and translocation of threatened species to the planned restoration of the key ecosystem drivers, such as seabirds, as illustrated by Mana Island and the Mercury Islands. This involves removal and minimisation of threats, the establishment of targets and measures, and the step-wise addition of missing components of the system.

While much of the reported NZ experience centres around the protection and recovery of endemic species and biological communities, the story is not complete without acknowledging the traditional ownership, harvest and management of island resources by Iwi Maori, notably the Rakiura tribes. Their ownership, management and long-term traditional harvest of *titi* (muttonbirds – *Puffinus griseus*) is the subject of collaborative research on sustainability, co-funded by the government, managed by the Rakiura Titi Islands Committee and undertaken jointly by the Committee and the University of Otago. This initiative and recent work on co-management of marine resources illustrate some of the challenges and benefits of acknowledging and incorporating traditional ownership and knowledge into a shared vision.

Although traditional knowledge and the ecosystem approach are generally compatible, the fit is not always perfect. Not every aspect of traditional biocultural heritage can neatly fit into the ecosystem approach framework, nor should there be a need for it to conform to a particular model. With this in mind, the role of culture in the ecosystem approach may require further consideration. From a practical management viewpoint, the legitimacy of the ecosystem approach is ultimately judged by the benefits it provides communities. These benefits are linked not only to the health of ecosystems but also to the sensitivity of the approach to the culture of communities. As many Pacific Island countries are in the beginning stages of the formal implementation of the ecosystem approach as defined by international conventions and processes (and as demonstrated by the case study from the Marshall Islands below), there is an opportunity to take into account the important role of traditional knowledge in the ecosystem approach.

Marshall Islands, Micronesia and the Central Pacific – Marine and Terrestrial Protected Areas, Ownership and Management – the Beginnings of an Ecosystem Approach

Steve Why, Marshall Islands Conservation Society

The Republic of the Marshall Islands consists of twenty-nine low-lying coral atolls and five islands. The total Marshallese population is approximately 70,000, with more than half living around Majuro, the capital, and smaller

numbers on Ebeye (in Kwajalein), Jaluit, Wotje and other atolls. In all, twenty-two atolls are inhabited. Marshallese live within a traditional culture based on predominantly chieftain systems. All lands and nearshore resources are owned and managed along traditional, matriarchal lines. Each atoll has a local government.

Traditional *mo* – closed areas and practices – are still employed, albeit weakly. Communities access resources within an atoll along family lines. Threats to communities include illegal foreign and local overfishing, loss of traditional conservation practices and subsistence crops, solid waste pollution, overpopulation, invasive species, climate change and sea level rise (1 cm per decade). While benefit-sharing across these communities is traditional, it is not necessarily equitable.

Increasingly during the past five years, national agencies – including the College of the Marshall Islands (CMI) and recently established local non-governmental organisations (NGOs) such as the Marshall Islands Conservation Society (MICS) and the Natural Resource Assessment Surveys (NRAS) – have worked with local governments to strengthen traditional practice, undertake surveys and establish marine protected areas. Now, under the Coastal Management Advisory Council (CMAC)[6] and a Strategic Plan, the group consisting of national agencies and NGOs is working on protected area establishment with communities on over six atolls, with plans to expand a representative network of marine and terrestrial areas on all atolls by 2012. With traditional ownership paramount, all must proceed at the request of local governments and communities.

Under presidential decree, we are also participating in the Micronesia Challenge (a regional commitment by the chief executives of Palau, the Marshall Islands, the Federated States of Micronesia, Guam and the Northern Mariana Islands) aiming to help set aside at least 30 per cent of nearshore marine and 20 per cent of terrestrial areas under protection and conservation across Micronesia by 2020.

[6] The council is made up of members from CMI, MICS, NRAS, the Marshall Islands Marine Resources Authority (MIMRA), the Republic of the Marshall Islands Environment Protection Authority (RMIEPA), the Office of Environmental Policy Planning and Coordination (OEPPC), the Historic Preservation Office and the Department of Internal Affairs.

An aerial view of Palau's famed Rock Islands

3. Recognising Traditional Marine Resources Management within National Law

This chapter looks at:

- The ways in which traditional marine management practices are recognised by national law
- Whether legal recognition has made traditional practices more effective
- Whether legal recognition of traditional management practices should be a recommended course of action for governments
- Case studies from Palau, the Solomon Islands, Vanuatu, Pohnpei (Federated States of Micronesia), Samoa and Tuvalu.

Incorporating traditional practices into national law can strengthen their implementation and enforcement, and make them formally part of national strategies for biodiversity conservation and natural resources management. Progress towards legal recognition of traditional practices has been made in many Pacific Island countries. For example, PNG, Vanuatu, Fiji and Samoa acknowledge the value of community law in their national legislation and have recently formed partnerships between communities and national agencies for conservation. In Kiribati, the *Environment Amendment Act 1999* (as amended in 2007) gives due recognition to considering, where appropriate, the retention and use of the traditional knowledge, innovations and practices of the people of Kiribati relevant to the conservation and sustainable use of the biological diversity.

The example from Palau below demonstrates how legal recognition can strengthen traditional management.

The Protected Areas Network of Palau – Recognition of Traditional Resource Management by a National Legal Framework

Alma Ridep-Morris, Ministry of Resources and Development, Palau

In Palau, the *Protected Areas Network Act* (PAN) is a piece of national legislation that was passed in November 2003 to provide a national framework for supporting state and community-level action to address local resource management needs and protect nationwide biodiversity, habitats and natural resources.

Traditional bans on harvesting – *bul* – put in place in an area are generally short term, and some states and local communities want to be able to extend *bul* on marine areas long term. This can be done by having these areas become Protected Areas under the PAN. This would make the protection more effective and enforceable, with the support from the national government enforcement agencies.

Some traditional leaders have therefore approached the national government to see traditional managed areas recognised under the PAN. As well as *bul* being only short term in nature, they can prove unsuccessful if traditional leaders are not well respected or not effective in a community. If a community-designated Protected Area is part of the PAN, conservation officers can help the states and communities enforce and monitor these protected areas. Normally the state government can only fine people a limited amount (US$100); however, under the PAN an offence can attract up to a US$10,000 fine.

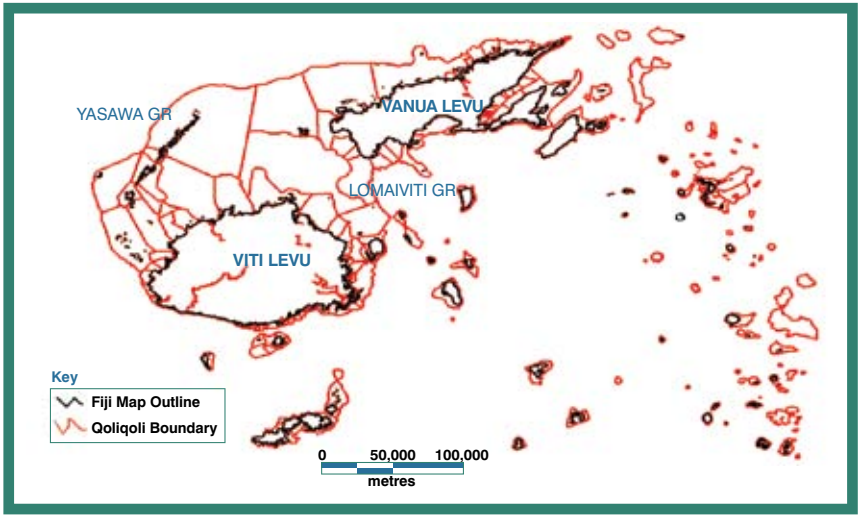
The PAN is a national legal framework that supports communities by giving them extra protection and technical support, and strengthens local systems by encouraging and enabling the local community to protect their resources. With traditional leadership slowly eroding, there is now a mixture of traditional and modern techniques in operation. In this context, the PAN serves to give legal recognition and enforcement to traditional practices and laws.

But is formal legal recognition of traditional practices and laws fundamental for successful natural resources management, or can traditional systems be strong enough on their own? Certainly there is a need for long-term and culturally appropriate approaches to natural resource management that are

within the capacities of small islands. It can be argued that the recognition of customary laws and institutions strengthens the role of customary law in a way that will benefit the livelihoods of people and the environment that is the basis of those livelihoods.

Traditional practices and fisheries management can be strengthened through the legal recognition of traditional ownership boundaries. Fiji is one of the few countries that has demarcated boundaries, with a total of 410 *qoliqoli* (see map). Qoliqoli (pronounced "ng-go-lee, go lee") are traditionally-owned fishing grounds that are passed down from generation to generation. These records of the ownership of fishing areas are one of the strengths of the traditional marine management system in Fiji. The demarcation process took approximately 20 years (from 1974 to 1994) and has been applied to the customary fishing areas, which are generally inshore (from the high-water mark to the reef edges).

Interestingly, in the context of the current debate in the United Nations relating to governance of the high seas, the traditional fishing grounds in Fiji extended as far offshore as one could go, which could be a considerable distance in a fishing boat. The present-day qoliqoli can range from 0.5 kilometres to more than 10 kilometres out to sea from the high-water mark. Beyond the qoliqoli boundaries (marked in red on the map) are Fiji's archipelagic waters, over which the government has legal control.



Map of qoliqoli boundaries in Fiji (in red). Source: Fiji LMMA Network Database, 2008, supplied by Alifereti Tawake.

Every indigenous Fijian must be registered to a clan to have the right to fish in qoliqoli. As a token of respect, permission from the chief must be sought to fish in another qoliqoli area, even if the individual has an ancestral connection to that area. While demarcation of boundaries is perceived to be positive, it can also create conflict. One of the emerging issues is that, if an area is over-fished, people tend to move out to other fishing boundaries (Aalbersberg et al 2005). Similar conflict in regards to demarcation has also taken place in PNG. For example, on the northern coast of PNG, conflict over relevant fishing territories resulted in community members of five villages not talking to one another for nearly twenty years.

Another country in the Pacific that has recognised traditional ownership of fishing grounds is Palau. In Palau, boundaries determined by state and traditional laws extend to 12 miles out from the high-water mark. Anything beyond this is considered national territory. In contrast, although Kiribati has some demarcated areas under national law and existing community by-laws, fishing access is generally open, with private ownership only extending to the high-water mark. As noted already, the sea remains under government ownership.

While there are many ways to undertake formal recognition of customary practices, there is not necessarily one “right” way to proceed. Ideally, legal recognition is undertaken in such a way that the national law and customary law coexist and complement each other. The case study below from the Solomon Islands examines a hybrid between traditional and modern law and the challenges encountered in implementing such a system.


Photo: Todd Winner, iStockphoto

School of Barracuda fish, Solomon Islands

Traditional Law and Environment in the Solomon Islands

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Traditional law in the Solomon Islands is similar to that of other Melanesian countries: the reef is considered as part of the land, secret sites are automatically protected sites (*tabu*), and certain sites are protected seasonally for the preservation of sacred species, according to the special management based on deity type rules.[7] The customary marine tenure systems are critical for marine conservation, and rules that apply on the land also apply to the sea.

However, researchers (e.g. Hviding (1998); Richards (1994)) and NGOs feel that traditional law is not effective for reef and resources management, and that modern law should be incorporated to ensure the sustainability of Solomon Islands' resources. This "marriage" has encountered a few challenges, because of the secretive nature of traditional knowledge and the lack of capacity and resources in the Solomon Islands.

The Constitution (section 75 (1)), the *Provincial Government Act* and the *Fisheries Act* (currently under revision) all recognise customary laws. The jurisdictional jargon defines indigenous people as "rights-holders" rather than "owners"; therefore they hold rights but do not own the land under the law. The issue of ownership derives from early laws in the late 19th century where it was asserted that "Crown ownership of the foreshore and the seabed is a common law principle" (Kabui 1997).

A court case in 1951 (Hanasaki v O.J. Symes) (Kabui 1997), however, changed the view on land tenure when an indigenous Solomon Islander accused a Westerner of taking trochus (*Trochus niloticus*) illegally. The court awarded the decision to the indigenous man and thereby recognised customary ownership of the reef. More than thirty years later, a native owner asserted his customary ownership of the land and proceeded against a timber company for damaging the land below the high-water mark through timber-logging activities (Allardyce Lumber Company Limited v. Laore);

[7] Beliefs, practices and protocols encoded and enshrined in oral traditions, often derived from island deities/cultural heroes and sanctioned by the ancestors as "the way". Following the way specified by island deities led to a fruitful life on the islands, where people were also ritually part of that sanctified world and were symbolically one with the gods and ancestral spirits (Eliade 1957). Evoking the power of the ancestral spirits or island deities to intervene and increase resource abundance was an integral part of traditional *tabu* placed on resources (Hickey 2006).

however, he lost the case on the basis that he failed to prove the existence of customary rights over the area and that the disputed area was seabed and not land (Kabui 1997).

