American Samoa
Marine Protected Areas
Planning Workshop Proceedings
May 28-31, 2002
Utulei Convention Center

Report submitted by the
Coral Reef Advisory Group
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American Samoa Coral Reef Advisory Group
Marine Protected Areas Workshop
May 21-28, 2002

Organizers

Nancy Daschbach (Fagatele Bay National Marine Sanctuary)

and

Andrew Cornish (Coral Reef Advisory Group)

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Appendix 4: Criteria for establishing MPAs: from various sources

Executive Summary

The American Samoa Coral Reef Advisory Group sponsored a three day workshop designed to produce an integrated plan for the identification of potential marine areas that could become part of the Territory's network of marine protected areas. This document contains the proceedings from the workshop, and the detailed plan.

The first day of the workshop opened with a presentation by Ufagafa Ray Tulafono, director of the American Samoa Department of Marine and Wildlife Resources. Ufagafa's opening remarks focused on the Governor Tauese Sunia's goal for marine protected areas, which he expressed during the 4th Coral Reef Initiative Task Force meeting in August, 2000. In those remarks, and in a subsequent letter to the Chair of the Coral Reef Advisory Group, the Governor set a goal for 20% of American Samoa's coral reefs to be fully protected by the year 2010.

Director Tulafono asked the workshop participants to focus on the workshop's four goals and introduced David Tarnas, the facilitator who went over these goals and the agenda:

- Identify a process to establish 20% of American Samoa's coral reefs as no-take areas.
- Identify criteria for site selection for no-take areas.
- Establish a procedure to make sure that those stakeholders that need to be involved are involved in the process of establishing no-take MPAs.
- Establish a reasonable procedure and timeline for the designation process.

Following Ufagafa's remarks, three invited guests gave presentations on their work in establishing marine protected areas:

- Dr. Brian Keller of the Florida Keys National Marine Sanctuary on the lessons learned in establishing the sanctuary, especially in the Dry Tortugas.
- Dr. Mark Tupper of the University of Guam on the science of marine protected areas, and lessons learned in establishing the no-take areas in Guam, and
- Mr. Ropeti Etuati from the Samoa Fisheries Department on establishing village- based marine reserves in Samoa.

Next, officials from the American Samoa government presented their current work:

- Dr. Andy Cornish of the American Samoa Coral Reef Advisory Group on marine protected areas with presentations on the coral reefs of American Samoa by
- Mr. Flinn Curren and Ms. Fatima Sauafea of the American Samoa Department of Marine and Wildlife Resources on the American Samoa community-based fisheries management program.

In the following days, the workshop became a collaborative effort of American Samoa territorial

government officials, US federal officials with the Fagatele Bay National Marine Sanctuary and the American Samoa National Park, several high chiefs, and the off-island experts. The group developed a plan to implement the goal set by the Governor of setting aside 20% of the coral reefs in American Samoa for no-take areas. The plan is presented in this report.

In summary, the consensus of the group held that most of American Samoa's future marine protected areas would be community reserves run by village councils through their strong system of high chiefs. Government managed MPAs would focus on some of the few coral reefs not under village control. On occasion, village councils would probably allow traditional subsistence fishing in their MPAs as strict no-take reserves may be culturally unpalatable. In fact, the Governor had stressed this in his remarks at the Task Force meeting—some subistence fisheries might be allowable. The territorial government fisheries and coastal zone management officials would provide technical support for watershed and marine resource management, and translate it into lay language. The village council would handle enforcement from the landside. The government recognizes that their enforcement support is needed to prevent night boat fishing, and fishing in remote areas. In addition, enforcement is a current topic of discussion in bilateral negotiations between the American Samoa territorial government and the government of Samoa.

The product of the workshop is the plan itself, comprising the tasks and timeline. An ambitious timeline was recommended to "jumpstart" the process. The initial phase contains broad education and public awareness goals, fact finding and interest assessment by the departments and the villages, identification of key reef areas and villages that might support MPAs, etc. Elements of the plan have already begun as we enter the implementation phase.

Introduction

The American Samoa Coral Reef Advisory Group to the Governor (CRAG) comprises several Territorial and Federal Agencies including the Department of Commerce (which houses the American Samoa Coastal Management Program and the Fagatele Bay National Marine Sanctuary), The Department of Marine and Wildlife Resources, the American Samoa Environmental Protection Agency, the American Samoa Community College and the National Park of American Samoa. Through their planning process, CRAG determined the need for a workshop that would help them plan a Marine Protected Area System for the Territory. In May, 2002, they held the workshop at the Utulei Convention Center. Local participants included agency staff, invited village representatives and invited guests from off-island including Dr. Brian Keller from the Florida Keys National Marine Sanctuary, Dr. Mark Tupper from the University of Guam Marine Lab, Etuati Ropeti from the Samoa Ministry of Fisheries, and David Tarnas, facilitator from Marine and Coastal Solutions International, Inc., a Hawaii-based environmental consulting firm.

