Managing the live reef food fish trade in Solomon Islands: the role of village decision-making systems in Ontong Java, Roviana and Marovo Lagoons

Nelson Kilé[1], Michelle Lam[2], Derrin Davis[3] and Ryan Donnelly[3]

Discussion Paper No.2 compiled as part of the

"Sustainable Management of the Live Reef Fish Trade-Based Fishery in Solomon Islands" Project, funded by the Australian Centre for International Agricultural Research (ACIAR)

Project No. ANRE1/1998/094

Suggested Citation

Kilé, N., Lam, M., Davis, D.C. & Donnelly, R.J., 2000. Managing the live reef food fish trade in Solomon Islands: the role of village decision-making systems in Ontong Java, Roviana and Marovo Lagoons. Discussion Paper No.2. Report to Australian Centre for International Agricultural Research. ACIAR, Canberra. 28pp.

Preface

This paper is one in a series relating to Project ANRE1/1998/094: *Sustainable Management of the Live Reef Fish Trade-Based Fishery in Solomon Islands*. The project is financed by the Australian Centre for International Agricultural Research, and involves researchers from Solomon Islands and Australia. Support is also provided by various non-government organisations and other agencies that are active in resource management in Pacific island nations. The focus of the research is to develop a management plan that supports the sustainable utilisation of the target species in the Live Reef Food Fish Trade. Research activities are underpinned by biological considerations, but have substantial social and economic elements as these are seen as an important component of the 'sustainability equation' for the fishery.

1. Introduction

Population increases and the growing cash dependence of rural communities have made the live reef food fish trade (LRFFT) an attractive commercial opportunity for village fishers in Solomon Islands. LRFFT practices in Solomon Islands have involved intensive fishing effort, concentrated on seasonal spawning aggregations. Johannes et al. (1999) suggested that the effect of such fishing on spawning aggregations could be the collapse and local extinction of the aggregations. As village communities have fished these aggregations for generations for subsistence, there is an urgent need to the

address the unsustainable commercial exploitation of these resources.

The LRFFT commenced in Solomon Islands in 1994. The trade was practiced in Marovo and Roviana Lagoons in Western Province and, in 1997, expanded to include the remote northern atoll of Ontong Java (Figure 1). In February 1999 a moratorium was declared, banning the export of live fish from Solomon Islands. The ACIAR funded project - "Sustainable Management of the Live Reef Fish Trade-Based Fishery in Solomon Islands" - aims to produce a Plan of Management for the LRFFT, which will re-establish the fishery on a sustainable footing. The project entails a multi-disciplinary approach to understanding the dynamics of the fishery itself and to understanding the social structure and motivations of the fishers and communities that are involved in the fishery. The World Bank (1998) emphasised the importance of understanding the perceptions of local communities to the formulation of appropriate policies. Social research is emerging as a vital component of achieving policy objectives.

Johannes (1982) noted that fishing communities have a high level of awareness of the marine environment and possess valuable traditional knowledge concerning fish stocks. King and Fa'asili (1999) added that much of the subsistence fishing in tropical regions is based in discrete communities, which have some level of control over adjacent waters. These factors provide a sound basis on which communities can be encouraged to manage their own marine resources.

A thorough understanding of the integration of the system of customary marine tenure, and of customary decision-making, is pivotal to the success of the project. This report is based on a short study of the customary decision-making systems in Marovo, Roviana and Ontong Java that are relevant to the LRFFT. Information was collected via discussions with village chiefs and other members of village communities, along with a review of relevant literature.

1.1 Aims and Objectives

The principal aim was to develop an understanding of the social aspects of the LRFFT. Such understanding is important in developing appropriate management strategies that contribute to sustainable exploitation of targeted resources. The fieldwork for this report was undertaken in the latter part of November 1999.

The objectives in this paper are as follows:

1. Review relevant literature on customary decision-making systems in Solomon Islands;

2. Describe traditional cultural mores that are relevant to the LRFFT and its management;

3. Describe the hierarchical decision making structure relating to village-owned resources (*e.g.* existence and role of groups such as Council of Chiefs,

Provincial land councils and, at the village level: chief, headman, and elders);

4. Describe how decisions relating to fishing activities are made, and by whom;

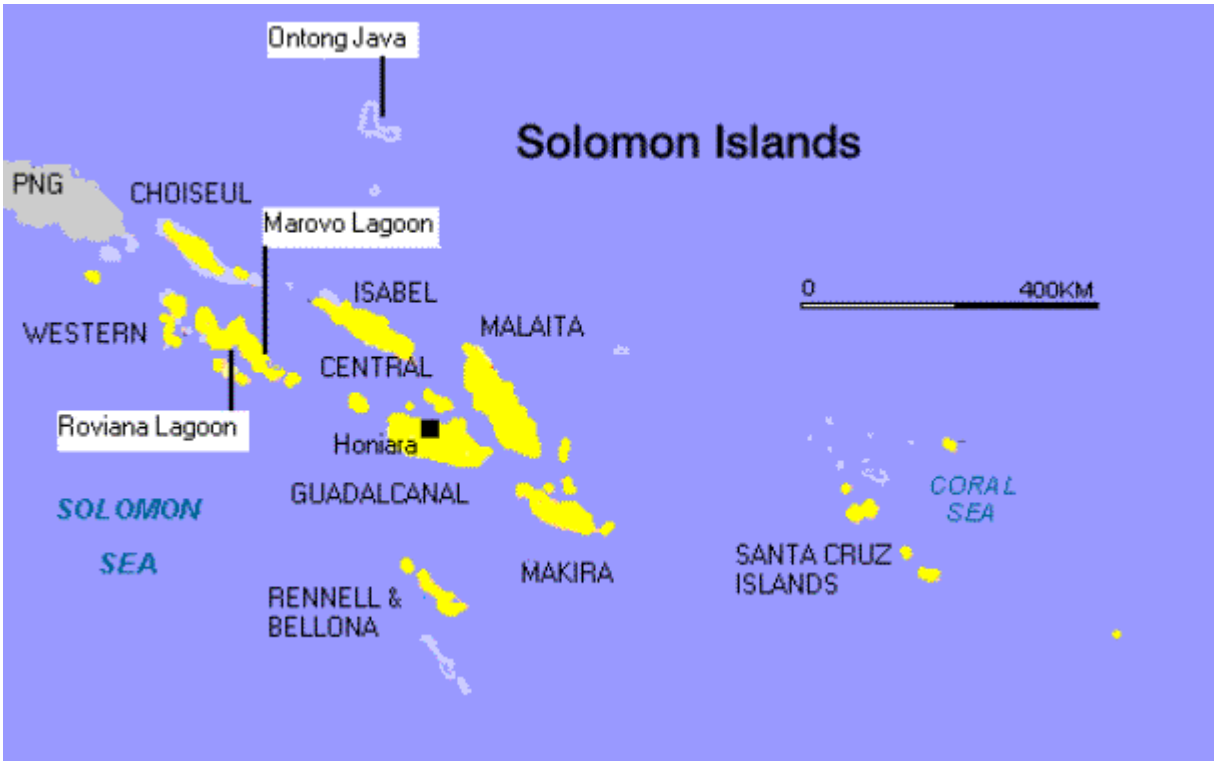
5. If there are conflicts or disputes, describe how and by whom they are resolved;