The Western Province Resource Management Ordinance was instituted in 1994 to provide for the proper management of resources and to empower customary owners in the management of the lands. Part III of this ordinance refers to this empowerment and is an attempt at achieving synergy between modern and traditional law while keeping the flexibility of the former. Under Part III, a Customary Land Management Resource Order (CLMRO) can be requested by the community if it decides to put protection on a particular area with clearly defined boundaries. The CLMRO is then passed on to the Western Province Executive, which approves it (if found relevant) before sending it to the Area Council. The CLMRO is then enforced as a law. If there are any objections, local courts can decide whether or not the CLMRO should be revoked. The CLMRO establishes penalties for infringing the laws of the communities, with fines up to SI$5,000 (AU$920). The money goes back to the land owners.

With the help of the World Wildlife Fund, the CLMRO system has been implemented by two communities, but it still faces some challenges as some communities want to protect resources from use by other people but not themselves, and do not recognise the personal relationships within communities.

The Solomon Islands needs to get the best out of both traditional and modern law by creating a hybrid that may combine the benefits of both laws, as was attempted with Western Province Resource Management Ordinance.

Customary law is diverse and evolutionary, and this is its great strength in dealing with complex human and environmental interactions. However, there are considerable challenges in capturing the various principles and values of traditional marine management in a formal legal framework. Issues for consideration include how to recognise the authority of customary institutions to manage resources without changing the nature of the customary institution, how not to disenfranchise communities and their common management tools (such as *tabu*) or the restrictions of access, how to respect the decision-making processes of customary communities, and how to accommodate the broad range of cultural practices found throughout the rich cultural diversity of the Pacific.

The three case studies below highlight the complexities of integrating traditional practices into a formal legal system. The case study from PNG looks at the challenges of finding harmony among diverse cultural practices and laws, while the two case studies from Vanuatu examine the integration of traditional resource management approaches and practices into the formal legal system.

Papua New Guinea – The Challenge of Diverse Cultural Practices and Laws

Alphonse Kambu, Papua New Guinea

In PNG there is recognition of traditional marine practices under the Constitution, which provides the basis for managing marine resources. While a number of policies and laws have been developed for fisheries, different laws govern different practices. For example, fisheries laws are generally geared towards commercial fishing, yet the *Customs Recognition Act* recognises traditional customary practices and touches on issues such as the environment. There is a need, therefore, to streamline the various pieces of legislation to support traditional marine practices.

Communities can currently implement protected areas under the Wildlife Management Areas section of the *Flora and Fauna Act*. Additionally, communities can use sections 42 and 44 of the Organic Law on Provincial Governments and Local-level Governments to make management regulations. Yet with the diverse cultural practices that exist in PNG, there is no one common theme underlying all the relevant legislation. This presents a challenge for the management of issues at the national level.

In the development of national laws, the common practices of all clans are considered. The finer details are left up to the local communities to work out. *Tabu* within communities is an example where people are restricted from eating certain food (e.g. only women and children can eat red fish). In addition, when a person reaches a certain age they are prohibited from eating particular fish. Totemism exists as well, e.g. if a person is named after a plant or a species, they are unlikely to harvest that particular species.

Cultural dimensions of environmental management are alive and well too. For example, certain areas are restricted if considered *masalai* areas – where spirits are laid to rest or where access is particularly dangerous.

In the context of marine areas, *masalai* are often areas of unpredictable, strong currents, or the windward sides of islands with high-breaking waves and rocky coastline often adjacent to steep drop-offs.

The PNG situation highlights the challenges of reflecting diverse cultural practices in national law, as well as streamlining legislation in support of marine management activities. Regardless, traditional management is actively practiced by communities.

Linking Traditional Resource Management Approaches and Practices into the Formal Legal System in Vanuatu

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After some twenty years of independence and ten years of workshops, mostly funded by international organisations or donor countries, it is time for Vanuatu to sit down and evaluate the improvements it has made to its legal system. The legal agenda has habitually been driven from outside, and this has led to paradoxical situations where laws were written but could not be implemented because of a lack of capacity or lack of a sense of ownership of the laws. In other words, traditional people did not feel part of the government system. There is now a need to develop a new scheme which will focus on implementing and incorporating customary laws and practices.

The resource management legislation has already been reviewed for several years, and thus it would be advisable to look at what systems are already there and modify these, rather than create new ones. There are presently two types of resource management in Vanuatu: direct management and indirect management. Direct management occurs as a result of direct observations and perceptions of changes and evolution, which result in taking relevant action, such as declaring a *tabu*, or ban. Indirect management has a spiritual focus more than a conservation focus: traditional people can declare a temporary ban on an area or a species via ritual ceremonies.

The key values and principles of traditional marine management in Vanuatu form the basis of the rural society. The key values are:

- Livelihood (how people meet the basic needs of life)
- Equity (the perception of fairness in a group)
- Responsibility (rights of use), and
- Cooperation.

The key principles are:

- Security of tenure
- Inheritance and use-rights
- Focus and orientation, and
- Decision-makers and decision-making processes.

A formal legal framework able to capture all these issues was outlined in the *Environment Management and Conservation Act 2003*. The drafting of environmental laws is a long and costly process, but it has to be manageable and realistic. The Act was presented to the Parliament in December 2002 and accepted on 10 March 2003; it finally became a new law. This piece of legislation strives to integrate traditional resource management approaches and practices into the formal legal system. The new law covers:

- Environmental Impact Assessment (EIA), aimed at reducing conflict by recognising an additional role for each agency within the framework. The law therefore gives power to provinces and municipalities.
- Biodiversity and bioprospecting, which involves research and manages, via permits, the activities of researchers in the country so that the government and communities can have access to the results of the research. This is a good weapon for combating research piracy.
- Conservation of biodiversity, which reinforces traditional resource management. Conservation is often based on perceptions, with the rules, boundaries and enforcement left up to communities. Communities decide the width of protected areas, as well as the activities, penalties, courts and

registration. There is no law on enforcement: the government provides only support and backup, and therefore a lot of flexibility is allowed.

This Act is one of the very few pieces of law that has undergone extensive consultation to ensure that all the different views and concerns have been expressed and adequately accommodated. Thus, this Act not only integrates traditional resource management, but also provides a sense of community ownership that was lacking in previous legislation.

Additional Links and Support for Traditional Resource Management Approaches and Practices in the Constitution and Informal Legal Systems in Vanuatu

Francis Hickey, Vanuatu Cultural Centre

The Constitution of the Republic of Vanuatu recognises customary law, land and marine tenure, and the expression of traditional resource management knowledge and practice. Chapter 12, Article 73 states: "All land in the Republic belongs to the indigenous custom owners and their descendents". Under the *Land Reform Act* (Chapter 123) land includes "land extending to the seaside of any offshore reef but no further". This then forms the legal basis for customary marine tenure (CMT). Article 74 states: "The rules of custom shall form the basis of ownership and use of land". Furthermore, Article 94(3) states: "Customary law shall continue to have effect as part of the law of the Republic of Vanuatu". These articles allow for the expression of customary law, tenure and use (including management) of land/reefs in Vanuatu following the range of cultural expressions found among over 100 cultural-linguistic groups. Further codification of these rights would not account for the high cultural diversity found within Vanuatu.

Traditional tenure and resource management regimes are typically devolved to families, clans, communities and traditional leaders. Infractions at the community level are normally dealt with in the *nakamal* (men's meeting house) where a "custom court" is held, as has been done for centuries. This traditional conflict resolution mechanism tends to be restorative in nature by avoiding a win/lose situation and incorporating consensus, compromise

and a sensitivity to the maintenance of peace within the community. The custom court typically concludes with a ritualised "washing out" of the wrong in the eyes of the community, in order to maintain social cohesion and the cooperation necessary for traditional resource management (TRM) systems and other community activities, such as development initiatives. This is in contrast with the Western win/lose outcome that is perceived by communities as divisive and likely to result in ongoing lack of social cohesion and cooperation affecting resource management (Johannes & Hickey 2004).

Although the custom court system is not formally recognised in terms of state enforcement, it generally remains effective in dealing with the majority of village-based infractions while reinforcing traditional governance and leadership practices and values. However, communities with ongoing internal divisions stemming from, for example, leadership or land/reef tenure disputes find it increasingly difficult to enforce custom court decisions. There has been some talk within government circles of empowering traditional leaders through legislation to formally enforce their custom court decisions, but exactly how to effect this is yet to be ascertained. The issue of state intervention somehow undermining and superseding traditional authority at the community level remains problematic, as are the risks with an approach that promotes dependency on government by communities to solve their internal problems. The lack of capacity for government to effectively adjudicate over village-based issues throughout the archipelago also remains a significant issue.

National fisheries regulations are also typically adopted by communities and enforced by traditional leaders on behalf of the government (which generally lacks the capacity to do this), provided the regulations support the community's own management objectives. For example, once the underlying rationale of fisheries regulations that specify size limits for trochus (*Trochus niloticus*) and other resources are understood in terms of lifecycle and recruitment effects, community leaders are happy to include these in their village-based management regimes. This has boosted the importance and value of cooperative management principles (the complementary combination of traditional and scientific knowledge) within the supporting framework of CMT that allows communities to specify bans (or taboos) on particular resources under threat or fishing gear deemed destructive. Examples of this include harvesting bans placed on commercial species such as trochus and *bêche-de-mer* (sea cucumber) and restrictions on the use of gill nets and night-time spearfishing (Hickey & Johannes 2002; Johannes & Hickey 2004).

As part of strengthening TRM and embracing cooperative management strategies, the use of traditional ecological knowledge (TEK) remains central. Not only are communities more comfortable and trusting in their own knowledge sets contextualised within their own belief systems but, by and large, TEK represents the only area-specific knowledge on the environment of Vanuatu. The incorporation of TEK has been found to assist in empowering communities with their own knowledge systems and promote ownership of resource management initiatives; as a result, these approaches have been found to be more sustainable in the long term. The mobilisation and use of TEK also assists with intergenerational transmission of this knowledge.

The Vanuatu Cultural Centre (VCC) actively supports the strengthening of CMT and TRM approaches in line with constitutional rights outlined above, while embracing and promoting a biocultural approach to ecological governance. Through the VCC network of fieldworkers across the archipelago, TEK, traditional governance (including conflict resolution mechanisms) and resource management systems are supported and strengthened as legitimate ways for communities to maintain the decentralised autonomy they have enjoyed for centuries in managing their communities and resources. An additional objective of this approach is to continue to foster a strong sense of responsibility among communities to manage well the resources under their tenure. The VCC network is comprised of some 80 men and 40 women who work voluntarily within their communities (and in vernacular language) to support and promote a range of traditional knowledge and practices in a holistic context.

Supporting and strengthening TRM systems involves a wide range of strategies, including CMT, *tabu* areas (sacred sites), species-specific prohibitions, seasonal and area closures that create networks of spatial-temporal *refugia*, gear restrictions, behavioural prohibitions, totemic restrictions and food avoidance – all of which serve to promote a balanced approach to resource management. In fact, many of the long-established traditional strategies have parallels in Western science-based management strategies promoted today (Hickey 2006, 2007). All or some of these strategies, along with the mobilisation of TEK, may be applied within a community to fine-tune resource management in the context of their own fisheries habitats, livelihood needs, traditional calendars and other cultural practices and cycles. This diversity of strategies stands in contrast to the more unidimensional, often donor-driven, approach increasingly seen in the Pacific that primarily supports marine protected

areas (MPAs) – a model that overlooks the richness of strategies employed traditionally (Ruddle & Hickey 2008).

Supporting communities to openly practise and take pride in their time-proven systems of decentralised management acknowledges the value of traditional systems and the limited capacity of governments in this context. Promoting traditional practices has also become an increasing tourism attraction, as travellers come to Vanuatu to learn more about its indigenous people and customs. The VCC has made the documentation, support and promotion of TRM a central theme of its fieldworker program for the past twelve years, due to increasing pressure on natural resources and traditional management practices. One of the greatest threats to TRM remains the blind promotion of Western conservation practices (with big budgets) that ignore and subsume long-established resource management systems. The VCC advocates for culturally sensitive awareness and cooperative management initiatives that acknowledge, support and strengthen established systems in an effort to promote community self-reliance and resilience.

Traditional reef closure marker in Vanuatu

Another model for integrating traditional practices and government-led conservation efforts is a co-management system (collaboration between customary institutions, government and/or other stakeholders). Some participants at the United Nations University Workshop on Traditional Knowledge and Coastal Resource Conservation (Townsville, Australia, 29 March – 2 April 2004) argued that customary law can be “too flexible”, with traditional chiefs having total power over their resources, and that in such cases co-management might be preferable. Yet co-management of the environment will only be effective if a voluntary and participatory approach is taken, not if a system is imposed on traditional communities. The following case study examines a co-management system undertaken in the Federated States of Micronesia.

