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USING CUSTOMARY PRACTICES IN MARINE RESORCE AND COASTAL MANAGEMENT IN YAP STATE, FEDERATED STATES OF MICRONESIA

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USING CUSTOMARY PRACTICES IN MARINE RESOURCE AND COASTAL MANAGEMENT IN YAP STATE, FEDERATED STATES OF MICRONESIA.

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INTRODUCTION

Much has been written and said about the potential of using customary knowledge and practices to acquire marine biological information, and especially to help resolve marine management questions in the Pacific region. Unfortunately, this potential has yet to be fulfilled by Pacific islands' fisheries and marine resource management agencies. There are numerous, often complex, reasons for this situation, some of which usually include a lack of trained manpower, necessary funds, and the always elusive 'time' to accomplish it.

In this paper I will outline the ways in which Yap State's Marine Resources Management Division (MRMD) is attempting to use customary knowledge and practices in our projects and programs. I will not discuss the 'results' of these projects and programs, but rather concentrate on the goals, methods and problems encountered in implementing them. Our ideas and efforts are perhaps unlikely to be ***directly*** applicable to other Pacific islands due to differing social and political situations, however, with a little 'lateral thinking' some of our experiences may be useful elsewhere.

BACKGROUND

To place this paper in context, some background information outlining the political and social structures of Yap State is included in the appendix. Briefly, Yap State consists of the four closely associated high islands of Yap 'proper' and 15 low coralline islands collectively referred to as the 'outer' or 'neighboring islands'.[1]

Despite cultural and linguistic differences, the Yapese and outer island (Carolinian) social systems have been traditionally linked by a system of political, economic and religious ties. The customary systems, as they relate to marine usage and tenure, are still in effect in Yap State, but are increasingly weakened by the effects of the current political, economic, religious and educational systems.

In 1987, MRMD contracted Mrs Margie Falanruw and myself (then with the Yap Institute of Natural Science) to conduct a two year study to document Yap State's traditional fishing knowledge and management systems. It has largely been this information, although not yet in a final form, which MRMD has been using for the following projects. The following cases provide some examples of the problems we at MRMD have encountered in trying to use customary knowledge and practices in our work.

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[1] In this paper, 'Yap State' will refer to all the islands; 'Yap' to the islands of Yap proper; and 'outer islands' to the remainder of the state.

Case 1: Marine Resources Coastal Management Plan

Objectives: MRMD is in the process of developing a 'Marine Resources Coastal Management Plan' (MRCMP) for Yap State. A MRCMP is needed to provide recommendations for the use and conservation of Yap State's mangrove, seagrass, reef, and lagoon resources. The plan will include traditional knowledge, uses and customs, modern scientific research, as well as recognizing the need for development activities. The goals for the MRCMP are: 1. To maintain Yap State's marine resources and coastal ecosystems in the best possible condition for future generations. 2. To obtain the maximum environmentally sustainable benefits from the multiple use of our coastal resources for traditional, subsistence, and development activities. 3. To support and enhance the traditional resource management and marine tenure systems, so as to be effective in resource control. 4. To provide appropriate marine environmental education to the public. 5. To provide a review process for making wise decisions about coastal resource use. This process should coordinate and balance the interests of the public, the government, and the developers.

Methods: The initial plan development was viewed as a multi-phased process resulting in the implementation of a comprehensive resource management program. Representatives from the state government, traditional leadership and the communities at large are involved in the plan's development. Three approaches are being used to ensure this involvement: (1) meetings with villages, traditional leaders and agency personnel to inform them of the plan's development and to gain their input; (2) workshops focussing on critical aspects of the plan development in which ideas can be gained and key decisions made; and (3) public education using radio, TV and printed materials.

Plan development is proceeding in four phases: (1) issue identification and policy development; (2) program strategies and administrative structure; (3) legislative and enforcement issues, and (4) plan finalization and implementation. Each phase has an associated workshop open to the public, which we have found a very useful tool.

Currently we are between phases 3 and 4, and are working on two major aspects of the plan. One is a comprehensive development review process, and the other is a marine resource management system. The strategy for the development review process is essentially a western one with modifications to suit the local socio-political system, and will not be discussed in this paper.