6. Explain the system of custom ownership of fishing areas and fishing rights;

7. Assess the effectiveness of traditional (customary) management and its potential application to the LRFFT;

8. Assess the community benefits of the LRFFT;

9. Formulate recommendations on those aspects of customary management that can contribute to the sustainable management of the LRFFT.



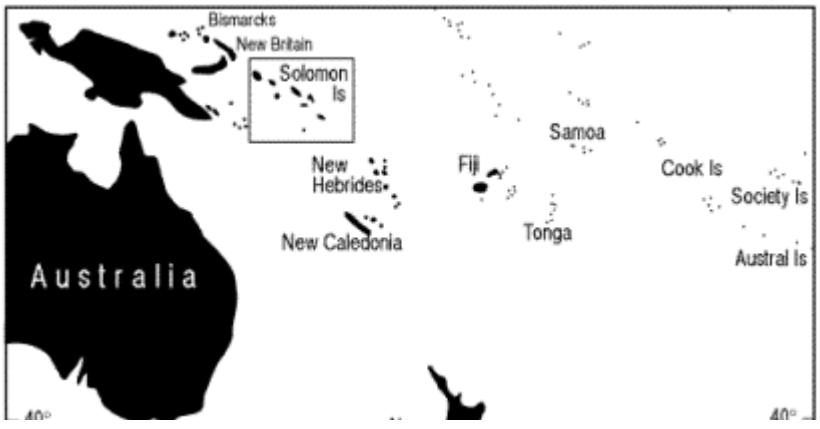


Figure 1. Location of the regions where the LRFFT was practiced (Lonely Planet, 1997)

2. Background

Many South Pacific societies have developed cultures based on the use of marine resources. Of particular interest is the marine tenure system, sometimes known as "customary rights", of Melanesia. Customary Law dictates that most nearshore areas, including reefs, are owned by clans or larger communal groups and are, therefore, not treated as open access fisheries (Wright & Hill, 1993).

The last decade has seen a burgeoning of interest in traditional knowledge about, and management of marine resources, in conjunction with a growing recognition that standard western biological and economic models are inadequate for the management of tropical in-shore and multi-species fisheries (Hviding & Ruddle, 1991). Problems with resource assessment and the enforcement of and compliance with fisheries regulations have led many to ask whether the widespread and increasingly well-documented systems of community based traditional fisheries management, or customary marine tenure (CMT), can serve as a vehicle for locally adapted, decentralised fisheries management. King and Fa'asili (1999), reporting on the 'Village Fisheries Project' in Samoa, noted the success of management approaches based on custom ownership of nearshore resources when centralised (government) regulation had failed to protect those resources.

3. Village Decision-Making and the Customary Marine Tenure System

In traditional Solomon Islands communities the concept of fisheries management is well known and practised extensively. The system of CMT, more commonly understood as traditional rights or customary law, promotes management at the tribal level. In CMT, "customary" refers to a system that emerges from firmly traditional roots, that constitutes part of what is often termed 'customary law', and which has continuous links with local history as it adapts to changing contemporary circumstances. "Marine" refers to the CMT system as dealing with reefs, lagoons, coasts, and open sea, as well as islands and islets contained in this overall seaspace. "Tenure" refers to a social process of interacting activities concerning control over territory and access to resources (Hviding 1989).

Tribal property rights usually extend from the forested inland to the outer extremity of reefs. CMT embraces far more than just fishing rights, and its functions range beyond the organisation of economic activities (Hviding & Ruddle, 1991). In Solomon Islands, CMT forms part of the framework that regulates social and political relationships and defines cultural identities.

Decision-making has a significant role in any organised society. In Solomon Islands, the traditional society and its custom is based on a hierarchical system. In Melanesian culture, there is a head, known as the Chief, who makes decisions for the people in the village. This contrasts with Polynesian culture where there is a group of people that head the village – a House or Council of Chiefs – that forms a body to make decisions. In both cases, the Chiefs are chosen through birthright, as opposed to being elected. The LRFFT has been concentrated in three areas of Solomon Islands: Ontong Java Atoll or the Lord Howe Group, where the people are Polynesian; and Marovo and Roviana Lagoons where the populace is Melanesian. The discussion that follows is concentrated on these three areas.

4. Village Decision-Making Systems in Solomon Islands

Village decision-making structures in Solomon Islands have been neglected somewhat by anthropologists and, consequently have not been well documented. Hviding (1988) explained the importance of marine tenure and noted that usually there is more attention paid to the tenure of terrestrial areas than to marine areas. Land or terrestrial tenure is relatively simple to demarcate. Physical landmarks, such as rivers, mountains or rocks can be used to identify boundaries.