Pohnpei Watershed Management – Reconciling Traditional and Modern Law for Sustainable Outcomes

Justin Rose, University of the South Pacific, Vanuatu

Pohnpei is one of the four states of the Federated States of Micronesia (FSM). Its main island has a population of around 30,000 and comprises 200 villages in five municipalities. Since the mid-1970s there have been major losses, almost 66 per cent, of intact catchment forest in Pohnpei. This has caused severe downstream impacts: erosion, sedimentation of mangroves and reefs, contamination of water supplies, loss of habitat for endemic species and threats to biodiversity. The primary cause of forest disturbance and clearing is the dramatic increase in kava production. Kava consumption has expanded beyond ceremonial uses and it is now a popular recreational substance.

Traditional Authority in Pohnpei

Pohnpei is divided into 200 *kousapw* (villages) and five *wehi* (traditional kingdoms). Customary authority resides with the island's traditional titleholders, whose roles and responsibilities are allocated and organised within complex hierarchical systems that operate in each *kousapw* and *wehi*. While the *nahmwarki* (paramount chief) is the symbolic owner of all land within a *wehi*, the *kousapw* is the centre of social organisation and culture. Traditional titles, while earmarked for men of particular matrilineages, are earned through community service, displays of traditional skills and accumulation of traditional knowledge. Titleholders are accountable to their constituents and titles can be removed if the holders fail to perform their duties adequately. Historically, specific title holders were responsible for management of natural resources (*Sou Madau* -"Master of the Ocean", *Souwel Lapalap* - "Great Master of the Forest").

A Society in Transition

At independence in the early 1980s, the Pohnpei State Government took over governance of the island from the Trust Territory administration. The adoption of a Western-style legal system and institutional structure reflected the need for Pohnpei and FSM society in general to operate within modern economic and political contexts. The young Pohnpei State Government is in some respects a model of good governance and democracy, with effective systems of administration and general respect for the rule of law.

However, in the areas of governance where the authority of the government stands in direct conflict with that of the traditional titleholders, the government is faced with severe difficulties. These areas include some aspects of land, family and criminal law, as well as conservation and natural resource management. As noted by John Haglegam (former FSM President), "the paramount chiefs are still the undisputed rulers in their kingdoms".[8]

Experimenting with Co-Management

Early attempts of the government to mark out watershed boundaries were a failure. The enthusiastically written *Pohnpei Watershed Forest Reserve and Mangrove Protection Act* of 1987 was welcomed by the villagers with guns and machetes, as they perceived it as "a government land grab in direct conflict with traditional Pohnpei resource use and authority".[9]

There followed a thorough process of consultation and participatory planning that reoriented catchment management towards government-community collaboration. All stakeholders contributed to and approved the Pohnpei Watershed Management Strategy 1996-2000, followed by implementation of the Pohnpei Community Conservation and Compatible Management Project 2000-2004 with support from the Global Environment Facility and the Nature Conservancy (TNC).

In 2001, after attempted legal reform at the state level collapsed due to a lack of consensus, a co-management system was attempted in Madolenihmw Municipality.[10] In 2002, the *Madolenihmw Protected Areas Act* (MPA Act) was passed, institutionalising the collaborative process and embodying a "bottom-up" approach to forest, coastal and marine conservation. The Sehnpen/Lehdau Mangrove Reserve was declared under the Act in 2003. Madolenihmw's second-highest titleholder gave the following perspective: "the greatest legacy of this process is that Pohnpeians are regaining control of their own resources".[11]

The MPA Act is no longer operational. It was modelled on Samoan legislation enabling the listing of village by-laws under the Samoan national fisheries

[8] J Haglegam, *Traditional Leaders and Governance in Micronesia*, State, Society and Governance in Melanesia Project, Discussion Paper 98/1 (Canberra: Australian National University, 1998) 4.
[9] C Dahl and W Raynor, "Watershed Planning and Management: Pohnpei, Federated States of Micronesia" (1996) 37 *Asia Pacific Viewpoint* 235, 237.
[10] Pohnpeian municipal boundaries mirror those of the five *wehi*, i.e. in Pohmpei, a *wehi* is also a local government area. This fact further reinforces the maintenance of traditional authority.
[11] W Raynor, "Pohnpei Watershed Management Project: 10 Years of Learning" (Paper presented to the Annual EPA Pacific Region Conference, American Samoa, 2000) 2.

law, a process that in turn relied upon longstanding arrangements and processes supporting decisions of Samoan village *fonos*. In the Pohnpei municipal context the MPA Act worked when TNC guided and facilitated the listing process, but more generally it was judged to be too complex for municipal-level institutions with limited capacity. Other difficulties included the uncertainty caused by possible conflicts with the state-level watershed law.

The Reassertion of Traditional Law

While the experiment with formalised co-management at the municipal level was abandoned, with the agreement of traditional leaders the watershed boundary line in Madolenihmw has been marked and kava planting above the line has been significantly reduced. The watershed boundary line has been marked in U Municipality also, where watershed monitoring reveals a remarkable reduction in upland kava farming. Watershed monitoring in 2001 indicated there were 1,741 new forest clearances for kava plantings in U, while in 2004 there were fewer than 100 new clearings. This is an improved outcome with which any environmental governance agency would be satisfied. The turning point in watershed conservation in U Municipality is pivotal to the present argument: it was when the *nahnmwarki* made it known throughout the municipality in 2003 that "any man who planted kava above the watershed boundary line will lose his title, or if he has no title the father will lose his title, or if the father has no title, the *soumas* will lose his title". This edict resulted in a 95 per cent reduction in forest clearing, as shown by systematic on-ground monitoring.

The title removal edict in U represents reconciliation, a coming together, between state law and traditional authority on the issue of kava planting in the upland forests. A recognised trait of Pohnpeian political culture is to maintain alternative sources of authority that can be used to justify alternate courses of action. In traditional terms this would entail oscillations of allegiance between *wehi* and *kousapw*, or in the division of *kousapw*. In contemporary terms this manifests also in finding conflicts between state and traditional rules for resource governance. The obvious example is of kava growers planting in the uplands, a sub-group empowered by the widespread opposition among traditional leaders to the 1987 watershed law to continue their activities in defiance of the State Government. By issuing the ban under threat of title removal the *nahnmwarki* of U brought these alternate sources of authority into agreement upon this basic yet important issue. This act both removed any suggestion of (customary or legal) legitimacy from future clearings, and reinforced the *nahnmwarki's* position as sovereign over the watershed forests of his *wehi*.

Concluding Comments

The stakeholders involved with the management of Pohnpei's watershed forests and inshore marine areas have travelled a difficult governance path over the past twenty years, learning many lessons along the way. Most of the lessons are to do with engaging communities and traditional leaders in natural resource management, and in creatively combining environmental governance and community development programs at the grass-roots level. These lessons confirm that, despite the adoption of centralised governmental institutions in Pohnpei, the state is poorly placed to exercise effective control over natural resource use, and so laws that are based upon an assumption that such control exists are destined to fail.

Just as the opposition of traditional leaders severely handicapped the *Pohnpei Watershed Forest Reserve and Mangrove Protection Act 1987*, the eventual support of traditional leaders for the watershed boundary marking has proven vital. The willingness of the traditional leaders to accept this partnership has assisted in reversing the deterioration not only of the island's resource base, but also of Pohnpeian traditional authority itself.

The edict of the *nahnmwarki* banning forest clearing in the watershed of U would not be visible to outside observers seeking the environmental law of Pohnpei in statute books. Such observers would, however, find a legislative instrument containing strongly worded statements regarding the ecological importance of Pohnpei's watershed forests, as well as scientifically informed institutional arrangements to protect them. If these observers were interested not only in the text, but also in the implementation of the text, they would discover that the kava growers, backed by the traditional leaders, had in 1987 chased the government surveyors from the forest and forestalled the law's implementation for a generation. Upon this basis it may be reasonable to conclude that it is the fondness of Pohnpeians for kava, and in issues of land use their obedience to traditional leaders in opposition to the Pohnpei State Government, which is at the heart of the island's unsustainable forest governance.

The above assessment would be neither accurate nor completely false. Among the ironies of Pohnpeian watershed governance is the fact that kava and traditional leaders, the two most sacred things in Pohnpeian culture, are undoubtedly at the centre of both the problems and the solutions.

The following words from Bill Raynor and Mark Kostka lucidly summarises the most fundamental issue illustrated by the case study presented in this report:

> Most importantly, the [recent watershed management reform in Pohnpei] has provided a bridge between the Western conventional centralized approach to resource management adopted by the young government and the Pohnpei traditional community resource management system, characterized by decentralization and consensus-based decision-making based on thousands of years of traditional knowledge. In a sense, the approach is an act of reconciliation, reconfirming those aspects of both political systems that are considered legitimate.[12]

Enforcement of traditional rules can sometimes present problems, particularly in the case of outsiders not bound by local rules poaching on a community's marine resources. Legal recognition of traditional management systems and customary law can make enforcement of these management systems easier, as demonstrated in the case study below relating to fisheries by-laws in Samoa. In addition, the task of enforcement can be delegated to communities under mainstream legal frameworks (e.g. fisheries wardens appointed by communities) or in the manner and form considered appropriate by the community in exercising its customary law. In this way, traditional authority is not undermined by transferring authority to the state, but serves to support and empower traditional authority systems through a legislated approach.

National Law and Fisheries By-laws in Samoa

Adapted from a case study by Posa Skelton, Coordinator, Pacific Islands Network for Taxonomy and Robin South, Visiting Professor, University of the South Pacific

After hundreds of years of conflict between various colonial powers, Samoa gained its independence in 1962. The supreme law is the *Constitution of the Independent State of Western Samoa 1960*. Laws prior to independence (mostly of New Zealand/British origin) continued to be enforced until they were repealed or amended.

[12] B Raynor and M Kostka, "Back to the Future: Using Traditional Knowledge to Strengthen Biodiversity Conservation in Pohnpei, FSM" (Paper presented to the Building Bridges with Traditional Knowledge Conference, Honolulu, June 2001) 22.

The coastal and marine ecosystems of Samoa have been a mainstay for the people over many generations. Over the last fifty years, rapid development has led to a population explosion and serious changes to traditional living. Market economies have become a dominating force, impacting adversely on the traditional social setting and obligations. The *Fisheries Act 1988* and the *Fisheries Regulations 1995* were enacted to try and manage fisheries resources. In recognition of the shift in Samoa's modus operandi, the government now encourages – in each village – the participation of the *fono* (council of chiefs) and the role of other users (i.e. untitled men and the women's group) in decision-making. Separate meetings allow for a free flow of discussions with representatives selected to form the local Fisheries Management and Advisory Committee (FMAC). The overall objective is to develop a Fisheries Management Plan to enable the village to manage its resources.

The process of developing a Fisheries Management Plan can take from three months to over a year, from the initial introduction phase to the formal adoption of the plan. Villagers decide on what critical issues are to be addressed and what solutions to adopt. Fish reserves can be designated no-take areas for a period of time, and enforcement of this is the sole responsibility of the village. The villagers impose penalties for law-breakers equivalent to penalties in the old days, such as fines of pigs, chickens or money.

This system has generally worked well for villagers, but has proved to be a toothless tiger when offenders are outsiders (non-village people). As clause 104 of the Constitution stipulates, all land lying below the high-water mark is public land, and this means that outsiders can fish within the village coastal zone, including *tabu* fish reserves. Villagers find it difficult to impose fines on members of another village. To overcome this, the government recognised the need for village rules to be given legal support to prevent such a loophole, and thus village-level fisheries by-laws were introduced. The by-laws are village specific and often stipulate activities that cannot be carried out within the village coast. To date, eighty-three villages have participated in the by-law system, with sixty-two agreeing to set up fish reserves as part of their management plans. This network of sixty-two reserves provides a good conservation strategy for the marine resources of Samoa.

The fisheries by-laws are subsidiary to national legislation; hence they must not contravene any provisions of national laws. The by-laws continue to rely on government support, especially when there is a dispute between parties,

such as a *fono* and an offender from another village. In this case the village will take their complaint to the Fisheries Division, which then takes the matter to the formal court system.

Lessons learned from the introduction of fisheries by-laws include the following:

- Engaging the traditional decision-makers (chiefs) ensures that decisions and undertakings are effectively implemented at the village level; the rich knowledge and experience of the traditional chiefs ensures that informed decisions are made.

- The by-laws strengthen a village's role in managing its resources, and some customs that may have been lost (e.g. fishing harvesting methods) are being revitalised.

Even with relevant legislation in place, enforcement can be a difficult issue. The case study below from Tuvalu illustrates some of the problems encountered in regard to surveillance and enforcement.

Tuvalu Marine Conservation

Viliamu Iese, University of the South Pacific

In Tuvalu there are six marine conservation areas belonging to the Island Councils (community groups). There are approximately three conservation areas which the Island Councils have declared *tapu* (sacred). Some *tapu* areas are permanent, while in other areas, the Island Councils decide when harvesting takes place. In Tuvalu, it is possible to fish anywhere outside the conservation areas. Communities are aware of relevant boundaries.

The Tuvalu Fisheries Department is responsible for conducting baseline studies and designing management plans. Relevant authority is granted to the Minister of Fisheries and Island Councils in the Conservation Areas Act, the Marine Resources Act and the newly established Environment Act. There are some clauses in the Marine Resources Act, which allow the Minister for Natural Resources and Environment to overrule an Island Council.