The current tendency in the Pacific (due mostly to western influence), is to seek legislative or regulative solutions to marine resource management problems. This approach has had mixed results, and in many cases has failed totally for diverse reasons. From the beginning of the MRCMP's development, MRMD has recognized that traditional marine tenure and use rights currently in force in Yap State need to be incorporated into the plan. MRMD is both legally, due to the Constitution, and morally required to incorporate traditional rights and ownership into the MRCMP. It is also realistically the most practicable thing to do in terms of management enforcement.

Unfortunately, the traditional marine management systems will not be the complete answer. Apart from there being two distinct systems (Yap proper and the outer islands), there are also a number of current marine resource management problems which either fall outside the grasp of the traditional systems or cannot be adequately resolved within the traditional systems. A further complication is the complexity of the marine tenure and use rights system on Yap proper. The current state of enforcement is also quite variable between municipalities, and even between villages, partly due to a decline in some aspects of the system. Finally, the strictly hierarchical nature of the traditional social systems results in a inequitable allocation of resources.

Some Practical Problems:

1. We feel that the greatest problem, but also the key to success, is "time". Working with

traditional leaders and associated groups to try and incorporate as much of the customary structure and procedures as possible into the plan is extremely time consuming. The realities are, however, that deadlines exist - political factors, contracts expiring, increasing development pressures, finances, etc. In having to juggle these conflicting pressures, progress has been made in sporadic bursts of frenzied activity intermixed with virtual inactivity.

Another way in which "time" has affected the plan's progress is through not having sufficient staff (experienced or otherwise) to permit full-time work on the plan. All staff involved have numerous other projects, programs and commitments to work on simultaneously. This is a common problem throughout the Pacific region.

2. The lack of trained and/or experienced staff who are familiar with ***both*** the traditional and western systems is another problem. To some extent we have overcome the 'western' aspects of the problem by utilizing various outside agencies. The US Sea Grant Program's FSM Extension Officer has been advising and assisting since the plan's inception; the University of Guam's Marine Laboratory and the Guam Government's Coastal Management Program (Bureau of Planning) have provided technical assistance at the workshops; the University of Oregon's Micronesian Technical Assistance Program is currently providing two technical assistants for three months to work on particular aspects of the plan; and the US Forest Service will be providing a mangrove expert to provide information and recommendations on Yap's mangroves. All this technical assistance has been obtained at minimal cost to MRMD. One important point, however, is that it has been ***Yap State*** that has decided the areas in which we need technical assistance, rather than having assistance thrust upon us by outside agencies. Although these people can be sensitive to the customary system, they can never gain a complete understanding of it. Whenever possible we try to have counterparts working with them, although this is, unfortunately, rarely able to be on a full-time basis.

3. Customary marine use rights systems are inherently dynamic. On Yap, this has resulted in the patchy adherence and enforcement of customary marine controls. This patchiness is also partly due to the extremely complex nature of Yap's social system, especially as it relates to marine usage, and partly a result of western influence. The changed ***perception*** of the customary system is also an important factor. The 'idealized' or 'theoretical' understanding people have of their customary systems, often differs from its 'real' or 'functional' operation. Some examples of these influences on Yap are identified in the following passage.

> "The [traditional] system ... functioned to its fullest prior to 1886 when the Spanish, the first of a series of foreign administrators came to Yap. By 1910, the German ethnologist Muller found that Yap's politico-religious system had collapsed from lack of capable leadership (Lingenfelter 1975). The German administration was followed by Japanese occupation and World War II. During this period Yap's very dense population declined greatly. Since the beginning of the American administration in 1946, the population of Yap has been growing rapidly, resulting in a great proportion of youth. In 1990 less than about 5% of Yap's population were men who had been born by the time Muller described Yap's culture. These elders might have experienced traditional fishing, but their own practice was limited by the requirements and prohibitions of the succeeding authorities such as the Japanese who had large canoes destroyed. This has resulted in great changes in fishing.
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> Under the American administration emphasis has been on developing a western type political system. Natural resources have largely been subject to benign neglect. Factors such as the introduced political, religious and education systems, dollar wage work outside the traditional system, and excessive alcohol consumption since Spanish times has weakened the traditional system and traditional control over people's use of marine resources. Fresh opportunities and new demands on men's time has

resulted in less attention being given to fishing. New fishing equipment and methods have come to Yap, and control of these has not been governed as much by traditional controls." [Falanruw, 1991, pg.20]

Despite codification of traditional laws being specified in the Constitution[2], we are not, as yet, taking this route. The above mentioned changes and perception differences in the customary system make the option of codifying traditional marine usage regulations very difficult, if not impossible.