Traditionally, people in Solomon Islands were allowed to fish almost anywhere for food, indicating that marine areas were, in the past, generally managed as open access. Due to the growing desire for involvement in the cash economy, however, the demand for sea resources has escalated, resulting in the depletion of marine resource stocks (Aswani, 1997). Leaders of the villages have often responded by attempting to control catch per unit effort, normally by introducing area closures and periods when the taking of different commercial species is banned. Johannes (1978, 1982) described such approaches as traditional models for the management of marine resources.

The creation of management systems to cater for long term sustainable use of scarce marine resources has occurred in recent years in recognition of the dangers of over-exploitation of those resources (Ruddle & Johannes 1985). Greater recognition of the property rights of local communities has accompanied this proactive approach to management. Village decision-making is, however, often challenged by both local and foreign entrepreneurs wishing to access valuable resources, and this potentially distorts traditional norms.

The new Solomon Islands *Fisheries Act* (1998) stresses the need for the government to give more power to the resource owners so that they can take responsibility for the management of their own property. That is, the focus has shifted towards basing management on the property rights of traditional resource owners. Furthermore, the government feels that it is more cost-effective to keep fisheries management decentralised and to maintain control in the hands of the community (Ruddle 1996).

5. The Hierarchical Decision-Making Structure in Solomon Islands' Villages

5.1 Ontong Java

Village decision making is vested in the chiefs and elders in Solomon Islands' society, including Polynesian Ontong Java. The chiefs and elders have responsibility for running the daily activities of the villages. There is a village headman in each village while, in larger villages and tribes, there is a Paramount Chief. In a village of more than 600 people, the paramount chief will usually work with at least 10 others. This group comprises the House of Chiefs for that village or area. In smaller villages, a village 'organiser' is responsible for the everyday activities of the village. To be obeyed, the organiser must be the chief of the village or an "original" person of that village. He could also be a person who has some leadership qualities and who has married into the village. However, this is quite rare except in the case of small villages of less than 200 people.

In Ontong Java there are two Houses of Chiefs, one in each of the principal villages of Pelau and Luaniua. Luaniua has 13 chiefs, including the two high chiefs who control most of the power in the community. Pelau has one high chief and an assistant chief. The high chiefs of Luaniua are called "Keku'u". They are equivalent to the Chiefs in Tikopia, a Polynesian island in the eastern part of Solomon Islands and, to some extent, to the chiefs in the Polynesian Kingdom of Tonga. The high chiefs have a very strong say in both the running of the community and the administration of its sea and land resources. Although there is a House of Chiefs the high chiefs have a power of veto - any decision with which they disagree will be nullified. This does not mean, however, that they normally dictate decisions. Typically, if there is a need to discuss a topic, it is tabled before the Council of Chiefs who, collectively, make a decision. A young chief is appointed to be the clerk or secretary who records all discussions and decisions of the meetings of the chiefs. The two Keku'u in Luianua succeeded their fathers' seats, and it is expected that the next of kin, "Pareku'u" or assistant chiefs, will be their sons. Ontong Java is patrilineal - powers are handed down from father to son.

There are five main tribes in Luaniua. It is these five tribes that the two Keku'u s represent, although each also has representatives in the Luaniua House of Chiefs. Local history notes that it was Avio, the first Keku'u, who altered the old ruling system and started the current system. Avio had five sons who are now represented by the five existing tribes of Luaniua. However, only two of his sons inherited his manna or power, and they are the present lineage of the Keku'u's tribe.

Pelau also has a Paramount Chief and an assistant chief, with the Paramount Chief again called "Keku'u". These chiefs have identical powers to those in Luaniua. Pelau also has a House of Chiefs which, in combination with the Luaniua House of Chiefs, comprises the Council of Chiefs for Ontong Java. The Council of Chiefs will hold a meeting at any time in response to a request from any Keku'u.

In Pelau, the Keku'u has full control over land and sea resources and is responsible for the everyday activities of the Pelau community. Pelau village is smaller but appears to be typified by stronger leadership than is Luaniua. The Pelau Keku'u demonstrated his

power in 1997 by confiscating the fishing gear of a LRFFT company fishing in Pelua's territory but failing to pay the required monthly rents to the community. The Keku'u also established a "Wildlife Area" or Sanctuary in his area of control. This includes two islands where both land and sea resources are fully protected. Nobody is allowed to enter these islands without special permission from the Keku'u, and any person who does so is fined. A custodian, chosen from the House of Chiefs of Pelau, is responsible for looking after these islands.

Politically, Ontong Java elects a provincial member who represents the community of the atoll in the Provincial government. This person deals with project requests and small development grants. The two villages elect their representative under the *Malaita Provincial Act* every three years. At the national level Ontong Java is represented by the member for the Malaita Outer Islands, which includes Sikaiana, another Polynesian atoll. The elected national member can act only as an adviser to the Keku'us.

Religion plays a very important role in Luaniua village. One of the chiefs is also the chairman of the church committee, with the village adhering to the Anglican faith - more commonly called the Church of Melanesia in Solomon Islands. The Anglican Church arrived in the early 1900s and helped to establish Christian leadership and religious doctrines throughout the nation, including Ontong Java. The Church of Melanesia is also important in Pelau, although another Christian denomination – the Church of Christ – has been introduced recently. In addition to religious values, the churches have also contributed to awareness raising in relation to such matters as gender, social and cultural issues.

5.2 Roviana Lagoon

In Roviana, which is in the Western Province of Solomon Islands (Figure 1), chiefs play an important role in decision-making in their individual tribes and communities. In each village there is both a chief and a village organiser; the organiser is responsible for bringing the village or community together for meetings, which he normally does by ringing a bell. Several tribes may live together in a village, but that village always has a tribal leader. Roviana is matrilineal - the inheritance of land comes from the mother's side. The exception occurs when a tribal chief or a noted chief gives away land in his power to his adopted children or people that are in favour. Inter-marriages also bring the tribes together in a village community where they share both the land and sea resources to which both parents have rights. However, it is from the mother's side that an individual takes his or her tribal strengths. The integration of people into the tribal setting is illustrated in the case of descendants from captured Isabel girls. Roviana chiefs adopted many of these girls in the headhunting era, and their descendants have since become important landowners in Roviana.