Surveillance and monitoring are key issues, particularly due to the vast geographic distance between islands, and as a result, Island Councils struggle with enforcement. Under the new Environment Act, the Minister also has the ability to appoint representatives to enforce the legislation. However, fines (up to AU$5,000) are rarely issued, despite widespread poaching, and despite the possibility of these fines generating income through the established conservation fund. This illustrates the challenges inherent in community and government co-management, and particularly in the enforcement of rules and regulations in remote island areas.

As the case studies in this section demonstrate, there is no one-size-fits-all solution for integrating traditional knowledge into national legislation. Customary management systems alone may be sufficient in cases where traditional authority is strong and well respected by the community. In most cases, however, traditional knowledge and structures have eroded, and legal recognition of these customs can help strengthen traditional knowledge systems in various ways. Legal recognition of traditional management systems, such as the village level by-laws in Samoa, can help with the enforcement of rules. Legal recognition of customary tenure and traditional practices can also empower communities with their own knowledge systems and promote ownership of resource management initiatives, as seen in the first Vanuatu case study. At its best, governments support and empower traditional authority rather than undermining it. As stated in the case study from Pohnpei, co-management initiatives should build upon the respective strengths, and shore up the weaknesses, of both the customary and governmental institutions.

Boys fishing in Upolo, Samoa

Clownfish amongst sea anemone, Fiji

4. Contribution of Traditional Marine Managed Areas to International Protected Areas Targets

This chapter looks at:

- Whether customary marine managed areas are considered part of countries' strategies to meet obligations under international and regional treaties, including international marine protected areas targets
- If so, whether they are part of national biodiversity strategies, national reporting to various conventions, and national marine protected area assessments and targets
- If not, whether it would be beneficial to communities and/or governments to consider traditional marine managed areas as part of such strategies and targets
- Case studies from Micronesia, Hawaii, Kiribati and Fiji.

During the past ten years, the international community has adopted a number of targets relating to marine protected areas (MPAs). These targets are a response to the continuing decline in the status of marine resources and biodiversity, and to the under-representation of marine areas in protected areas globally. Most of these policy targets relate to the protection of the full spectrum of life on earth, including in the oceans, through representative networks of MPAs. Most notably, the Plan of Implementation of the World Summit on Sustainable Development in 2002 called for countries to:

> Develop and facilitate the use of diverse approaches and tools, including the ecosystem approach, the elimination of destructive fishing practices, the establishment of marine protected areas consistent with international law and based on scientific information, including representative networks by 2012.[13]

[13] World Summit on Sustainable Development Plan of Implementation paragraph 32 (c).

Similarly, the Conference of the Parties to the Convention on Biological Diversity (CBD) adopted in 2004 a programme of work on protected areas with an overall objective being to:

> Establish and maintain, by 2010 for terrestrial areas and by 2012 for marine areas, comprehensive, effectively managed and ecologically representative systems of protected areas that, collectively, will significantly reduce the rate of loss of global biodiversity.[14]

This target was also reflected in the 2006 Mauritius Strategy for the Further Implementation of the Programme of Action for the Sustainable Development of Small Island Developing States (SIDS). Furthermore, in 2006, the CBD adopted the following targets as part of a larger framework of targets for 2010 (after which they will be updated) relating to specific biomes,[15] and to islands (CBD 2006a):[16]

- At least 10 per cent of each of the world's marine and coastal ecological regions effectively conserved
- By 2010 at least 10 per cent of each of island ecological regions effectively conserved
- Particularly vulnerable marine and coastal habitats and ecosystems, such as tropical and cold water coral reefs, seamounts, hydrothermal vents, mangroves, seagrasses, spawning grounds and other vulnerable areas in marine habitats effectively protected
- By 2010 areas of particular importance to island biodiversity are protected.

The CBD work programme on island biodiversity (CBD 2006b)[17] also calls for:

> The identification and establishment of, as appropriate, comprehensive, representative and effectively managed national and regional systems of protected areas taking into account issues of resilience, ecological and physical connectivity to conserve viable populations of threatened, endemic, and ecologically or culturally important island species. This should be done

[14] Decision VII/28 of the Conference of the Parties, Annex.
[15] Similar targets were agreed upon for the following biomes: marine and coastal areas, inland waters, forests, mountains, dry and sub-humid lands and islands.
[16] Decision VIII/15 of the Conference of the Parties, Annex IV.
[17] Decision VIII/1 of the Conference of the Parties, Annex, Target 1.2.

> with the full respect for the rights of indigenous and local communities and relevant stakeholders and their full and effective participation, consistent with national law and applicable international obligations.

And finally, the 12th Secretariat of the Pacific Regional Environment Programme (SPREP) Intergovernmental Meeting and Ministerial Forum in 2006 adopted a decision to:

> Develop a regional framework for the establishment and management of MPAs to strengthen the conservation of marine biodiversity of coasts and oceans in the Region (SPREP 2006).

Collectively, these international policy targets recognise the need to protect areas that represent the full range of biodiversity found in the world's oceans. They also identify networks of MPAs as the primary tool to achieve this protection. However, it has been acknowledged that MPAs alone are not enough, and that achieving these targets will also require sustainable management actions over the wider marine and coastal environment in an ecosystem approach context.

Following the setting of these policy targets, Pacific Island countries have in many ways taken a leadership role in committing to reaching ambitious targets. Importantly, the governments of Palau, the Federated States of Micronesia, the Marshall Islands, Guam, and the Northern Marianas joined together to initiate the Micronesia Challenge, which was announced by the president of Palau, Tommy Remengesau, at the CBD in Curitiba, Brazil, in 2006. Mr Remengesau credited his nation's commitment to the conservation effort to the "strong partnerships within Palau, between the national and state governments, and with traditional leaders and local communities". The Micronesia Challenge is described in the case study below.

The Micronesia Challenge and the Federated States of Micronesia Protected Areas Network

Alissa Takesy, Division of Resource Management and Development, FSM

The Micronesia Challenge represents a shared commitment by the Federated States of Micronesia (FSM), the Marshall Islands, Palau, the Northern Marianas and Guam to effectively conserve at least 30 per cent of nearshore marine resources and 20 per cent of terrestrial resources across

Micronesia by 2020. These areas represent nearly 5 per cent of the Pacific Ocean and 7 per cent of its coastlines – a marine protection area equal in size to the Gulf of Mexico. These commitments far exceed those called for by international conventions, such as the CBD.

Framework for Implementation

The Micronesia Challenge was signed by the presidents of the Micronesian countries in 2006, and launched at the 8th meeting of the CBD Conference of the Parties in Curitiba, Brazil, during that same year. The five nations developed and agreed upon all aspects of implementation of the Micronesia Challenge, to be guided by a six-point framework. In order to implement the Micronesia Challenge, leaders, resource managers, community representatives and technical experts from around the region are undertaking and following through on local, national, regional and international conservation strategies and plans, including the establishment of resilient nationwide protected areas networks to:

1. Develop a clear understanding of the terms of the Challenge

2. Establish and expand local partnerships between government agencies, NGOs, academic institutions, local communities and traditional leadership engaged in the conservation and sustainable use of biodiversity

3. Share experiences, tools and techniques among Micronesian officials, conservation practitioners and community leaders

4. Establish sustainable financing mechanisms

5. Engage the region's development and trading partners, as well as NGOs and private foundations, to ensure the effective implementation of the Challenge, and

6. Further engage Pacific Island programs and facilities, such as the Pacific Island Forum and associated organisations such as the Secretariat for the Pacific Community and the Secretariat for the Pacific Regional Environment Programme, to optimise regional coordination and financing.

The partnership aims to mobilise leadership and action for the conservation and sustainable use of island resources; catalyse strategic partnerships to deliver political, technical and financial support; strengthen systems to share skills, information and resources; and build public and private support for

island conservation around the world. The Micronesia Challenge also serves as a model for island conservation and has the ability to inspire other areas of the world into action.

FSM Protected Areas Network

The FSM Protected Areas Network was initiated in January 2006 and is in line with one of the six recommendations listed above. This includes taking appropriate steps to institutionalise the Challenge, including engaging traditional and community leaders and providing support to a Regional Communication Specialist to implement outreach and marketing strategies at regional, national and jurisdictional levels.

In addition to the Micronesia Challenge, a number of Pacific Island countries have committed themselves to quantitative, time-bound MPA targets. For example, in 2005 at the 10 Year Review Meeting of the Barbados Programme of Action for Small Island Developing States in Mauritius, Fiji committed to manage 30 per cent of its waters as a network of MPAs by 2020. The Action Strategy for Nature Conservation in the Pacific Islands Region 2003-2007 incorporated a five-year target to place at least 5 per cent of coastal and terrestrial areas under effective community-based conservation management in all Pacific Island countries and territories. The Coral Triangle Initiative, which includes PNG and the Solomon Islands, also contains substantial commitments for the protection of marine biodiversity.

Much progress will need to be made during the coming years to reach these targets, and collectively these initiatives present a substantial commitment by Pacific Island countries to put new MPAs in place. Achievements to date include the establishment of national MPAs, MMAs and networks, including two of the three largest MPAs in the world (the Phoenix Islands Protected Area, and the Northwestern Hawaiian Islands National Monument, now known by its Hawaiian name, Papahānaumoku ākea Marine National Monument).[18] Traditional knowledge and leaders played an important role in the establishment of Papahānaumokuākea, as is evident from the case study below. The case study also demonstrates that concerted stakeholder involvement can exert significant influence on top-level administrations and governments.

[18] According to the World Database on Marine Protected Areas (http://www.wdpa-marine.org), the Phoenix Islands Protected Area is the second largest MPA in the world at 408,250 km^2, while the Papahānaumokuākea Marine National Monument covers 360,000 km^2 of ocean, and is slightly larger than the Australian Great Barrier Reef. The largest MPA currently is the Chagos Marine Protected Area.

Joining Forces to Protect Biodiversity in Hawaii

Isaac Harp, Pono Aquaculture Alliance

The Northwestern Hawaiian Islands (NWHI) are a network of coral reefs, islands, atolls and shoals that arches through the Pacific Ocean for 1,200 miles northwest of the Main Hawaiian Islands. These landmasses are the oldest emergent lands of the Hawaiian archipelago. Because of their isolated location – they are further from continents than any other islands on earth – life evolved on its own terms.

Celebrated in the *Kanaka Maoli* (Hawaiian) stories of creation as the place where Hawaii began, these ancient islands and coral reef atolls are often described as *kupuna* ('ancestors' or 'elders') to the Main Hawaiian Islands. The NWHI marine ecosystems contain over 3.5 million acres of some of the world's oldest living coral colonies, encompassing tremendous biodiversity. More than 7,000 marine species have been recorded in the NWHI. Among them are the endangered Hawaiian monk seal, endangered and threatened sea turtles, reef fish, bottom (ground) fish, sharks, hard and soft corals, other invertebrates, sea grasses, algae, over 14 million sea birds, with many species still being discovered.

The NWHI are surrounded by the last remaining large-scale coral reef wilderness ecosystems on the planet. These complex ecosystems, while supporting teeming biodiversity, are also very fragile, and have evolved over millennia to be perfectly adapted to their environment. Their survival is a critical issue for the Pacific region and, for that matter, the entire planet. In order to establish protection for the NWHI a broad range of interests came together and became known as the NWHI *hui* (partnership).

The NWHI *hui* got its start in early 2000 when the area's ecological stress had become evident. In its first year, it helped the United States government create the 84-million-acre NWHI Coral Reef Ecosystem Reserve – the largest protected area under US jurisdiction – and has been working ever since to preserve those protections.

One of its first contributions was to convince the US government to create an independent and broadly based Reserve Advisory Council of Native Hawaiian cultural practitioners, local conservation organisations, scientists, and fishing and ocean tourism representatives. The *hui* pushed for the

council to be established with strict rules governing conflicts of interest. No council member could, for example, financially benefit from their votes, and the violation of any marine or conservation laws or regulations would be grounds for removal from the council.

As the *hui* began working to establish protections, new proposals were being made by industrial fishers and federal fisheries managers to expand commercial fisheries within the fragile coral reef ecosystem. Though some of those proposals have been rejected by the US Secretary of Commerce, there is still a lot of political pressure to expand commercial access to the marine resources of the NWHI.

Among the first to voice concern about these trends was *kupuna* fisherman Louis 'Uncle Buzzy' Agard, former head of the Hawaii Tuna Association and a former NWHI fisher and lobster trapper. "There are many of us who have fished the Northwestern Hawaiian Islands," he said. "We found that it is not sustainable. The nutrients for sustainable fisheries are lacking in the area, as early commercial fishermen like myself have already discovered."

In 2000 a workshop was sponsored by KAHEA (a grassroots coalition of environmentalists and Native Hawaiians) and the Environmental Defense Fund, and led by kupuna from five islands. The result of the community workshop was a locally developed consensus-based proposal that, through a series of federal hearings, received strong public support. The plan became the backbone of two executive orders issued by the White House to establish the Coral Reef Ecosystem Reserve, a state marine refuge, and the NWHI Marine Monument (see below).