Governor Tauese Sunia pledged at the August 2000 Coral Reef Initiative meeting held in American Samoa that our government would establish 20% no-take areas in our surrounding coral reefs. To that end, CRAG determined that a designation process needed to be developed that would identify how to achieve that goal. This Planning Workshop was designed to have this process as the main outcome (complete list of expected outcomes in Appendix 1).

Prior to the workshop, several planning documents were developed through the group. These included a working definition of Marine Protected Area (MPA) which was largely derived from other sources:

> *A marine area and its associated habitats that receives legal protection of its resources by authority of government or village council. This protection can include a full range of management options, including complete prohibition of resource extraction ("no-take"), exclusion, protection of selected resources, seasonal protection, prohibition of selected activities, etc., and combinations of these management options, that are above and beyond the fisheries management practices that apply to all of the Territory's waters;*

a list of types of MPAs that may be appropriate for American Samoa (Appendix 2), and a draft list of stakeholders in coral reef resources (Appendix 3). These documents helped CRAG to organize the agenda for the workshop, and complete some of the preliminary steps to creating the designation process beforehand. We also drafted a list of the criteria necessary to identify and develop MPAs (Appendix 4). All of these preliminary documents were validated and revised during the workshop.

The following summary is provided for all major topics discussed. The summary attempts to capture both the significant content and the full range of the discussion.

Invited Presentations

Lessons Learned in Establishing the Florida Keys NMS, with particular reference to the Tortugas Ecological Reserve

Dr. Brian Keller
Florida Keys National Marine Sanctuary
Science Coordinator

Summary notes from the power point presentation and discussion

Statement of the problem

Increasing recreational and commercial activities were causing direct and cumulative impacts on the reefs around the Florida Keys, including overfishing of grouper and snapper species. In addition, deteriorating water quality was contributing to the loss of corals.

Solution – Florida Keys National Marine Sanctuary and Protection Act, 1990

The Act offered immediate protection, charging the National Oceanic and Atmospheric Administration (NOAA) with developing a management plan with marine zoning goals and objectives. The draft Management Plan was released in 1995 to strong opposition to the size and location of three proposed no-take marine reserves. As a result of the public process, only one marine reserve was implemented, and a commitment was made to revisit establishing a marine reserve in the Dry Tortugas region.

Lessons learned

Setting up no-take marine reserves takes time to do right. The following points helped shape the Florida Keys solutions.

Participation—Leadership of stakeholders early in the process was essential.

The process— open, flexible, used neutral facilitator, identified goals & objectives, agreed on site selection criteria, engaged the public; held public forums, listened to and valued stakeholder input, strove for consensus; no predetermined outcomes.

Science—used best available science to drive process/forums, used socioeconomic GIS map; use of oceanographers, geologists, coral reef ecologists

Jurisdictions—agency representatives spoke for their agencies; used ecosystem approach

rather than jurisdictional boundaries in designing the reserve.

Public Acceptance—Had to overcome perception that marine protected areas (MPAs) would cause unjust displacement in order to gain public acceptance of no-take areas.

Recommendations for Designing Marine Zones

- Involve stakeholders in process
- Integrate the best available science into process
- Overcome unfounded perceptions of social and economic injustices

Challenges

- gaining public acceptance of concept
- enlisting residents to share their knowledge
- educating users
- involving appropriate stakeholder leaders
- obtaining adequate ecological and socioeconomic information.

Successes

- improved public acceptance and ownership of zoned areas
- increased compliance
- increased abundance and average size of several exploited marine species
- high quality resource protection

Q &A Session

What was done to gain acceptance?
Some people were opposed to many regulations, others losing their businesses

Which scientific data was most useful?
Science- oceanographic patterns (to inform larvae dispersion), gyres-flow patterns

How do you designate a threshold area?
Get a manageable area set aside

What was the level of local community participation in the initial process?
Initial planning didn't include local community enough; second design of Tortugas did involve many of the public

What stage is recommended to bring in stakeholders?

This meeting is a good starting point; it's important that everyone shares their experiences; it takes time out of other activities, so there has to be a strong commitment; we can't force people; must have all stakeholders together at all times discussing same information

Are you going to involve any monitoring, including local community, or just scientists?

It is done by other federal agencies and academic institutions; not NOAA. There are volunteer groups, non-governmental organizations, i.e. REEF (Reef Environmental Education Foundation, a citizen fish monitoring program), etc.

Are you going to return and review plan?

A management plan review is required to be done every 5 years; it's only been 3 or 4 years since FKNMS management plan was completed.

Socio- economic data: How do you assess the people involved?

Commercial fishermen would share their data. Typically that works and we focused on fishermen who were being displaced. The fishermen were able to find alternatives in Dry Tortugas. So far we have not seen bad effects and we will continue monitoring.

Positive socioeconomic status?

We have received positive report of increased fish observed, but doesn't necessarily mean a positive change in economic level. We are not seeing an increased catch of reef fish.Ultimately, our interest is in protecting the biodiversity of fish and the ecosystem.