Tribal leaders now appoint their own chiefs through merit, while also having a tribal committee to take care of tribal affairs. Decision-making in Roviana is democratic rather than autocratic. Each village has a village council that comprises of the chief plus elders and young chiefs. The council discusses matters before bringing the village together to hear what was decided.

Matrilineal systems, common in Solomon Islands, mean that men cannot claim land ownership from their tribe. This also leaves their children no rights to their tribes' land. The same situation occurs in Isabel, Guadalcanal, the Russell Islands, Savo, and Gela, while in Temotu the men take control of all resources despite it being matrilineal.

Religion also plays a very important role in village decision-making in that the churches have many programs, including women's clubs, as well as youth and social, cultural, and economic activities. The Christian churches follow a denomination-specific church calendar, which is considered important because religious activities cover several hours each day in most villages.

A national Member of Parliament represents Roviana, Vonavona Lagoon and Noro. This representative works with the Provincial Government members, the Town Clerk of Noro, and the Munda Senior Administrative Officer to see that services and development plans for the area are being implemented. The Member of Parliament, along with the Provincial members, is democratically elected. Although not directly involved in village decision-making, these representatives can be quite influential in relation to decisions made at village level. In some instances, politicians become directly involved in village decision-making, normally as a result of an invitation from the chief.

5.3 Marovo Lagoon

In the Marovo Lagoon area, the village chief, known as the "Bangara", rules the chiefly system, which covers certain areas of 'Puava', including land, islands and reefs (Hviding, 1988). 'Puava' traditionally referred to soil or land, but in the Marovo language it is now used to mean all land and marine areas of a 'Butubutu'. The word 'Butubutu' means relations or relatives either living together or blood-tied.

In each village in Marovo there is a chief who is supported by a spokesperson who is responsible for most of the organising of the daily activities of the village. Marovo, with its five languages and 11,000 people, has several Houses of Chiefs that rule on matters ranging from small disputes to more serious land disputes and hearings on timber rights. Marovo chiefs or bangaras exact considerable respect from their people, to the extent that even poor judgment or support for doubtful schemes remains unopposed. Bangaras have the right to talk about the Puava when it comes to commercial development or investment opportunities such as tourism, commercial fishing, agricultural development or logging. Several elders who assist him in village decision-making support the Bangara. However, the Bangara has the 'nginira' or the 'power to speak', that gives him the right to dictate decisions as he wishes.

Politicians from both the Provincial and National Parliament also have considerable involvement with village decision-making in Marovo. This is particularly the case if the politician himself is a Bangara or a member of the village decision-making group.

Religion again plays a very important role in village decision-making in Marovo. The two main Christian denominations are the Seventh Day Adventists (SDA), the Methodists/United Church and a smaller number of the Church of Christ. There is also a smaller group known as the Church of Christ. There are important differences between the two main churches, in that the SDAs do not eat or make use of marine invertebrates (crayfish, coconut crab and sea cucumber), reptiles (turtles) and pork. The Methodists, conversely, may consume or make commercial use of any of these species.

Considerable amounts of money are spent on church contributions, with most going towards the construction of church buildings. People sacrifice a considerable amount of their time undertaking church activities, from simply cleaning the surroundings of the church building to actually spending time outside raising money to meet church targets.

6. Decisions about Fishing Activities

Based on advice and information gathered from the community, the Keku'u in Ontong Java decide on the type of fishing activities that should be employed. Certain fishing areas or habitats are suited to different types of fishing techniques and the chief and his house will decide which techniques will be employed in which areas. There are certain areas where the chief will not allow netting, night diving, or spearing while other areas will be designated as no-take zones. In the Polynesian islands of Temotu Province, the chief arranges a feast before a seasonal closure is declared. The area to be closed is marked with wooden poles with coconut leaves tied around them. The Keku'us call a village meeting at which they notify the community of the fishing ban that has been declared.

Bans placed on the exploitation of marine resources are the result of cooperation between the Pelau Keku'u and the Luaniua Keku'u. The Council of Chiefs meets and discusses the proposed ban on the harvesting of certain resources. They may also decide on other matters affecting both communities. Once a decision is agreed to, the Keku'u communicate it to the members of the community who respond accordingly.

Similarly, the Roviana people follow the decisions of the Bangara in relation to the taking of marine resources, and in relation to the type of fishing gear that can be utilised. The decisions made are communicated to both outsiders and village members, and may include directives on where fishing is permitted and at what times.

Most local people know which parts of the sea area belongs to which tribe and, consequently, individuals know where to fish, as well as which places they must seek permission from the chiefs to access.

In Marovo Lagoon, the Bangaras are the spokesmen of the Butubutus and they make decisions on what activities are allowed. The allowable activities decided upon by the

chiefs depend on their personal preferences, rather than on any democratic process. For example, if a foreign company shows an interest in commercial exploitation of marine resources, permission to do so can be granted by the chief, with such a decision usually based on the benefits likely to be realised by the chief and the community. Fishing for food or local consumption in Marovo Lagoon is unregulated, especially within an individual's 'Toba' or 'Puava'. Disputes occur when fishing happens within an area of seasonal closure, or nearby to someone else's village.

7. Resolving Conflicts

In Ontong Java, the House of Chiefs is responsible for resolving conflicts or disputes. When a dispute or a conflict occurs, the House of Chiefs is informed and they usually call a meeting immediately, although this may depend on the seriousness of the case. The dispute or the conflict is then heard and a decision made. A person found to be in the wrong is punished accordingly. Punishment includes fines, working for the community, and/or working for the Chiefs.

If a dispute or conflict involves the two communities of Ontong Java (Luaniua and Pelau), the Council of Chiefs is responsible for its resolution. As they do not have a normal police post in either of the villages, the Council itself deals with minor criminal cases. The Council of Chiefs uses custom law to deal with such crimes on the basis of their severity. For more serious criminal cases, requiring a magistrate, the Council of Chiefs will refer the case to Auki, the provincial headquarters, or to Honiara, the national capital.