Our method to resolve, or circumvent, these problems is to take a "systems" approach. That is, to set up a marine resources management system that will be flexible enough to allow for changes and differing perceptions, but also be capable of encompassing those problems of introduced techniques which fall outside the scope of the traditional system. To achieve this we are reviewing recent marine conflict resolutions (at all community levels). Through this review we hope to relate what is currently happening with what should 'theoretically' have happened according to custom. This will also provide us with an indication of the effectiveness of the current system.

The administrative approach we are tentatively considering involves setting up permanent consultative groups for both Yap proper and the outer islands to advise and determine fisheries management matters in the internal waters. The groups would be part of, or at least attached to, the councils of chiefs. To avoid confusion, the overall structure should be the same for both Yap and the outer islands. Within that structure the program strategies could vary to fit the differing traditional systems. Their composition will need to be very carefully determined. Those whose customary positions would normally involve fishing matters should be included. They should also include people that the traditional chiefs and resource managers will be receptive to (even if they don't always take their advice), have a concern for marine resource issues, and be interested in learning about the western concepts of management and conservation.

These two high level consultative groups (for Yap and the outer islands) would provide recommendations, advice, and so forth, to similar groups at the municipal, island, and/or village level.[3] Members of the groups would be regularly informed on fishery matters. This could be done by training workshops in Yap sponsored by MRMD, FSM MRD, Sea Grant, etc. These groups could also form the focal point for any regional workshops by SPREP, SPC, and so forth. These groups would then, in a low key, semi-informal way seek to inform the fishermen during their regular contacts.

MRMD's main focus would be to get these groups functional, and to provide the technical, educational, and logistical backup (possibly including a full-time extension agent). We would then leave it up to the groups to determine what level of regulation or government participation is necessary to address areas where the traditional system is weakening or for issues it cannot adequately deal with. An important factor in setting up such groups will be defining procedures and instigating training.

4. The introduction of flashlight spearfishing and monofilament gill nets has probably had the greatest effect on marine resource usage in Yap State. This is partly due to these methods falling outside the customary system's control, for example, gill nets have supplanted community net fishing, but is conducted without the customary controls attached to community net fishing. These methods, coupled with the increased demand for the sale of fish, represent a major management problem. These are areas where the customary system has been found wanting.

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[2] "The Legislature shall provide for the codification of traditional laws of the State within a reasonable time after the effective date of this Constitution." [Article XV, Section 1, Yap State Constitution].

[3] The number of levels would be directly related to the number of traditional levels that currently exist in Yap State.

As yet we are uncertain how best to approach this problem. Some of the options are to legislate/regulate indirectly (i.e. do not attempt to directly restrict or control fishermen when fishing in their own areas). For example, control the sale of speared fish in stores (to reduce the urge to flashlight spear fish); introduce some gill net regulations such as licensing, minimum mesh size; encourage the use of alternative (more customary?) methods; control the export of reef fish; and so on. Any restrictions would need to be enforceable and approved by the chiefs.[4] Whatever approach is decided upon will need to be 'holistic' in nature, addressing ***all*** the key issues identified in the plan simultaneously. Other wise, a restriction on one method may cause an unwelcome increase in another, such as a ban on spearing causing an increased use of gill nets.

5. There is a general lack, or perhaps mis-understanding, of the western concepts of 'management' and 'conservation'. This problem can only be solved through an extensive education/extension program aimed at all community levels from elementary school through to public education. MRMD is currently trying to locate funding for such a program. We feel that in the long term, this is the key to the success of any management program. We have already had requests from various municipalities for information and general education materials.

Case 2: Reef Fish Management Demonstration Project

Objectives: Amongst the local fishermen there is the common impression that reef fish populations are lower than 'before'. MRMD has no data to determine whether this is, or is not the case, but we are taking advantage of the situation to encourage some changes in fishing habits by village fishermen. The specific objectives are: 1) to gain permission from some reef owners to use their reef as a demonstration area; 2) survey the area; 3) together with the owner, determine the best way to divide the area up for rotational usage: options include temporarily closing certain areas, closing areas to certain fishing methods for periods of time, permanently close an area as a reserve, or a combination of these; 4) carry out regular surveys of the area, including collecting catch data. Two municipalities have provided large, adjoining sections of reef for this project.