Environmental Defense Fund scientists worked closely with Native Hawaiian cultural practitioners and fishers in support of their goals for the protection of their lands and waters. They also collaborated with the 'Ilio'ulaokalani Coalition, a group of respected cultural practitioners, to help strengthen the emerging campaign. The partners provided detailed scientific and economic analyses, direct connections to policy-makers in Washington, and improved technology to allow KAHEA and the 'Ilio'ulaokalani Coalition to rapidly communicate with its members and the public.

Vicky Holt-Takamine, president of the 'Ilio'ulaokalani Coalition noted:

> "Since early 2000, 'Ilio'ulaokalani Coalition has partnered in a unique relationship with environmental and community organisations to assure

> maximum protections for our kupuna islands and for full recognition of Native Hawaiian rights to our traditional and customary practices. The hui has brought together a wide spectrum of local, North American and international organisations willing to support both Native Hawaiian rights and conservation. It has been very effective, though we were substantially understaffed and underfunded."

The *hui* developed electronic networks to disseminate information to the public, resulting in support from thousands of citizens. The *hui* also understood that US government backing would be critical, so support was sought from a range of sources. At an international coral reef conference held in Okinawa, Japan, for example, leading coral reef scientists from sixty-eight countries agreed to publicly support the strong protections put forth by the Native Hawaiian community.

In 2000, President Clinton issued an Executive Order creating the NWHI Coral Reef Ecosystem Reserve. This was followed shortly by the State of Hawaii establishing the NWHI Marine Refuge. Finally, in 2006, President Bush designated the area a Marine National Monument. In 2007, the area was renamed Papahānaumokuākea. This all came about because various interests with similar goals were able to come together for one common purpose and secure strong public support for protection measures.

Individual members of the *hui* had been involved in fishing or protecting the NWHI for over fifty years. But it wasn't until 2000, when Native Hawaiian fishermen and cultural practitioners joined forces with local and national environmental organisations willing to support native rights, that protection for the NWHI became possible.

The author of this article summed it up as "a new approach toward cooperation. As a Native Hawaiian and a fisherman, I'm proud to be a part of the *hui* because I know that it protects the interest of not only my *ohana* [family], but the interests of all residents of Hawaii today and in the future." Considering the importance of the NWHI as a nursery for fish that migrate to the main Hawaiian Islands, replenishing its fisheries, "if there is one place in Hawaii that everyone should respect, our *kupuna* islands are that place".

Clearly, traditional knowledge and community-based marine managed areas have a central role to play in reaching national, regional and international MPA targets, and this role is explicitly recognised in the Micronesia Challenge (as well as the Palau Protected Areas Network and

the FSM Protected Areas Network) and the CBD work programme of island biodiversity. These traditional MMAs build on sustainable management methods and customary tenure systems that have been in place for centuries, and are thus likely to be more successful in providing biodiversity outcomes in the Pacific Islands than western-style MPAs (Ruddle & Hickey 2008). In addition, the International Union for Conservation of Nature (IUCN) definition of MPAs, the most commonly accepted existing definition, is broad enough to encompass traditional marine managed areas.[19] Similarly, the CBD definition of marine and coastal protected areas would apply to traditional MMAs.[20] In accordance with both of these definitions, traditional closures can be easily counted towards MPA targets.

But how will the incorporation of traditional MMAs into national and international MPA strategies and targets work in practice? Are traditional knowledge and cultural practices taken into account in the design of new MPAs and, if so, are there good models for linking science-based network design with traditional knowledge? Are traditionally managed marine areas included in various countries' national biodiversity strategies and action plans, international databases, and government commitments to international MPA targets? Is a formalisation of community-based approaches needed to recognise their contribution to national and international policy and targets?

Efforts to track the contribution of MMAs towards national and international targets have been complicated by a lack of information about their exact number and coverage. Lists maintained in global databases, such as the World Database on Marine Protected Areas (WDPA-Marine) and MPA Global, are not complete and do not always consider smaller, locally managed areas. For example, WDPA-Marine lists only fifteen MPAs for Fiji, while in actuality the country has 217 locally managed marine areas (LMMAs). In addition, some traditional MMAs are temporary in nature, and thus difficult to accurately report. This reporting is likely to be improved in the future through initiatives such as the Indigenous and Community Conserved Areas (ICCAs) Registry.[21]

[19] The IUCN definition of MPAs is as follows: "Any area of intertidal or sub-tidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment."

[20] The CBD definition of an MCPA (decision VII/5) is as follows: "Marine and Coastal Protected Areas mean any defined area within or adjacent to the marine environment, together with its overlying waters and associated flora, fauna, and historical and cultural features, which has been reserved by legislation or other effective means, including customs, with the effect that its marine and/or coastal biodiversity enjoys a higher level of protection than its surroundings."

[21] http://www.iccaregistry.org/

In addition, some traditional MMAs are temporary in nature, and thus difficult to accurately report. A recently compiled regional inventory of LMMAs indicates that they are virtually the only type of MPA pursued in the independent countries of the Pacific Islands region. The dependent states and territories are using more Western-style protected area approaches. The study indicates that approximately 30,000 km^2 are currently covered by different types of MMAs in the Pacific Islands region (Govan 2009).

While it is evident from the above that international MPA databases do not accurately reflect the true number and the size of LMMAs, these areas are an important component of national biodiversity planning in many Pacific Island countries. Traditional MMAs are considered to be part of many countries' strategies to meet their obligations under international and regional treaties, including efforts to reach international MPA targets. For example, the Protected Areas Network (PAN) in Palau was established to preserve Palau's biodiversity through the network of protected areas including MMAs. The lack of inclusion of traditional MMAs in international databases may therefore be more a reflection of the difficulty of maintaining accurate and up-to-date MPA listings internationally than it is of any failure to appreciate the benefits of traditional marine management nationally.

In fact, traditional knowledge is a central component of most Pacific Island countries' National Biodiversity Strategies and Action Plans (NBSAPs), and traditional management practices are discussed at length in many of these documents. In some countries, such as Fiji, traditional MMAs are a central component of the country's NBSAP (completed in 1994). Implementation of the marine component of the NBSAP in Fiji has been ongoing for ten years, although the NBSAP did not receive final approval until 2007 due to the country's political situation. Vanuatu's NBSAP, completed in 1997, recognises and supports the role of traditional leaders and communities in managing biodiversity and promotes the strengthening of communities' rights and traditional resource management strategies to manage and wisely use biodiversity (Environment Unit 1999).

Although traditional marine resources management is often a component of NBSAPs, reporting on such activities to international conventions does not always take place. In cases where traditional management actions have been formalised by national legislation (such as the customary marine managed areas that are part of the Palau PAN), they are generally included in the national report. Where such formal recognition is lacking, reporting on traditional activities may not necessarily take place. In general, reporting

requirements of various conventions can be onerous and time consuming for small countries. Reporting is also affected by national priorities and situations. For example, the political situation in Fiji has affected reporting to conventions, although it has not affected implementation.

Kiribati National Biodiversity Strategy

Nenenteiti Teariki-Ruatu and Ratita Bebe, Ministry of Environment, Lands and Agricultural Development, Kiribati

The important roles of traditional marine management practices in the conservation of biological diversity are highlighted and recognised in the 2005 Kiribati National Biodiversity Strategy and Actions Plan (NBSAP), which is still awaiting Cabinet approval. Marine environment and resources are critically important concerns for local communities and the national government in Kiribati. Protected areas (either on land or at sea) provide a range of goods and ecological services while preserving natural and cultural heritage.

Kiribati has also established a system of marine protected areas (MPAs) that aim to conserve marine biological diversity and serve as ecologically representative networks of protected areas at sea. Currently there are twelve MPAs primarily set up for stock enhancement of marine species that have been identified and confirmed to be declining in numbers, yet important for Kiribati's livelihood and economic wellbeing. Pearl oyster and *bêche-de-mer* culturing is currently being carried out by the Fisheries Division of the Ministry of Fisheries and Marine Resources Development for stock enhancement and economic development.

There are closed areas and seasonal closed areas that have been designated in several islands of Kiribati (Butaritari, Marakei, Abaiang, Nonouti and Tabiteuea North in the Gilbert Group, and Cook Islet of Kiritimati Island in the Southern Line Group) for in-situ conservation of targeted populations of marine species – all marine fish, including the *te kuau* (grouper) and *te karon* (wrasse) species for the live fish trade (market export), and their natural habitats, which are the spawning aggregation sites of such species.

The Fisheries Division is currently working with local island governments to develop a by-law on these closed areas and seasonal closed areas for appropriate legal backup at both national and island levels.

Equal access and benefits over marine and coastal resources and areas are currently promoted under the national government management regime over marine areas and resources. In accordance with Convention on Biological Diversity principles, this regime provides for both conservation and sustainable use of marine resources, as well as equitable sharing of benefits.

One relatively successful model seems to be that established by the locally managed marine area (LMMA) network. An LMMA is an area of nearshore waters actively being managed by local communities or resource-owning groups, or being collaboratively managed by resident communities with local government and/or partner organisations. An LMMA differs from what is commonly known as a marine protected area (MPA) in that LMMAs are characterised by local ownership and/or control, whereas MPAs are typically designated by local or national governments, often via a top-down approach. One or more MPAs or other management techniques or "tools" may be employed within an LMMA. In using an LMMA approach, some coastal communities are reviving methods that have been used traditionally for many generations;[22] others are using more modern ideas introduced from outside, while some use a combination of both. LMMAs have succeeded in creating economic benefits for communities while providing for sustainable use of marine resources, as described in the box below.

Developing Networks of Locally Managed Marine Areas from Sites to Systems – A Fiji LMMA Network Case Study

Alifereti Tawake, University of the South Pacific, Fiji

Fiji has a population of around 800,000 people inhabiting over 300 islands. Most Fijian villages still lead a traditional subsistence-based livelihood, with communities depending on local marine resources for at least part of their daily protein and income. In the 1990s, a combination of increased commercial fishing and larger local subsistence harvests left most of Fiji's coastal waters overfished. With the sharp decline in abundance, the pressure on village economies mounted, leaving 35–40 per cent of rural households below the poverty line.

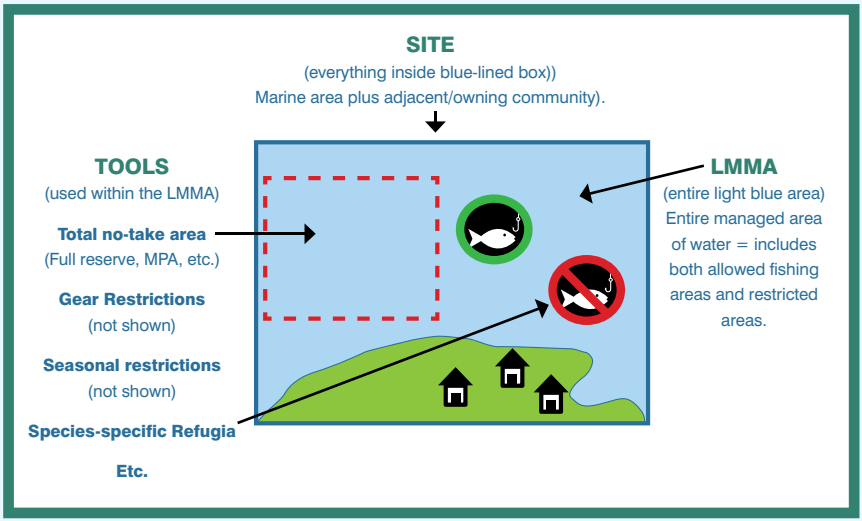
[22] www.lmmanetwork.org/

Since the late 1990s, Fijians have been responding to this situation, village by village, site by site, by scaling up from single sites to managed systems linked via a network of communities and institutional partners that regulate the use of their customary marine areas, slowly restoring their productivity. These efforts essentially led to the development of a network of managed customary marine areas between neighbouring villages, within and between islands and across multiple habitats (mangrove, mudflat and seagrass areas, lagoons and reef areas). Although these locally managed marine areas (LMMAs) are an innovation of the last decade, they call on a rich tradition of customary management and governance of marine resources. The network is called the Fiji LMMA network and is one example of a unique and practical approach that has emerged in order to address some of the social and political obstacles to successful marine protected area (MPA) network initiatives.

Well-designed networks of MPAs are essential for marine conservation in many places, yet it is often challenging for practitioners and scientists to establish networks of MPAs that adequately fulfil the biodiversity conservation needs as well as the socioeconomic needs at a particular community or site. The resurgence of LMMAs in Fiji resulted from the active participation of communities and from the communities' perceptions of the likely benefits, including the recovery of marine resources, improved food security, improved governance and security of tenure, improved health, a revival of cultural and traditional management practices, greater access to information and services, and improved community organisation. The commonly accepted scientific rationale that MPAs provides fisheries and biodiversity benefits is not enough. The LMMA approach builds on existing community strengths in traditional knowledge, customary tenure and governance, combined with local awareness of various stakeholders' needs and communities' willingness to take action.