In the Solomon Islands' legal system, Custom Law is recognised and is above Common Law, but it is inferior to the Local Court, Customary Land Appeal Court, High Court, and the Court of Appeal. The Keku'us in the House of Chiefs on Ontong Java exercise the right of Custom Law and implement it when dealing with conflicts and disputes. Based on this power, the chiefs may also create by-laws to suit the community. The Keku'us have the right to punish those who transgress Customary Law, and to impose fines according to such law. The chiefs make special efforts to communicate the requirements of Customary Laws to the community. Response from the Ontong Java communities shows that Customary Law is more closely adhered to than National Law (World Bank, 1998).

Roviana chiefs have their own system of handling domestic conflicts and disputes through a House of Chief's court system. Depending on the severity of a conflict or dispute, however, a chief will bring cases to the National legal system if this is seen as necessary. If it is a minor case the chiefs will charge the law-breakers according to Roviana Customary Law. Settling of disputes and conflicts is almost a daily chore, and one that dates back to the headhunting days when the chiefs could even command the beheading of someone who disobeyed customary laws.

Today, Customary Law is not as strong as in the past because it is much easier to report the case to the Police at Munda or Noro. Subsequently, a magistrate or court

clerk will hear the case and deal with it according to national law. Land disputes and tribal conflicts are, however, dealt with primarily at the village level by the chiefs or through a chiefs' hearing. The chiefs' hearing is conducted by a group of chiefs appointed under the national legal system to hear such cases. The group comprises a President and members who are called Justices. This group hears minor conflicts and disputes in the villages, while dissatisfied parties can appeal against the groups' decisions to a higher court, which in this case, is the local court. In Roviana the village chiefs deal with only minor conflicts and disputes but they take the initiative in reporting severe cases to the higher courts or the police for further action.

The Marovo chiefs, in their respective villages, deal with minor conflicts and disputes but, like the Roviana chiefs, the police and the higher courts are called in to deal with more severe cases. Marovo chiefs also have a similar local court system that sits to hear preliminary cases, with such hearings chaired by a President and recorded by a National Magistrate Clerk.

The Butubutu's Bangara deals with tribal and Butubutu conflicts and disputes, and a decision is usually given immediately.

8. Customary Ownership of Fishing Areas and Fishing Rights

The prevalence of reef habitats throughout Solomon Islands, coupled with the access of most coastal communities to reef resources, means that these communities generally understand the need to preserve the in-shore environment. Communities make choices about resource uses being kept within sustainable limits, and popular participation in the consideration and adoption of management measures for reef resources is common. The need for in-shore fisheries management in the South Pacific has long been recognised. Traditionally, dependence on in-shore fisheries resources as a primary food source meant that communities were acutely aware of the need to ensure proper use of these resources (Lam, 1998). Doulman (1992) observed that the exclusive right to use in-shore fisheries resources, combined with communal decision making about their management, engenders a natural concern for their proper use.

As settlements grew and cash economies developed, however, many island communities found themselves displaced by the very development that promised a better life. For many South Pacific societies, which had evolved practical and sustainable ways to utilise their resources, western style development proved to be their downfall (Hinrichsen, 1990).

Teiwaki (1988) pointed out that obligations associated with individual user-rights in Pacific societies usually involve a commitment beyond simple resource use, including:

1. participation in decisions concerning resource allocation and management;

2. agreement to abide by communally imposed measures designed to protect the resource;

3. commitment to report infringement of agreed conservation and management measures; and

4. participation in the performance of rituals designed to enhance resource productivity and longevity.

Notwithstanding such commitments, many traditional subsistence and commercial artisanal fishers in Solomon Islands are now locked into economic systems that might result in relative poverty.

The conventional approach to fisheries management usually pits the manager and the managed against each other in an adversarial-type relationship (Doulman, 1992). Excluded from decision-making processes, and often not appreciating the need for particular management measures, fishers may attempt to circumvent such measures in order to maximise catches and, in turn, revenue. Indeed, consultation between the managers and the fishers is often limited to an explanation by the managing authority as to the nature of management measures after they have been adopted and are in the process of being implemented.

Community-based management could lead to welfare improvements if it is possible to revive, or build on, traditional fishery management systems. When fishers are involved in attempting to solve problems associated with fisheries over-exploitation, they become active agents for change in the process. They are likely to better understand the rationale and need for management, even though measures proposed might – in the short term - appear to disadvantage them. Such regimes will be more cost-effective because, through participation, fishers will ensure that measures are observed and surveillance and enforcement costs will therefore be lower (Lam, 1998).

Community-based approaches to management essentially involve ‘bottom-up’ or ‘grass-root’ planning. This means that communities will be involved in determining fisheries management measures, supervising their implementation and invoking penalties when management measures and guidelines are ignored (Doulman, 1992). King & Fa’asili (1999) reported that 44 coastal villages in Samoa have developed their own Village Fisheries Management plans under a community-based fisheries extension program. More than 85 per cent of the villages chose to establish small Village Fish Reserves within their traditional fishing areas. The communities have a direct interest in the responsible management of the resources within their marine estate. Management measures that apply to the reserves are both contrived and enforced at the village level. In the presence of clearly defined property rights, communities have the incentive to manage resources in a sustainable manner.

The Keku’us of Ontong Java own fishing areas, as is common in the Polynesian system. The chiefs claim, by tradition, that the reefs and resources within those reefs, belong to them. They have the primary rights and are the custodians of the reefs of the entire atoll. The types of fishing gear, which ecosystem may be exploited, which resource can be harvested, and the time and/or season when fishing is allowed, are all

controlled by the Keku'us.

At those times and in those places when fishing is allowed, all villagers have open access to the reefs, which means that resources such as bêche-de-mer, trochus, fish, giant clams and crayfish can be harvested at anytime by the Ontong Java community. Any person from outside Ontong Java is regarded as a poacher unless he or she has prior permission from the Keku'u to enter Ontong Java's fishing areas. Fishing for subsistence is, however, totally unregulated. In any case, when commercial fishing is undertaken, the permission of the Keku'u is required. Outside investors must have their permission at least a month before even visiting Ontong Java. These rules apply in both Luaniua and Pelau.