Methods: Our main method in setting up and running this project is through meetings with all those concerned. We have informed the reef owners that this is their project and its success or otherwise depends upon them. At the meetings we determine how the area is currently being fished and other relevant information. With this information we work with the fishermen to determine how to rotate their fishing practices to allow areas to recover.

Problems: Again the main problem has been 'time'. It has taken more than six months to organize the meetings and set up the project. At the time of writing these meetings were just commencing.

Case 3: Turtle Management

Objectives: The underlying objective of MRMD's turtle work is to devise management controls which will allow future generations of these islands to also enjoy the traditional aspects of turtle usage. However, at the same time we also have an international, as well as cultural, responsibility to ensure that turtles in this region are not hunted to low levels, or to extinction. The specific objectives are: 1) to tag adult turtles to determine their movements; 2) to raise a small number of hatchlings through a portion of the period when they are highly susceptible to predation; 3) to assess the current turtle catch rates for Yap State; 4) to develop and provide an education/extension program on turtles to the people of Yap State; and 5) to provide realistic management suggestions to traditional and government leaders.

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[4] Some municipalities and islands have already acted: in Yap, one municipality has introduced a minimum mesh size; in the outer islands, a large proportion of the islands have completely banned flashlight spearfishing and monofilament gill nets.

Problems:

1. Although green turtles are found throughout the state, they only nest in the outer islands. More turtles seem to be caught in the outer islands than in Yap proper. Any approaches we use to collect data and to disseminate information have to take into consideration the different cultural usages and different turtle behavior (e.g. nesting) between Yap proper and the outer islands.

2. MRMD has had mixed success with the collection of green turtle catch data. Due to the remoteness of the outer islands, we have to rely on local people to fill out catch data sheets, and for the Field Trip Officer to distribute and collect them. Some islands have cooperated 100%, while others have neglected to fill them out, or done so only periodically.

In an attempt to overcome this problem, we have requested the councils of both the Yapese and the outer island chiefs to consider appointing contact people for MRMD in each village/island. It would be to these people that we forward data sheets, newsletters, and so forth, and from whom we would receive information.

3. Legislation and management recommendations: The current turtle legislation for Yap State consists of one sentence banning the wholesale and retail sale of turtle meat in stores. There is a bill currently pending in the Legislature to amend the law, however, the amendments have been taken straight from the FSM Code, which in turn was taken from the old Trust Territory (TT) laws. The TT laws were written almost 30 years ago without the benefit of much knowledge or understanding of turtle biology and usage, particularly in what is now Yap State. The proposed legislation is culturally inappropriate and would be totally unenforceable.

MRMD has recommended that any turtle legislation would need to address at least the following topics: (a) definition of the species involved, using the scientific, common english, and vernacular names; (b) the commercial sale of turtle products; (c) the collection of eggs; (d) protection of hatchlings; (e) turtle capture methods, including seasons; (f) turtle nesting habitat protection; (g) the use of non-traditional vessels, including government vessels, to facilitate turtle hunting; and (h) customary usage and controls. Any legislation will need to be flexible enough to allow for the different behavior and usage of turtles in Yap State. To make it effective it will require the cooperation of the traditional leaders. To achieve this, any legislation will need to closely reflect the customary practices and reinforce customary controls.

<u>Case 4: Reef Fish Stock Assessment</u>

Objectives: As in any fishery, a knowledge of the standing stock is essential for management. As reef fisheries are multi-species fisheries, they are very difficult to manage and easily overfished. In the outer islands reef fish are used solely for subsistence purposes. Although there is currently no commercial reef fishing, it is possible that some small scale commercial fishing could be introduced in the near future. In addition, with the increasing population in the outer islands there will be an associated increase in demand for reef fish. This project set out to determine an index of the fishable biomass or standing stock of fishes for various reef sites by using intensive (depletion) fishing experiments.

The project was conceived after traditional fishing methods recorded by the author were being discussed with one of SPC's inshore fisheries biologists. After the suggestion was made that one or two of the methods would be suitable for a depletion experiment, it took two years of work to bring it to fruition.