The LMMA network was established in 2000 by bringing together eight country-networks of LMMA systems across the Indo-Pacific region, including the Fiji LMMA. Management approaches can be adapted to the specific circumstances of small islands, and this has seen the LMMA network grow from 8 sites in 2000 to 244 in 2005 and over 260 in 2008. Participating countries include the Federated States of Micronesia, Fiji, Indonesia, Palau, Vanuatu, PNG, the Philippines and the Solomon Islands. The network consists of a group of practitioners (communities, researchers, policy-makers) working together to improve the practice of marine conservation efforts. The Fiji LMMA operates independently from, but within the overall framework of, the wider LMMA network.

The LMMAs cover an extensive area of the south-western Pacific. Categories of management include community-based marine area management initiatives and collaborative management (national, NGOs, institutions and resource owners/users) of marine resources (co-management). LMMA tools include *tabu* (no-take) areas, seasonal harvest and rotational harvest areas (temporary or permanent), species-specific harvest *refugia* (e.g. turtle/lobster moratoria), and gear restrictions. The following figure shows how an LMMA works.



Source: www.lmmanetwork.org

In Fiji, monitoring has demonstrated the real impact of the LMMA approach in economic terms: increased harvests and sustainability of marine resources. The shared vision of stakeholders underpins the success of the project, as evidenced by healthy ecosystems and communities, abundant marine and fish stocks, sustainable fisheries utilisation, protected marine biodiversity, sustainable development in coastal communities, an understanding of what communities are doing and can do in managing marine areas, and an understanding of ecological and socioeconomic responses to LMMA and coastal management implementation. Adaptive management is central, and there is a strong emphasis on gender and youth empowerment. Results for the oldest Fiji site (Verata district) revealed that since 1997 there was a twenty-fold increase in clam density in the *tabu* areas, a 200–300 per cent increase in harvest in adjacent areas, a tripling of fish catches, and

a 35–45 per cent increase in household income. Similar trends have also been observed in the other sites across Fiji.

Currently there are more than 200 traditionally imposed LMMAs, including *tabu* areas. This is in addition to the three to four MPAs established with input from the scientific community; one of these MPAs has been accepted legally. Active community input and the development of community action plans guide relevant actions. This could take the form of agreements between traditional chiefs, maps of *tabu* areas and LMMA boundaries, and posters in local languages. In one instance of community action, people who had broken a law were shamed and given a village punishment (compulsory work on the village farm).

While the LMMA network has been successful overall, LMMAs face a range of emerging issues that include poaching, the need for a legal framework to strengthen enforcement, the need to balance conservation with community needs, difficulties with sustaining these areas, and the need to integrate them into existing national plans (e.g. national fisheries strategies).

Recommendations to address such issues include encouraging local participation at every stage of the process by maintaining open communication between all stakeholders (local leaders, village and community, NGOs, university and government). Such efforts are being made throughout the LMMA network.

Participatory mapping of fishing ground using local materials, Fiji

In summary, Pacific Island countries generally consider traditional marine managed areas a part of their strategies to meet obligations under international and regional treaties, as exemplified by the Kiribati case study. This vision is clearly outlined in the Micronesia Challenge, but also in national MPA networks, as seen for example in the Palau PAN. The power of bottom-up approaches in contributing to international protected area targets is also clearly demonstrated in the case study from Hawaii, where collaborative approaches with the holders of traditional knowledge led to the declaration of one of the world's largest MPAs.

Many international and regional protected areas databases and treaty reporting mechanisms do not fully take into account customary or community-based management efforts that are not formally recognised by national law. This lack of recognition may result in undervaluing the contribution of these traditional management actions to biodiversity conservation and sustainable use internationally. This highlights the need for greater awareness of the biocultural approach to resource management taken in the Pacific and the value of these bottom-up systems in conserving biodiversity. International and regional conservation organisations would benefit from this awareness, as would the wider donor community regarding the need to recognise and support traditional systems.

Green lipped mussels, New Zealand

5. Sharing the Benefits of Marine Genetic Resources in the Pacific

This chapter looks at:

- The status of bioprospecting in Pacific Island countries
- Examples of successful access and benefit-sharing arrangements
- What the greatest needs are in regard to setting up access and benefit-sharing arrangements
- Case studies from the Pacific region as a whole.

Note that most of the factual information for this section comes from the Pacific Islands Bioprospecting Database, www.bioprospector.org, compiled by UNU-IAS.

Traditional knowledge in Pacific Island countries has already made a significant contribution to sustainable development internationally. Traditional management practices provide valuable information to the global community, and can serve as models for biodiversity policy on a broader scale. However, the contribution of indigenous and local communities to the conservation and sustainable use of biological diversity goes far beyond their role as natural resource managers. The Pacific Islands are the source of rich genetic resources and local knowledge that have already led to the development of widely used products, such as medicines, health products and cosmetics. Unfortunately this commercialisation has often taken place without the consent of, or benefit to, source communities.

Marine bioprospecting is an increasingly important economic activity, due to the unique physiological properties of marine organisms. The world's oceans host thirty-two of the thirty-four known phyla, and contain somewhere between 500,000 and 10 million marine species. Species diversity is known to be as high as 1,000 per square metre in the Indo-Pacific Ocean, and new oceanic species are continuously being discovered. It is therefore not surprising that the genetic resources in the Pacific region's oceans and coasts are of actual and potential interest for commercial users.

There are numerous patents filed on Pacific marine genetic resources, and the first marketed drug originating from the Indo-Pacific – the pain medication PRIALT, based on a synthetic derivative from marine cone shell venom from Indonesia – is now on the market, producing over $12 million in 2007 (Forbes 2007).

Significantly, the ratio of potentially useful natural compounds is higher in marine than terrestrial organisms. There is, therefore, a higher probability of commercial success with marine-sourced material. The odds of success are long, however; just one to two per cent of pre-clinical candidates become commercial products. Nevertheless, all major pharmaceutical firms, including Merck, Lilly, Pfizer, Hoffmann-La Roche and Bristol-Myers Squibb, have marine biology departments, while the Spanish company PharmaMar concentrates solely on pharmaceuticals from marine sources.

Many native and endemic species of the Pacific Islands may have significant potential for scientific research and for biotechnology. Most commonly, marine sponges have shown promise for treatment of cancer, asthma, Alzheimer's, arthritis, inflammation and other medical conditions. Several potential drugs sourced from Pacific marine sponges are now in clinical trials, including sponges collected in Palau, Fiji, PNG, New Caledonia and the Marshall Islands.

Marine microbes are also of interest for biotechnology. In particular, extremophiles (organisms adapted to extreme conditions, such as those found on and around hydrothermal vents) have novel biological adaptations that make them particularly suitable for applications such as development of enzymes for industrial processes (e.g. production of ethanol) and development of polymerases and skincare products. Microbes collected from deep hydrothermal springs of the North Fiji Basin, for example, have been patented as sources for new hyperthermostable enzymes, which catalyse the polymerisation of DNA. The enzyme market is quite lucrative, and is potentially worth a minimum of $50 billion a year.

Sea hares, sea slugs and sea squirts have been used as a basis for cancer and other drugs, with some in pre-clinical and clinical trials, including some sourced from Hawaii, Vanuatu and Fiji. Similarly, soft corals, sea fans and sea whips have been found to have potential as cancer drugs, and have been collected from at least PNG. Marine algae collected from Fiji have been found to exhibit anti-bacterial, anti-malarial and anti-cancer activity.

If a given discovery has commercial potential, a patent is usually filed to secure intellectual property related to that discovery. Therefore a search of patent databases gives an indication of the degree of potential commercial application of Pacific Islands' biodiversity.

A preliminary search of the worldwide, European and US patent databases found a number of patents that have used source material collected from the Pacific Islands. In some cases, a given discovery is entirely based on a Pacific species. Such is the case of the anti-mitogens discovered from a marine sponge in Palau. In other cases the discovery relates to a species that occurs in the Pacific Islands as well as in other parts of the world. Such is the case with the multitude of patents filed relating to the pharmaceutical, dietary and cosmetic uses of noni (*Morinda citrifolia*).

In many cases a DNA sample or virus collected in the Pacific Islands was one of many from worldwide sources that were tested as part of medical or agricultural research and contributed to the patented innovation. Many of the patents relating to specific pathogens, diabetes, HIV transmission, etc, have utilised samples collected from PNG, Nauru and Tonga, among other places, often under the auspices of research programmes which subsequently provide samples for pharmacological companies. Similarly for certain patents filed relating to banana cultivation: the DNA or virus strains used as part of the research were likely obtained from collections or genomic libraries held by universities or biotechnology companies, and may have been collected from the field a long time ago. The majority of the patents found in the databases fell into this category.

There is no doubt that traditional knowledge has benefited those seeking to commercialise genetic resources. A browse through patent databases turns up a number of instances where traditional uses of various organisms are cited as part of the patent documentation. This is the case, at least, for patents related to plants such as noni, Indian terminalia (*Terminalia catappa*, used for the care of sprains and/or muscular pain in the Cook Islands), and *Homalanthus acuminatus*, an endemic tree of Samoa used by traditional healers to treat various physical ailments.

Ensuring that the benefits from commercial utilisation of marine species will be shared with source communities requires recognition of indigenous ownership over resources and the establishment of adequate policy and legal mechanisms. There are relatively few examples of successful benefit-sharing arrangements from the Pacific. Some examples do exist, however. For example, the developers of bengamides (compounds extracted from a

marine sponge in Fiji with cancer-fighting potential) have committed 2–5 per cent of the proceeds from sales to support further research in Fiji. The case study below from Fiji shows that it is possible for bioprospecting to benefit communities.

Linking Bioprospecting with Conservation in the Pacific

Bill Aalbersberg, University of the South Pacific

The Pacific Islands region is characterised by numerous small island states at different stages of economic development. A common problem for many of these states is limited natural resources and often fragile ecosystems, which limit their potential for economic development from the extractive use of natural resources. Any extractive use of natural resources, such as logging, mining or fishing, needs to be sustainably managed in order to ensure that ecosystem processes are not altered or damaged.

An alternative and more sustainable use of natural resources is to try and discover chemicals or genes useful for drugs – bioprospecting. In the past, bioprospecting faced scientific and technological constraints, as well as issues over intellectual property rights. Yet now it is increasingly seen as offering a long-term economic development option to Pacific Island states, providing low-impact use of natural resources and significant potential to provide a steady revenue stream, while increasing scientific and research capabilities of Pacific Island institutions. Bioprospecting has in the past often focused on terrestrial plants, especially those used as traditional medicines. Yet there is now an increasing focus on marine bioprospecting focusing on sessile marine invertebrates, though finding potentially active chemicals in marine species requires a more random and extensive search compared to medicinal plants.

Advancing Bioprospecting in the Region

The 1993 Convention on Biological Diversity (CBD) provided a more secure intellectual property framework for advanced bioprospecting in the Pacific Islands region by providing sovereign rights to source states. In addition, the CBD encouraged Pacific governments and institutions to undertake cooperative research with external parties under mutually agreed terms. Pacific Island states, led by Fiji, PNG and Samoa, are putting in place policies and legislation to achieve the bioprospecting objectives of the CBD.

In summary, the CBD provisions require that access to genetic resources shall be subject to the prior informed consent of the contracting parties. This includes monetary benefits, such as up-front payments and royalties, as well as non-monetary benefits, such as participation of source country researchers and institutions, thereby supporting and developing local scientific and technological capacity. The Secretariat for the Pacific Regional Environmental Programme (SPREP) has been active in assisting Pacific Island states develop their legislative capacity to respond to bioprospecting. The University of the South Pacific (USP) has also developed guidelines for biodiversity research and bioprospecting.

The Verata Bioprospecting Project

In 1996, USP initiated a bioprospecting project in Verata Province, Fiji, funded by the BCN. This project looked at a development model using an enterprise-based approach, based on bioprospecting, to contribute to community-based conservation. Instead of harvesting marine resources, the project provides an alternative income to the community to support conservation and development needs. The Verata community developed a marine resource management plan with features such as establishing no-take *refugia* and limiting types of fishing and fishing gear. Members of the community were also trained to assist in such activities as socioeconomic surveys.

The Verata project led to a bioprospecting venture being established with the Strathclyde Institute for Drug Research in Scotland. A community trust fund was established to administer licensing fees, and is accessible for activities such as scholarships to support local students. The Verata model of using bioprospecting as an enterprise in community-based marine resource management is replicable in other Pacific Island communities. A similar venture in Samoa has led to the construction of a local school in return for the conservation of adjacent rainforest.

USP and the University of PNG are leading bioprospecting institutions in the Pacific, and are establishing collaborations with overseas universities to link biodiversity and conservation of natural resources. The establishment of partnerships with bioprospecting partners such as the Marine Biotechnology Institute of Japan has assisted in training Pacific Island nationals in natural products chemistry.