Individual families own many of the islands in the Ontong Java atoll whereas, as noted above, all the reefs belong to the chiefs. The community has an obligation to obey the rules and regulations set by the chiefs throughout the atoll. While this ownership and management framework is well understood, the emergence of commercial activities, coupled with better education, now means that some individuals would like to have control over the reefs adjacent to their own islands. Some families apparently now feel that the chiefs are not managing the reefs near their islands in an appropriate way. They are also becoming more knowledgable about the resources within "their" area and are shifting toward the Melanesian system where individual tribes or clans own both the land and reefs. This is a change that is at odds with the Polynesian tradition where the reefs are entirely under the ownership of the chiefs. While there is still a substantial level of respect for the Keku'us and the Council of Chiefs, further moves in the "Melanesian direction" may, gradually, erode the power of the Keku'us.

At least one dispute has occurred in relation to this problem in Luaniua where some families have refused to adhere to traditional cohesion. These families have chased away people wanting to dive for either trochus or bêche-de-mer within "their" reef areas. The same families attempted to attract foreign investment for the harvest of live fish without the permission of the Keku'u. Such challenges might, over time, threaten the manna, or power, of the Keku'u.

In Roviana, ownership of sea areas and the land is tribal. Tribal chiefs, who are responsible to their own tribal bangara, administer these areas. Land tenure and marine tenure go hand in hand because no Solomon Islander survives on fishing alone. In addition to their own areas, Roviana people utilise open access areas such as in the Lau lagoon *"gula e mola"* in Malaita Province (Akimichi, 1991).

The tribal reefs and other in-shore areas contain different species that are specific and important to individual tribes for special purposes. For example, the members of the tribe will know when and where certain species aggregate, or at what lunar phase catches of different species will be high. From this traditional knowledge about species, types of habitat and fishing areas, local people are able to demarcate tribal fishing grounds. In Roviana there are several hundred fishing grounds owned by the tribes that are within and near the Lagoon (Aswani, 1997). Members of a tribe that owns an area know what the rights to these fishing grounds are, although access by

outsiders can result from inter-marriage, or permission from the Chief. Fishing for subsistence by outside groups is also usually allowed. Because Roviana is matrilineal, women have more rights in claiming fishing grounds for their children than do men.

The Marovo bangaras have exclusive rights to marine resources within their tribal area. Consequently, they control the type of use and development that they prefer. Some areas in Marovo Lagoon have been marked out by Non-Government Organisations, such as the World Wide Fund for Nature, and their fishing and hunting grounds have been mapped. Others, like the Tobakokorapa tribe, have a marine management plan, including a resource management order, in place. The boundaries of their area have been mapped and the management plan is administered by an executive committee consisting of five members, two of whom are advisers. This is an example of Butubutu in Marovo working together for a common goal, that goal being to set up a marine conservation area in their Puava. In summary, in Marovo it is the bangaras who have the final say on resource use and management, although they are only custodians to the Butubutus or relatives.

9. Customary Fisheries Management and its Effectiveness

The management of very complex coral reef systems requires detailed knowledge of those systems, such as knowledge relating to the lunar spawning cycle of reef fish. Such knowledge is contained in the oral traditions of fishing communities in Solomon Islands.

While there is interest among many fisheries officers and policy makers in incorporating traditional knowledge and management practices into fisheries planning and management, this often appears to be inhibited or curtailed by several factors, including:

1. the belief that traditional environmental knowledge is neither accurate nor "scientific" enough for incorporation into, for example, western biological or economic models for stock assessment;

2. the belief that customary management measures are so locally specific as to be of little use on the national level; and

3. a tendency (although less widespread than in many other parts of the tropics) to consider rural people and their institutions as unsophisticated and "problematic" (Hviding & Ruddle, 1991).

These beliefs are a reflection of strongly western-biased training curricula that focus exclusively on quantitative science and formalised management programs. Fisheries officers and other decision makers tend to consider that, although traditional knowledge might be accurate as far as predicting the seasonal abundance of fish or shells (particularly trochus), it must often be supplemented by western science to convince local people of the need for regulations such as those, for example, on

minimum-size limits. Fisheries officers and others also point to the inherent flexibility of unwritten CMT systems, noting that they allow for adaptations to shifting circumstances on the local micro-level. Wright & Hill (1993) noted, however, that this flexibility should be promoted as a valuable element of CMT.

In the Melanesian countries of Fiji, Solomon Islands and Vanuatu, the existence of viable CMT systems with a background of strong traditions and explicit legislative support ensures that fisheries officers take customary rights and privileges into account, sometimes to the point of seeking active assistance from traditional resource managers.

Conflicts between CMT holders and external development agents have been recorded. The former, by assessing their rights partly with reference to provisions in national legislation have, in many cases, catalysed a modification of the activities of the latter. In some cases, local resistance to large-scale commercial resource extraction has led to the cancellation or long-term suspension of such activities altogether (Hviding & Ruddle, 1991).

Although CMT in the South Pacific may be referred to as systems of "traditional resource management", based on "customary law", this does not mean that such systems are static, and rigid. Rather, tradition is a system of knowledge and rules which has, on the one hand, strong roots in local history and experience and which, on the other is unwritten and uncodified, thereby allowing for flexibility in adapting to changing social, political, economic or ecological circumstances. Far from being overwhelmed by commercialisation and resource scarcity, many CMT systems in Oceania appear to have considerable capacity for handling and adapting to new circumstances, thereby becoming potentially important tools in the contemporary management of fisheries.

10. Local Management Systems Relevant to the LRFFT

Customary closure or "tabu" is a practice implemented by village chiefs that restricts the use of certain resources, for conservation purposes. This ensures that those resources are not too heavily fished, and also ensures that the resources are used in a sustainable manner. Over the years the people of Ontong Java have managed to sustain the use of two major commercial resources - trochus (*Trochus niloticus*) and bêche-de-mer (*Holothuria* spp). The Keku'us were, some years ago, advised by a politician to ban harvesting of these commercial resources on a two year basis, and to alternate the harvest of these two commodities. The Council of Chiefs regulates this management system throughout Ontong Java.