Methods: Two community fishing methods were used: a leaf sweep and group spearfishing. The leaf sweep is a traditional method, whereas the group spearfishing is a more recently introduced technique

based on a traditional method. Each technique was used twice at separate sites. For each method and site, fishing was conducted on successive days at exactly the same spot until the amount of fish caught decreased considerably. Before and after each fishing experiment visual fish surveys were made using a small team of local men and MRMD staff.

Problems:

1. Explaining to chiefs, reef owners and fishermen why we wanted to fish in the same place, with the same method, on successive days with the aim of catching less fish each day, was the hardest task! The proposed fishing methods are normally used in the same area only once or twice a year to get fish for special occasions or community use. To get permission to conduct this 'strange' style of fishing we had to satisfactorily explain: (a) how much area we would require; (b) why we wanted to fish-out an area; (c) what benefits would they see from the project; (d) how much manpower would we require; (e) would they be paid.

Initially a request was made to the Council of Chiefs for the outer islands during one of their bi-annual meetings in Yap. No objections were raised. After the money for the project was approved by Yap State Legislature and the South Pacific Commission, previous informal approaches to specific islands had to be formalized. The official requests to specific islands/atolls were made through the chiefs. Although this is the official protocol, it has a number of inherent problems. Often, what is discussed with a chief at the council meetings in Yap, only gets back to the island in an incomplete form, if at all. This often results in rumors which can have a lasting effect on the project. To overcome this, in addition to meeting with the chiefs and discussing the project with them, specially written explanations of the project's aims, needs and benefits were provided. Immediately afterwards, discussions were also held with outer island government officials, who, once they understood the purposes of the project, also advised those living on the islands about the project. The key to the success of the project was explaining the aims, needs and benefits of the work to as many people as possible, for as long as possible, so as to ensure that they understood what we wanted.

Upon arrival on the atoll for the field work, a further meeting of all the men was requested by the MRMD team, and the whole project, step by step was explained, any questions answered, and problems resolved. After this was done the project progressed without any problems.

2. Familiarity with the fishing methods, how they are usually conducted, and what minor alterations were needed to satisfy the scientific objectives were essential to the project's success. This was achieved by the author's familiarity with the islands and their fishing methods, knowledge which was acquired during the traditional fisheries project.

3. Payment of the fishermen and hiring of the necessary boats for the time spent fishing ensured the men's continued interest. Payments were made after the completion of the work at each of the four fishing sites. Prior to the field work, considerable time and effort was put into ensuring that the fishermen would be paid in cash, rather than the usual government checks which can take months to get issued.

4. Doing visual fish surveys with local men proved successful. Once the species of fish that needed to be counted and recorded were identified in vernacular by using pictures from fish books, the men had no trouble with learning to carry out transects. Their ability to spot fish and assign them to a given category was excellent.

CONCLUSION

MRMD does not believe that the incorporation of customary marine knowledge and systems into our work will solve all our marine management problems. It does, however, provide a very useful

mechanism to alleviate problems which would otherwise arise by following the 'western' management approach.

The time and money spent on documenting the traditional fisheries and management systems has been of benefit to us. Having information on what Yap State's customary marine practices were, and by relating them to what is currently occurring, provides us with valuable management information. Yap State's situation is, however, different to most other Pacific islands, as all the internal waters are privately owned and controlled.

The following are some brief suggestions on incorporating customary marine knowledge and systems into current marine management/research, based on MRMD's experiences:

1. Document what is known of traditional fisheries, especially marine tenure and use rights.
2. Relate that information to what is currently occurring.
3. Assess which direction(s) the community wants to go with management, i.e. they might not want to "go back" to traditional or neo-traditional systems.
3. Allow enough "time" to work with traditional leaders and fishermen.
4. Develop education programs for ***all*** community levels, including government agencies.

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APPENDIX[1]

Current Political and Economic Environment

Yap State is one of the four constituents of the Federated States of Micronesia (FSM). It is comprised of the four closely associated high islands of Yap[2] and 15 low coralline islands collectively referred to as the 'outer' or 'neighboring islands'. Geographically, Yap State is situated within the Western Caroline Islands from approximately longitude 137°E to 148°E and from latitude 7°N to 10°N.