Lessons Learned and Recommendations

- An important consideration in promoting bioprospecting is that the chance of finding active chemicals is low – generally only one in 10,000 compounds investigated ends up as a commercial pharmaceutical product. Direct monetary benefits from sample collection are also not likely to be significant.
- It is important to ensure that royalty policies are well drafted, and reviewed by international experts, as, even though the chance of a product reaching the commercial stage is small, any royalty payments can provide a considerable annual income, in the millions of dollars.
- As the biogeographic range of many of the marine species that are collected cross several Pacific Island states, it is important to consider a regional policy of revenue-sharing.
- Maintaining and increasing training of Pacific Island nationals in marine chemistry and biosystematics is important for ensuring that local capacity and knowledge is gained and retained.

Most Pacific Island nations do not have legislation to control bioprospecting and to arrange benefit-sharing, though most have ad hoc systems based on existing regulation, such as research permits, export permits and source country identification for marine organisms. Most Pacific Island countries have only just begun the process of developing a national access and benefit-sharing management framework and none have fully enacted their access and benefit-sharing (ABS) measures. Due mainly to their size, countries of the region have limited resources for developing effective access and benefit-sharing measures.

The most advanced country in this process is Samoa. It has developed a policy that sets the conditions for access to its genetic resources and for the sharing of consequent benefits. This policy has been administered by the Ministry of Natural Resources and Environment since 2000 and draws upon draft regulations developed in 1999 to provide a legal framework for access and benefit sharing issues. The National Biodiversity Strategy and Action Plan set the overarching policy framework, which contains policy statements relating to access and benefit-sharing. Ultimately, though, the most recent review of access and benefit-sharing measures in Samoa concluded that any benefit-sharing that currently occurs relies entirely on the goodwill of the

researcher involved in seeking government and/or village permission (e.g. liaising with staff at the National University of Samoa or depositing copies of findings with the University).

The need for effective legislation for access and benefit-sharing is a key concern in most countries. Pacific Island countries have a great deal of cultural, social, environmental and economic similarities. Given this, there are significant potential benefits to be gained from sharing experiences and ultimately developing a similar approach to regulating access to and use of their genetic resources and traditional knowledge. The Pacific Region Model Law on Traditional Knowledge, Innovations and Practices, presented in the case study below, provides a useful tool against unauthorised use of resources.

Pacific Region Model Law on Traditional Knowledge, Innovations and Practices

Clark Peteru, Secretariat of the Pacific Regional Environment Programme – SPREP

Pacific Island countries, along with other developing countries, continue to face the unauthorised use of their traditional biological knowledge, innovations and practices (TBKIP). While conventional intellectual property laws (copyright, patent, trademark) exist in all Pacific Island countries, and protect certain forms of intellectual property, in the main they fail to protect TBKIP from exploitation. To remedy this, various countries or regional blocs are developing what are popularly known as sui generis laws. These laws may complement conventional intellectual property laws or may override them. The Model Law (ML) does something of both.

There are a number of complex issues that arise which the ML deals with summarily:

- Whether TBKIP can be owned
- What happens where there are no known owners of TBKIP
- What rights are granted to holders of TBKIP
- What happens when there are two or more owners

- How to deal with TBKIP in the so-called public domain
- The rights of the state as compared to the rights of non-state owners of TBKIP
- What happens when the ML conflicts with conventional intellectual property laws, and
- Whether the ML has extraterritorial effect.

Such issues are currently being debated, and rather than enter into such debates the ML has taken positions for which there was some support by Pacific Island countries and which appear to involve more work from a drafting perspective. This way, a Pacific Island country wishing to take a simpler position, from a drafting viewpoint, should more easily be able to modify the ML than if the situation were the other way around. In any event the ML, being a non-binding instrument, does not oblige any country to adopt it in whole or in part.

The point noted above, concerning what happens when the ML conflicts with conventional intellectual property laws, can be dealt with by proposing detailed amendments to each of the various intellectual property laws in force in most countries: patent law, copyright, trademark, etc. Instead, a more economical solution was chosen of allowing the two regimes to exist side by side except where an inconsistency between the two arises, at which time the ML is to prevail to the extent of the inconsistency. This allows for the realisation of the benefits from the conventional system and the suppression of its less helpful aspects in favour of the ML.

The structure of the ML is designed to: 1) define TBKIP; 2) assign rights (economic and moral) to it; and 3) provide sanctions to deter infringement of these rights. Additionally, the ML:

- Provides a means to prevent the erosion and loss of TBKIP via use of a database
- Allows owners to commercialise TBKIP if such is their desire
- Allows for regional cooperation

- Aligns itself with the CBD, using its language wherever possible and attempting the ambitious task of regulating the threefold grouping of knowledge, innovations and practices, and

- Aligns itself to the Regional Framework for the Protection of Traditional Knowledge and Expressions of Culture.

As a concession to several Pacific Island countries, some more extreme provisions in earlier drafts have been diluted, so that:

- The state is no longer bound by the ML, given that the ML charts new territory and the boundaries of state liability have yet to be delineated

- There are no longer penalties of imprisonment for any of the offence provisions; they are all by way of monetary fines

- The ML only has retrospective effect regarding moral rights, not economic rights. Economic activities in TBKIP which occurred prior to the ML coming into effect will therefore not be affected by the ML, and

- Individuals per se may not "own" knowledge, innovations or practices, but can only do so on behalf of a social group.

The ML establishes the premise that all knowledge, innovations and practices are owned, hence foreclosing any argument that any of these elements may be ownerless. This makes it easier to design a system which can be enforced.

Finally, the ML takes the character of a domestic law rather than a regional treaty, which would entail much more work to conclude. The only indication of the ML's potential for extraterritorial effect is section 17 (reciprocal agreements).

The model law can be found online at www.sprep.org/legal/international.htm under the Convention on Biological Diversity, 1992.

The Model Law is currently being utilised in the development of national legislation. For example, Vanuatu is in the process of combining the Model Law with another model law on culture produced by the Secretariat of the Pacific Community to present to the Council of Ministers for passing into law to protect against exploitation of traditional knowledge.

Coral waters on Savaii Island, Western Samoa

6. Lessons Learned and Good Practices

This chapter looks at:

- The main challenges in implementing effective traditional marine management practices
- Whether there are "good practices" concerning how traditional marine management can be strengthened and how it can contribute to national and international marine protected areas strategies and targets
- Whether the unique situations of each country/island require unique solutions
- Recommendations.

Lessons Learned

The implementation of effective traditional marine management practices in today's world is faced with a number of challenges, ranging from the nature of the traditional practices themselves to the nature of government policies, bureaucracies and capacities. In the former category, both the temporary nature of traditional closed marine areas and the erosion of traditional leadership can present obstacles to the effective management of marine areas.

Traditional marine management areas, such as the *bul* of Palau, are normally established on a short-term or temporary basis to ban the take of certain marine resources. However, their effective management as marine protected areas would require them to become long term or even permanent closures, and to have long-term management regimes in place. Extending traditional temporary closures into marine protected areas has been undertaken at least in Palau and Fiji.

The weakening of traditional leadership also presents challenges. If traditional leadership is not well respected by communities, traditional marine management practices may not always be effective. Vanuatu has identified this challenge, and the Cultural Centre Resource Management Program works closely with a fieldworker network (many of whom are traditional leaders) as well as the *Malvatumauri* (National Council of Chiefs) to build capacity of traditional leaders and strengthen traditional governance systems.

Challenges relating to governments include the lack of legal recognition or a legal framework for the development and establishment of closed marine areas and seasonal closed areas. Where legislation exists, it may be weak, inadequate or poorly drafted. And where many laws exist, linking and implementing legislation can also present a challenge. In addition, agencies mandated with implementing regulations often have poor human and financial resources. Additional challenges include competing priorities (e.g. environment vs. development) and, in a similar vein, striking a balance between livelihoods and conservation.

Governments on small islands often have limited capacity and funding. This is particularly true of local governments. There is a strong need for resources to enhance the capacity of local governments to be able to undertake all their responsibilities related to multiple sectors of government (fisheries, agriculture, environment, etc) and to conduct community awareness campaigns. Even if relevant strategies and legislation are in place, challenges will continue to exist if there is insufficient financial backing. Equally important is building the capacity of communities to sustainably manage the resources under their tenure. Towards this end, communities should be encouraged to strengthen their own systems of traditional governance, resource management and mobilisation of traditional environmental knowledge. Always looking to donors creates and feeds a mentality of dependency that in many cases ultimately undermines community capacity-building, self-reliance and sustainability.

The cooperation between local communities and governments can also be problematic, and gaining a community's trust difficult, especially if government mistakes have been made in the past. Lack of transparency and accountability may create additional tensions.

Good Practices

The identified good practices have as a common theme empowering resource owners and local communities, as they know their needs and wants better than anyone else. For example, good practices for managing resources in Fiji include a strong sense of community ownership and control over marine areas, empowerment and recognition of traditional knowledge, and empowering Fijian communities (e.g. not bringing in outside scientists). Most traditional marine managed sites identified in Fiji are the result of traditional knowledge, and there is recognition that Fijian people are able to do the same job as foreign-trained people. The introduction of Fijian fish wardens and village people with enforcement responsibilities (e.g. they

carry badges) has also helped. The community identifies who should be punished and the village chief administers the appropriate punishment.

Traditional resource management in Vanuatu also promotes community empowerment and self-reliance by emphasising traditional ecological knowledge, customary marine tenure, and traditional leadership and governance systems. This serves to support and reinforce pre-existing systems of traditional resource management while allowing the incorporation of cooperative management strategies in adapting to contemporary circumstances. In some cases, Western-style conservation practices can threaten traditional knowledge by ignoring and subsuming pre-existing resource management systems.

Putting in place legislation to recognise traditional management, including marine managed areas, is also, in some circumstances, a good practice. While legal recognition may not be necessary in cases where traditional authority is strong and well respected, it will assist with enforcement of traditional rules in most cases. This is the case for the Palau PAN, where legal recognition allows government conservation officers to assist communities with enforcement and to give out fines to offenders. While traditional leaders manage *bul* areas, best practice can be achieved through government enforcement. This seems inevitable given the trend towards the slow erosion of traditional powers in Palau.

For conservation enforcement purposes, there is a need to strengthen combined traditional and modern management practices. A collaborative approach between communities, scientists and government will better serve community needs and will ensure that management results contribute to national strategies (e.g. employing community members as enforcement officers). Local people have vast knowledge and a greater sense of ownership over resources as compared to relevant enforcement people from the mainland. However, there is no one-size-fits-all solution, and legally recognising traditional marine managed areas may also undermine traditional authority by transferring it to the state in cases where the state lacks the capacity to effectively monitor and enforce such regulations. It should be noted that Melanesia, Polynesia and Micronesia are all vastly different, and models that may apply in one case may not be valid in another.

Community-focused by-laws may serve to empower communities. Such by-laws existed in the past in PNG but were lost through the colonial era

and due to the development of national legislation. They are now being contemplated again. However, as stated in the FSM case study, if the customary and governmental authority systems are not in harmony over control of resource use, they will probably be in conflict.

Experience in Tuvalu shows that community resource ownership is considered an example of good practice. When people are responsible for a resource, all other things seem to fall into place. For Tuvalu, an isolated country with limited resources, this system works well as it improves people's livelihoods. Similarly, as the case study from FSM shows, a key to legal reform for collaborative natural resource management is local ownership of the negotiation and design of the regulatory system. Off-the-shelf solutions are likely to be met with little interest.

Networking opportunities presented by the development of management plans (often initiated by non-governmental organisations) is an example of good practice. The setting up of a network or group that can discuss issues and share experiences is also useful, and provides strong motivation, as shown in the Fiji LMMA network case study.

As seen in the Cook Islands case study, support for traditionally managed marine areas can decline without continued education and awareness. The Cook Islands *ra'ui* was well supported when intensive public education, awareness and community meetings were administered, but interest waned as the publicity and consultations declined. This demonstrates that maintaining such education and awareness activities is good practice.

Regarding traditional knowledge and genetic resources, the Pacific Model Law and other collaborative approaches may be considered good practice initiatives. National control through issuance of research permits has also been successful. In Tuvalu, for example, only nationals of Tuvalu can collect plant materials for studies or similar purposes.

The traditional, community-based practices that are the topic of this report present culturally appropriate alternatives to top-down marine protected area strategies that have at times failed to bring benefits to communities. In addition, marine protected areas alone are not sufficient for reducing biodiversity loss, and need to be incorporated into broader integrated management approaches, such as the holistic management systems

traditionally used in the Pacific Islands that are based on an understanding of the connections between ecosystems in the land and the sea. The strength of community-based approaches in the Pacific Island is their sustainability, adaptive nature, and ability to enhance community resilience and self-sufficiency in a time of change. Enhancing and building upon traditional marine management strategies in the context of national and international policies relating to biodiversity conservation, marine protected areas, fisheries management and climate change adaptation, is likely to provide benefits for both communities and biodiversity. The examples from the Pacific Islands teach us that conservation and sustainable use are often inseparable, and that we have a duty to future generations to take care of natural resources.