The Keku'us have been controlling the use of sea resources for centuries. Two of the approaches the chiefs have used to help sustain resources for future generations are the following.

10.1 Alternating two-yearly bans on trochus and bêche-de-mer

This system has been in place for several decades, although the growing demand for cash, combined with population pressure, might now require some modification to it. Increasing the period of closures to five years might now be recommended. *Trochus niloticus* can reach commercial size in about 2.5 years (8cm), and spawns monthly in Solomon Islands. Bêche-de-mer also grows quite rapidly and a five-year alternating ban would ensure sustainable use of these resources. If such an approach were applied to the management of the LRFFT, it would preserve five fish cohorts before major harvesting reoccurs. After a five-year period where no controls were applied, the Council of Chiefs re-established the alternating ban in 1991 due to apparent over-exploitation of both bêche-de-mer and trochus. The chiefs have also allowed the harvest of bêche-de-mer from 15th November to 15th December to enable villagers to pay annual school fees. This management regime commenced in 1999 for bêche-de-mer and will alternate with trochus in 2000. The 30-day harvesting period offered to bêche-de-mer divers is thought to allow sufficient time to collect a substantial amount of the commodity, although this might catalyse review of this policy.

10.2 No take areas or Sanctuaries

A no-take sanctuary has been established in Ontong Java, and comprises an important conservation initiative, one that has come from the community leaders themselves. It therefore has a high level of local acceptance and community ownership. Such a protected area is a potential source of recruitment for other fished areas of the atoll. It might, therefore, support sustainable resource use. Importantly, the customary owners know which species live in the sanctuary area, when they spawn, and during what lunar phases they aggregate. Such conservation measures may contribute to placing the LRFFT on a sustainable footing, particularly if more such areas are declared as protected zones.

In Roviana Lagoon, conservation of marine resources is not as prevalent as in other parts of the country. Roviana is a closely populated area with numerous fishers. The only management practices are the Taboos or species closures. The taking of certain species is banned for short periods of time, such as for certain events like Christmas feasts.

11. Integration with Centralised Management

Village fishers appear eager to effectively manage their marine resources. When the property rights of resource owners are clearly defined and recognised by the central bureaucracy, the resource owners become better able to ensure that maximum benefit is realised from exploitation of their resources, while ensuring that those resources are not diminished for future generations. An education program conducted by Solomon Islands Fisheries Division, about the reproductive biology and population dynamics of species commonly targeted, assisted villagers to better understand the importance of certain restrictions to fishing. Villagers were keenly interested to learn, for example, of the protogynous characteristics of coral trout, and the methods for differentiating male

from female trochus. When informed of the fecundity and reproductive frequency of trochus, villagers were eager to participate in a stock enhancement program.

Information sharing between decision-makers is another important component of the establishment of effective community-based fisheries management. The Chief of Luaniua was a participant in the 1999 workshop on the management of the LRFFT in Solomon Islands. The workshop enabled the Chief to make informed decisions when approached by investors in the LRFFT by training he and other resource owners in all aspects of the LRFFT. The Chiefs who attended the workshop were given the opportunity to meet interested, and established, investors in the LRFFT. As a consequence, the Chiefs of Luaniua and Pelau are in favour of management of the LRFFT.

Marine resource owners, in Solomon Islands and throughout Oceania, have practiced fisheries management measures for generations. These measures are the precursors to those commonly adopted in modern fisheries management. The measures aim to minimise impacts on the regenerative capacity of a fishery. The LRFFT in Solomon Islands, however, entailed intensive fishing effort that focused on seasonal spawning aggregations. It is important that resource owners are able to differentiate between the impacts on the fishery of meeting subsistence requirements and that of servicing the demand of an international market. Access to such information facilitates informed decision making and results in effective co-management of fisheries resources.

Size restrictions are also an important management tool for the LRFFT as the species targeted are protogynous hermaphrodites. That is, they are females when they reach sexual maturity but change sex to become males when, among other factors, they reach a certain age and size. Size restrictions are best enforced at the point of sale because fishers in the LRFFT have the incentive to catch and sell small individuals of targeted species, because the consumer demand for plate-sized fish is great.

Banning fishing for commercial purposes in seasonal spawning aggregations seems essential if the LRFFT is to be placed on a sustainable basis. Overfishing has been implicated in the disappearance of spawning aggregations throughout the world. Johannes *et al.* (1999) listed five Pacific island locations where grouper stocks had been eliminated as a result of fishing spawning aggregations. Enforcement of such a management measure in Solomon Islands will only possible through the empowerment of local communities who hold the property rights and have a vested interest in the sustainable management of marine resources.

12. Conclusion

Fisheries management has, in the past, focused heavily on imposing restrictions on fishing effort to prevent what was often seen as the inevitable overfishing and depletion of fish stocks. Centralised fisheries authorities, often a legacy of colonial occupation, assumed that access to fishing in the sea was unrestricted and, as such, there was no incentive for an individual to limit fishing effort. Policy initiatives

adopted were often sweeping and uncritical. Research, in recent years, into the widespread existence of local-level common property type systems of marine tenure, which regulate access to, and use of resources, thereby acting as fisheries management systems (Hviding & Baines, 1994), has challenged this view. Today, it is widely recognised, in the wake of degraded inshore habitats and depleted fish stocks, that conventional fisheries management has largely failed. Recognition of traditional customary marine tenure, and the clear definition of the property rights of resource owners, rekindles the incentive for traditional owners to sustainably manage the resources within their marine estate.

Johannes & Riepen (1995) stated that, outside of Australia's Great Barrier Reef, the only places where effective control over exploitation of marine resources was being accomplished were those where customary marine tenure or some other form of local control over such activities exists. In Solomon Islands, systems of CMT are recognised within the wider legal framework. Customary tenure and access rights are largely adhered to by local fishers, and outside investors are obligated to obtain permission from traditional resource owners prior to the commencement of commercial resource exploitation. The basis for integrated co-management of fisheries resources is, therefore, well-established.