The Federated States of Micronesia was constituted in 1979 and gained sovereignty in 1986 through the ratification, by the U.S. Congress, of the Compact of Free Association. This treaty, among other things, establishes a framework for aid to support government operations and economic development over a 15 year period.

The economy is a dual one based on subsistence production and government employment. The cash economy results almost exclusively from aid provided through the Compact of Free Association. Despite government encouragement, the private sector is still poorly developed. Yap State, as is true of all of Micronesia, is heavily dependent on imports but exports very few goods.

The traditional political structures have been partially integrated into a modern representative government. The two Councils of Chiefs (one for Yap and one for the outer islands) have veto authority over legislation promulgated by an elected legislature. A governor, presiding over an administrative bureaucracy, is elected separately. In practice accession to government posts, whether elective, appointive, or within the bureaucracy, is influenced by a person's cultural ranking.

The traditional rights of the people are protected by the Yap State Constitution. In relation to marine resources the constitution says:

> "The State recognizes traditional rights and ownership of natural resources and areas within the marine space of the State, within and beyond 12 miles from island baselines. No action may be taken to impair these traditional rights and ownership, except the State Government may provide for the conservation and protection of natural resources within the marine space of the State within 12 miles from the island baselines." (Article XIII, Section 5).

The island baseline is defined for an island or atoll with a fringing or barrier reef as a '...line following the contour of the seaward edge of the reef system...'(Yap State Code, Title 18, Section 27).

Yap State's waters are divided into the internal waters and the State Fishery Zone[3]. The internal waters are those from the shore to the island baselines, and the State Fishery Zone extends from the island baselines for 12 miles seaward. Due to the ambiguous wording of above mentioned section of the constitution, the traditional leaders may have total control over the internal waters; it is uncertain if the government can intervene for conservation and protection purposes in the internal waters, as it can in the State Fishery Zone, without the chiefs' approval.

The government departments and agencies which have direct responsibilities for the marine area and its resources are MRMD, the Yap Fishing Authority (YFA), and the Environmental Protection

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[1] The following was taken, with modifications, from Smith (in press).

[2] That is, Yap, Tamil-Gagil, Maap, and Rumung. They are often collectively referred to as 'Yap proper'.

[3] The FSM Exclusive Economic Zone extends from 12 miles to 200 miles from the island baselines, but is controlled by the national government based in Pohnpei.

Agency (EPA).

Social Environment

In 1987, Yap's population was 6,650 and the outer islands' 3,489, for a total population of 10,139 (OPB, 1987). The natural population growth rate is about 2% per annum; however, the real growth rate is probably much lower due to the effects of emigration (OPB, 1988). The absolute populations for Yap and the outer islands are nowhere near the former highs, for example, Yap proper's population has been variously estimated at 26,000 to 50,000.

Despite differing cultures and languages, Yap and the outer islands have traditionally been linked by a system of political, economic, and religious ties. The tribute system, most of which ceased sometime around the turn of the century, obliged the outer islanders, at specified intervals, to send objects of tribute to the chief of Gagil district on Yap, as well as religious gifts to specific religious functionaries, and gifts from specific families to their Yapese 'overlords' in Gagil. The details of this tribute system can be found in Lessa (1950) and Alkire (1989) for the outer island perspective, and Lingenfelter (1975) for the Yapese aspects.

The following are brief outlines of the traditional Yapese and outer island (Carolinian) social organizations as they relate to marine usage and tenure. These systems are still in effect in Yap State, but are increasingly weakened by the effects of the current political, economic, religious and educational systems. With the introduction of christianity after World War II a number of the cultural restrictions on marine resource usage were inhibited. This, coupled with increased involvement in the cash economy, weakened some aspects of the following systems.

Yap

In Yapese society power and authority is defined in terms of land. The land is perceived as the chief, and the man who inherits the land serves as its voice (Lingenfelter, 1975). The *tabinaw* ('one land') is the basic sociopolitical unit, usually referring to one patrilineal household, and the traditional basis of land ownership. The concept of *tabinaw* is, however, exceedingly complex with many different meanings or references. Several families may reside on lands belonging to a single, named, stone house foundation; these lands, or 'estates' (*tabinaw*), ideally include all important resources, such as several non-localized house and garden plots, parcels of taro patches, and sections of the lagoon for fishing (Lingenfelter, 1975).