Recommendations:
The following recommendations arise from a consideration of the case studies included in this report:

1. Empower resource owners and local communities through:

a. Recognition of community ownership and control of marine areas and resources.

b. Recognition of the importance of local and traditional knowledge.

c. Strengthening of customary marine tenure, traditional leadership and governance systems to promote sustainability.

d. Recognition and strengthening of pre-existing systems of traditional resource management, while allowing the incorporation of cooperative management strategies in adapting to contemporary circumstances.

e. Providing government support and assistance for community resource management, including fostering community ownership of resource management initiatives and the negotiation and design of management/regulatory systems.

f. Providing for community enforcement of regulations, with government support where desirable.

2. Improving cooperation between communities, governments, regional organisations, Non-Governmental Organisations (NGOs), donors and scientists through:

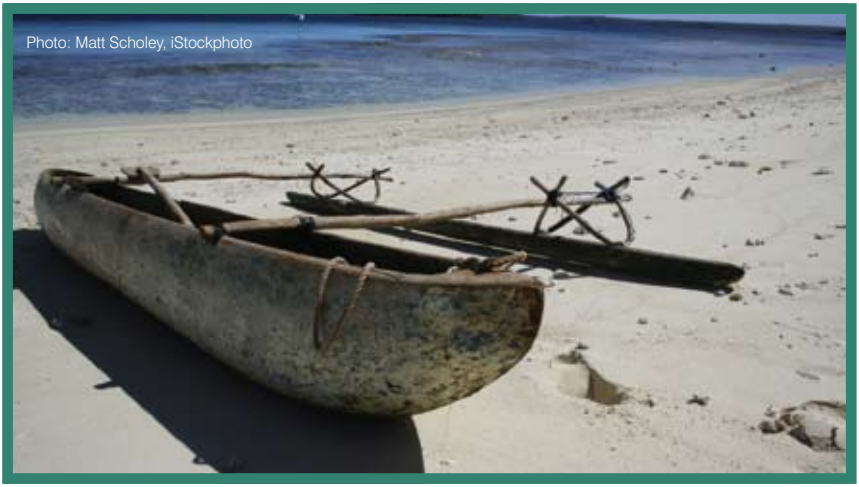
a. Creating a collaborative management and monitoring processes, incorporating as appropriate, both local/traditional knowledge and Western science.

b. Creating transparency and accountability in dealings between local communities, governments, NGOs, donors and scientists.

c. Providing for networking, and continued public education and awareness building.

d. Creating clear rules for national and local ownership of genetic resources and access and benefit sharing arrangements as well as associated traditional knowledge through, for example, research permits and regulatory approaches, such as the Pacific Model Law.

e. Creating greater awareness amongst donors, governments, regional organisations and NGOs about the value and importance of supporting traditional governance, leadership and resource management systems.



Traditional canoe, Tonga

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This report relies mainly on case studies submitted by authors and on discussions that took place in two dialogue sessions on traditional marine management organised by UNU-IAS at the 8th Pacific Islands Conference on Nature Conservation and Protected Areas (Alotau, PNG, 22-26 October 2007). Case studies and discussions from previous UNU-IAS-sponsored workshops in 2003, 2004, 2005 and 2006 have also been utilised. The list of participants in these workshops can be found in the Annex to this report. While the majority of source material is therefore oral in nature, the report includes a number of formal references, as listed below.

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Crayfish on rocks in New Zealand

Annex – Participants in UNU-IAS Workshops on which this Report was Based

The report incorporates input from two dialogue sessions on traditional marine management organised by UNU-IAS at the 8th Pacific Islands Conference on Nature Conservation and Protected Areas, which took place in Alotau, Papua New Guinea (PNG) from 22 to 26 October 2007. It also incorporates case studies presented at the following workshops organised by UNU-IAS and sponsored by the Christensen Fund:

- Workshop 1 – for countries and states of the Melanesian Spearhead Group, Townsville, Australia, 29 March - 2 April 2003
- Workshop 2 – for countries and states of Micronesia, Koror, Palau, 25-27 May 2004; hosted by Government of Palau, UNU-IAS and SPREP[23]
- Workshop 3 – for all states of the Pacific to summarise the findings of Workshops 1 and 2 and prepare action plans; Cairns, Australia, 21-24 November 2005; hosted by UNU-IAS and SPREP
- Workshop 4– workshop on the ecosystem approach and customary practice in protected areas in Small Islands, Bangkok, Thailand, 12-16 December 2006; hosted by UNU-IAS and Secretariat of the Convention on Biological Diversity.

All workshops were supported by the Christensen Fund.

The participants in the workshops were as follows:

Papua New Guinea, October 2007

UNU-IAS Dialogue on Marine Managed Areas and Traditional Knowledge at the 8th Pacific Islands Conference on Nature Conservation and Protected Areas, 22-26 October 2007, Alotau, Milne Bay Province, Papua New Guinea:

- Ratita Bebe (Ministry of Environment, Lands and Agricultural Development, Kiribati)
- Dominique Benzaken (Secretariat of the Pacific Regional Environment Programme – SPREP)

[23] In 2004, SPREP was renamed the Pacific Regional Environment Programme.

- Alphonse Kambu (UNU-IAS/Ishikawa International Cooperation Research Centre, Papua New Guinea)
- Viliamu Iese (Department of Environment, Tuvalu)
- Mellani Lubuang (University of California, Guam)
- Rahera Noa (UNU-IAS)
- Alma Ridep-Morris (Ministry of Resources and Development, Palau)
- Alifereti Tawake (University of the South Pacific, Fiji)
- Marjo Vierros (UNU-IAS).

Thailand, December 2006

Workshop on the Application of the Ecosystem Approach to Protected Areas in Small Islands, a collaborative workshop with the Secretariat of the Convention on Biological Diversity, 12-16 December 2006, Bangkok, Thailand (note that only Pacific and UNU-IAS participants are listed):

- Sultana Bashir (GEF Regional Coordinating Unit, Thailand)
- Isaac Harp (Northwestern Hawaiian Islands Committee, 'Ilio'ulaokalani Coalition, Hawaii)
- Rod Hay (Department of Conservation, New Zealand)
- Sam Johnston (UNU-IAS)
- Aroha Mead (Victoria University of Wellington, New Zealand)
- Russel Nari (Ministry of Lands and Natural Resources, Vanuatu)
- Clark Peteru (Secretariat of the Pacific Regional Environment Programme – SPREP)
- Tebaua Sapolu (Fisheries Division, Kiribati)
- David Slip (Department of Environment and Heritage, Australia)

- Toni Tipama'a (Ministry of Natural Resources, Environment and Meteorology, Samoa)
- Alissa Takesy (Division of Resource Management and Development, Federated States of Micronesia)
- Alifereti Tawake (University of the South Pacific, Fiji)
- Ana Tiraa (Secretariat of the Pacific Regional Environment Programme – SPREP)
- Marjo Vierros (UNU-IAS)
- Steve Why (Marshall Islands Conservation Society, Marshall Islands)
- Elaine Wright (Department of Conservation, New Zealand).

Australia, November 2005

Access & Benefit Sharing, Traditional Knowledge & Customary Law Workshop, 21-24 November 2005, Cairns, Australia (a collaborative workshop with SPREP):

- Nooapii Tearea (Ministry of Justice, Cook Islands)
- Paul Lynch (National Environment Service, Cook Islands)
- Emilio Musrasrik (Department of Justice, Federated States of Micronesia)
- Jack Valentine (Ministry of Justice, Fiji)
- Tererei Abete (Environment and Conservation Division, Kiribati)
- Eweata Maata (Attorney General's Office, Kiribati)
- Leo Keke (Nauru Air Corporation, Republic of Nauru)
- Joy Heine (Department of Women's and Culture, Republic of Nauru)
- Tagaloa Cooper (Department of Environment, Government of Niue)
- Justin Kamupala (Deputy Secretary to Government, Government of Niue)

- Tepa Suaesi (Ministry of Natural Resources Environment and Meteorology, Samoa)
- Theresa Potoi (Ministry of Natural Resources Environment and Meteorology, Samoa)
- Fred Pattson (Department of Environment and Conservation, Solomon Islands)
- Martyn Haurii (Attorney General's Chambers, Solomon Islands Government)
- Sione Tukia Lepa (Department of Environment, Tonga)
- 'Alisi Taumoepeau (Solicitor-General, Crown Law Office, Tonga)
- Ernest Bani (Environment Unit, Vanuatu)
- Marie T. Hakwa (National Cultural Council, Vanuatu)
- Yoli Tomtavala (University of the South Pacific, Vanuatu)
- Luigi Guarino (Secretariat of the Pacific Community, Fiji)
- Henrietta Marrie (The Christensen Fund, Australia)
- Michael Jeffery (Macquarie University, Australia)
- Benjamin Philips (Department of Environment and Heritage, Australia)
- Susan Jones (Trade and Environment International Division, Australia)
- Aroha Te Pareake Mead (Call of the Earth Llamado de la Tierra, New Zealand)
- Sultana Bashir (UNDP-GEF, Thailand)
- Donna Craig (Macquarie University, Australia)
- Peni Ralawa (Ministry of Fijian Affairs Culture and Heritage and Provincial Development, Fiji)

- Rex Rumakiek (Pacific Concerns Resource Centre, Fiji)
- Alolae Cati (Ministry of Health, Kiribati)
- Mere Falamaka (Pacific Islands Forum Secretariat, Fiji)
- Clive Wilkinson (Global Coral Reef Monitoring Network, Australia)
- Sam Johnston (UNU-IAS)
- Brendan Tobin (UNU-IAS)
- Nobuyuki Kawade (UNU-IAS)
- Wendy S. Elliot (UNU-IAS)
- Clark P. Peteru (Secretariat of the Pacific Regional Environment Programme – SPREP)
- Kate Brown (Secretariat of the Pacific Regional Environment Programme – SPREP)
- Saunoa Mata'u (Secretariat of the Pacific Regional Environment Programme – SPREP).

Australia, March-April 2004

Workshop on Traditional Knowledge and Coastal Resource Conservation, Townsville, Australia, 29 March to 2 April 2004, held in collaboration with the International Marine Project Activities Centre (IMPAC) and the Queensland Government and aimed at countries and states of the Melanesian Spearhead Group:

- Manasa Sovaki (Department of Environment, Fiji)
- Silika Tuivanuavou (Fiji Locally Managed Marine Area (FLMMA) Network, Fiji)
- Sarimin J. Boengkih (Agence Kanak de Développement, New Caledonia)
- Douveri Henao (Department of Justice and Attorney General, Papua New Guinea)

- John Genolagani (Department of Conservation, Papua New Guinea)
- Eric Kwa (University of Papua New Guinea)
- Reuben John Sulu (University of the South Pacific, Fiji)
- Cesar Jose Da Cruz (Ministry of Agriculture, Forestry and Fisheries, Timor Leste)
- Narciso de Almeida Carvalho (Fisheries Resources Management and Marine Environment Division, Timor Leste)
- Russell Nari (Environment Unit, Vanuatu)
- Angelyne Saul (State Law Office, Vanuatu)
- Donna M Llewell (WanTok Environment Centre, Vanuatu)
- Brendan Tobin (UNU-IAS)
- Sam Johnston (UNU-IAS)
- Donna Craig (Macquarie University, Australia)
- Stephan Schnierer (Southern Cross University, Australia)
- Justin Rose (University of Sydney, Australia)
- Henrietta Marrie (The Christensen Fund)
- Alma Ridep-Morris (Ministry of Resources and Development in Palau)
- Paul Havemann (James Cook University, Australia)
- Frank Loban (James Cook University, Australia)
- Clive Wilkinson (International Marine Project Activities Centre)
- Robin Cook (International Marine Project Activities Centre)
- Anne Caillaud (International Marine Project Activities Centre).

Participants at UNU-IAS Dialogue on Marine Managed Areas and Traditional Knowledge at the 8th Pacific Islands Conference on Nature Conservation and Protected Areas, 22–26 October, 2007, Alotau, Milne Bay Province, Papua New Guinea

Participants at Access & Benefit Sharing, Traditional Knowledge & Customary Law Workshop, 21–24 November 2005, Cairns, Australia

Canoeing at dusk in northern Vanuatu

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The United Nations University – Institute of Advanced Studies (UNU-IAS) is a global think tank whose mission is "to advance knowledge and promote learning for policy-making to meet the challenges of sustainable development". UNU-IAS undertakes research and postgraduate education to identify and address strategic issues of concern for all humankind, for governments, decision-makers, and particularly for developing countries.

The Traditional Knowledge Initiative, a programme of UNU-IAS, seeks to build greater understanding and facilitate awareness of traditional knowledge to inform action by indigenous peoples, local communities and domestic and international policy-makers. Our thematic areas are climate change, biological resources (including access and benefit-sharing) and natural resources (including water, marine and forest management).

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