Legally established community empowerment, coupled with clearly defined property rights of traditional resource owners in relation to access to, and use of resources within traditional marine estates, affords custom owners security of tenure. This provides owners with the incentive to manage their marine resources in a sustainable manner. It also relieves centralised fisheries authorities of the often-insurmountable task of comprehensive enforcement of regulations. Traditional owners, bypassing the data-intensive, quantitative models that typify the basis for modern fisheries management decision making, can implement management initiatives on a highly specific basis.

In Solomon Islands, traditional resource owners are eager to control access to and use of resources within their marine estate, and to manage those resources in a sustainable manner. However, these traditional owners require government support in the form of appropriate legislation, education and assistance with legal arrangements. The bipartisan transfer of technology, between decision-makers in clan-based groups and from government, is pivotal to the establishment of appropriate policy and management guidelines.

References

Akimichi, T., 1991. Sea tenure and its transformation in the Lau of North Malaita, Solomon Islands. *South Pacific Study* **12(1)**: 7-22.

Aswani, S., 1997. *Customary Marine Tenure and Artisanal Fishing in the Roviana and Vona Vona Lagoons, Solomon Islands: The Evolutionary Ecology of Marine Resource Utilisation*. A dissertation submitted to the Graduate Division of the

University of Hawaii in partial fulfilment of the requirements for the degree of Ph.D.

Doulman, D.J., 1992. *Community Based Fishery Management: Toward the Restoration of Traditional Practices in the South Pacific.* In: FAO/Japan Expert Consultation on the Development of Community Based Coastal Fishery Management Systems for Asia and the Pacific. FI: CCFM/92/Sp.4. March 1992.

Hinrichsen, D., 1990. The South Pacific. In: *Our Common Seas.* Earthscan Publications Ltd, London; in association with United Nations Environmental Program, Nairobi, 63-81.

Hviding, E., 1988. Marine Tenure and Resource Development in Marovo Lagoon, Solomon Islands. FFA Report no: 88/35 June 1988, Forum Fisheries Agency, Honiara.

Hviding, E., 1989. *'All Things in Our Sea': The dynamics of customary marine tenure, Marovo Lagoon, Solomon Islands.* Boroko, Papua New Guinea: National Research Institute, Special Publication No. 13.

Hviding, E. & Baines, G.B.K., 1994. Community-based fisheries management, tradition and the challenges of development in Marovo, Solomon Islands. *Development & Change* **25(1)**: 13-39.

Hviding, E. & Ruddle, K., 1991. *A Regional Assessment of the Potential Role of Customary Marine Tenure (CMT) Systems in Contemporary Fisheries Management in the South Pacific.* Report to the Forum Fisheries Agency. FFA Report 91/71. Honiara.

Johannes, R.E., 1978. Traditional conservation methods in Oceania and their demise. *Ann Rev. Ecol. Syst* **9**: 349-364.

Johannes, R.E., 1982. Traditional conservation methods and Marine Protected Areas in Oceania. *Ambio* **11(5)**: 258-261.

Johannes, R.E. & Riepen, M., 1995. Environmental, economic & social implications of the live reef food fish trade in Asia & the Western Pacific. Report to The Nature Conservancy & the Forum Fisheries Agency. 83pp.

Johannes, R.E., Squire, L., Graham, T., Sadovy, Y. & Renguul, H., 1999. Spawning aggregations of groupers (Serranidae) in Palau. Marine Conservation Research Series Publ.#1, The Nature Conservancy. 144pp.

King, M. & Fa'asili, U., 1999. Community-based management of subsistence fisheries in Samoa. *Fisheries Management & Ecology* **6(2)**: 133-144.

Lam, M., 1998. Considerations of customary marine tenure systems in the

establishment of marine protected areas in the South Pacific. *Ocean and Coastal Management* **39(1-2)**: 97-104.

Lonely Planet, 1997. Solomon Islands Map. Lonely Planet Publications, Hawthorn, Victoria. http://www.lonelyplanet.com/dest/pac/graphics/map-sol.htm

Ruddle, K. & Johannes, R.E., (ed) 1985. *The Traditional Knowledge and Management of Coastal Systems in Asia and Pacific*. UNESCO. Jakarta. 313pp.

Teiwaki, R., 1988. *Management of Marine Resources in Kiribati.* University of the South Pacific. Suva. 239pp.

World Bank, 1998. *Voices from the Village: A comparative study of coastal resource management in the Pacific Islands*. Pacific Islands Discussion Paper Series. No.9. World Bank, Washington DC.

Wright, A. & Hill, L., (eds.) 1993. *Nearshore Marine Resources of the South Pacific - information for fisheries development and management.* Report prepared for the Institute of Pacific Studies, Suva; Forum Fisheries Agency, Honiara; International Centre for Ocean Development, Canada.

Nelson Kilé Paramount Chief of the Baehai Clan of Isabel Island, Solomon Islands Solomon Islands Coastal Consultancy Service PO Box 302, Honiara SOLOMON ISLANDS E-mail: lamkile@welkam.solomon.com.sb	**Michelle Lam** Project Director – Solomon Islands LRFFT Project Principal Fisheries Officer – Research & Resource Management Fisheries Division Ministry of Agriculture & Fisheries PO Box G13, Honiara SOLOMON ISLANDS Ph: (677) 30 107 Fax: (677) 30 256 E-mail: michelle.lam@ffa.int
Associate Professor Derrin Davis Project Director – Solomon Islands LRFFT Project Graduate Research College Southern Cross University PO Box 157, Lismore NSW 2480 AUSTRALIA Ph: 61 2 6627 7133 Fax: 61 2 6621 5836 E-mail: ddavis@scu.edu.au	**Ryan Donnelly** Research Officer – Solomon Islands LRFFT Project Graduate Research College Southern Cross University PO Box 157, Lismore NSW 2480 AUSTRALIA Ph: 61 2 6627 7135 Fax: 61 2 6621 5836 E-mail: rdonnell@scu.edu.au

1 Solomon Islands Coastal Consultancy Service

2 Solomon Islands Ministry of Agriculture and Fisheries – Fisheries Division

3 Southern Cross University