Yapese villages are distinctly defined. A village is run by a council consisting of the patrilineal heads of the *tabinaw*. Within a village there are a number of ranks, the highest of which are the chiefs 'of ritual/elders', 'of the village' and 'of the young men' (Lingenfelter, 1975; Sudo, 1984). The 'chief of the village' is the executive head and the economic leader.

Lingenfelter (1975) denotes eight rankings of Yapese villages which fall into five different general groupings: 1) the chiefly villages (two ranks), 2) their closest and highest-ranking allies, or nobility (two ranks), 3) the common villages, 4) the servant rank, and 5) the serfs (two ranks). The first three are considered 'high caste' and the other two as 'low caste'.

Villages are grouped into networks of chiefly villages and lower ranked allies. Management of marine resources serves to support the hierarchial system of each network. Marine resources are exploited for subsistence use, to support cooperative efforts within the network, and to support the head of the network. Access to fishing grounds, fishing gear and fishing rights is managed within the hierarchial system. In general, fishing methods involving the most elaborate equipment (such as special canoes and gear) are limited to higher groups. They are controlled by fishing masters of each method who oversee the conduct of the fishing, often in response to requests from, or in support of, his chief. In

addition, particular species are the property of certain higher ranked people.

The inshore waters of each village are within the jurisdiction of the village, and, except in the case of certain methods, outsiders are prohibited from exploiting its resources. Some fishing methods are available to all fishermen within a village while other methods, and sometimes the area within which they are used, are vested in certain estates. The lowest ranking villages have no land or fishing rights except for a few methods practiced in specified limited areas. The servant level have land but the title belongs to a high chief to whom the 'first fruits' and other tributes and services must be given.

Outer islands

The systems of social organization, especially as they relate to fishing rights, vary slightly between the different outer islands, but significantly from Yap. The major sociopolitical groupings are based on the matrilineal clans. Branches of the major clans are found on all the outer islands, whereas some of the smaller clans are restricted to only a few islands. These clans are ranked upon the sequence of their arrival on the different islands. These rankings vary on different islands. Generally, the eldest son of the most senior woman in each clan is the chief. However, under some circumstances the eldest man of the most senior branch of a clan may be the chief. The clans are further divided into subclans, lineages, and descent lines (Alkire, 1989).

The system of control and tenure of the marine areas and resources fall into three broad and overlapping categories. In all islands, however, the marine areas are not owned by the chief(s), but are only managed by them, in consultation with the other clan elders, for the benefit of the whole clan. In Ulithi atoll, for example, all the reef and lagoon areas belong to the highest ranking clan. This clan's chief also presides as the paramount chief of Ulithi. The marine areas of the atoll are, however, divided into a number of regions. Some of these regions were said to have been given to the chiefs of each island to be controlled by them, but only on behalf of the paramount chief. Within each region are a number of sections which are controlled by the chiefs of each clan. The members of any clan have the right to fish in any sections within the atoll that belong to their clan.[4]

A slightly different tenure and use rights system occurs on Woleai. Here the reef and lagoon is divided up and controlled by the ranking clan on each island or village. There is no paramount chief who has jurisdiction over all Woleai. The head of each ranking clan, in conjunction with the other elders, will control their own areas, determining when and if they should be closed, as well as deciding upon communal fishing. Individuals are able to fish within their own clan's areas anytime.

The third form of tenure and use rights is exemplified by Satawal. Here the chiefs of the three ranking clans divide the responsibilities for island affairs. One chief takes the role of the 'chief of the sea'. He has the rights to control the usage of the marine resources and fishing methods (Sudo, 1984). The use of the fringing reef area is open to any man who wants to fish there, but all other fishing areas (seamounts, uninhabited atolls) require permission of the 'chief of the sea'. The propriety rights to use the food resources of the fishing areas other than the fringing reef belong to the chief of the sea.

The social organization, especially as it relates to marine resource usage and tenure, within Yap State are much more complicated than outlined above. In Yap, for example, very few men completely understand the whole island's system of marine use rights. A further complication arises from the rights to certain resources within the distribution systems. The aim of these outlines is to give an idea of the complexity of the traditional systems that need to be taken into consideration by MRMD.

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[4] For a more detailed description of Ulithian reef and lagoon tenure see Ushijima (1982).

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