The science of marine protected areas, and lessons learned in establishing the no-take areas in Guam

Dr. Mark Tupper
University of Guam Marine Laboratory
Mangilao, Guam

Summary notes from power point presentation and discussion

Seven Key Concepts in MPA management

- ξ choose clear objectives
- ξ site selection and MPA design
- ξ policy & legislation
- ξ education & public awareness
- ξ community-based management
- ξ research & monitoring
- ξ financing (it's not cheap)

Why are we interested in MPAs? On the positive side, they protect commercially exploited or otherwise threatened species and or ecosystems, they conserve biodiversity, they can (in theory) allow for recreational use with minimal damage to ecosystem, and they are a major tourism draw. On the negative side, they are often a source of conflict between resource users and managers.

In the Turks & Caicos Islands, surveys indicated that divers would be willing to pay entrance fees to MPAs, and many were willing to pay up to $10 per dive to see more or larger groupers, sharks, lobsters, etc. These fees could go a long way to financing MPA implementation and management.

Effects of excessive fishing – genetics become altered so that fish mature at smaller/earlier. The end result is a population of small fish with reduced reproductive output.

The ideal management plan for reef fisheries would be simple, inexpensive, require little data on stocks, easy to enforce, and would protect essential fish habitat. In theory, no-take marine reserves (a subset of MPAs) fit all the above criteria.

Advantages of MPAs over conventional management:

- ξ MPAs treat multiple objectives
- ξ Allow for dispersal of eggs and/or larvae to surrounding areas and thus improve fisheries yields
- Provide insurance against stock collapse or poor management in fished areas

ξ Easier to access, monitor and enforce

Oceanography & MPAs

It is difficult to manage MPAs in isolation; marine areas are generally interconnected by currents and tides. This means that MPAs suffer impacts from outside their boundaries, including marine and terrestrial pollution, sedimentation, eutrophication, and overfishing.

How well do MPAs work?

By current estimates, as few as 20% of MPAs reach their management objectives (if there are any). The best success rates occur in areas where marine resources are important to tourism.

Why such a low success rate?

Biggest problems are: reserve is too small, there is a lack of enforcement, and there is a lack of financing.

Institutional Capacity and Community Capacity:

Institutional capacity is the capacity of state or government to provide resources (finance, enforcement, etc) for management. Community capacity is the set of values, norms and rules that locals adhere to, which allow them to work together for the common good.

e.g. Belize: gets resources from many departments; high community capacity, leading to high economic status

e.g. Guam: good federal funds, external visiting scientists,...but low community capacity, leading to stage where government has to lead; problem is that it requires a lot of enforcement; compliance is low when community capacity is low

e.g. Fiji-low institutional, but high community capacity; problem is there's no authority over foreign involvement

e.g. South Caicos- low institutional and low community capacity, leads to conflict and dysfunction

So the idea is to increase institutional and community capacity. How do we do that? Get government involved; community involvement is based on history of community values, public education, working with fishermen, teaching people to recognize the value of their resources.

Qualitative Comparative Analysis is a tool to determine which factors are necessary or sufficient for ecosystem or fishery sustainability. This type of analysis can help us to understand what social, economic, or biological attributes of our coral reefs and reef fisheries are necessary or sufficient to achieve our management goals. Our research at the University of Guam focuses on determining whether MPAs are necessary or sufficient to achieve sustainability of the reef fishery.

Agent based models (ABMs) of coral reef resource management are predictive and comparative tools that allow us to develop a "digital management laboratory". We are currently

using ABMs to compare the performance of MPAs versus traditional fisheries regulations versus commercial trade bans. ABMs are spatially explicit. We use IKONOS satellite images to define and delineate reef habitats. This information is used to create a digital environmental base in an object-oriented programming language called SWARM. The model is then parameterized by adding data on how fish respond to changes in habitat, how fishers respond to changes in fish abundance in distribution, and how fishery managers respond to changes in both fish abundance/distribution and fisher behavior (effort, compliance, etc.). Manager responses could be to tighten regulations on size limits, gear restrictions, catch limits, etc., or to adjust the boundaries of an MPA, or what have you. The point is that management decisions can be modeled based on what we know about available habitat, fish ecology, and fisher behavior.

In Summary:

- MPAs must be based on the fundamental ecology of the organisms to be protected
- Effectiveness of MPAs is limited by institutional and community capacity
- Socioeconomic and political issues cause more MPA failures than ecological problems
- MPAs should be part of an integrated coastal management scheme, which includes sound land-based and watershed management practices.

Q & A Session:

Have you had any conflicts?

The process took 14 years and they are still trying to get community involvement; sometimes it takes outside motivation. For example, the Turks and Caicos suffered heavy poaching by illegal fishers from the Dominican Republic, so they wanted the government to act on their behalf.

Communication is very important; is it included in the objectives to involve communities and to be educated to become good managers?

We have a scholarship available for a local Guamanian student to get a Master's degree in coral reef management at University of Guam. The stipulation is that after finishing the degree, the student must do two year's work for the government of Guam in a resource management capacity. We have fairly regular TV programming on Guam's coral reefs, and a newspaper column called *Man, Land and Sea* is published in the *Pacific Daily News* every Monday.

Do you allow locals to use/fish area traditionally?

Yes, there is some limited take allowed using traditional methods.

How long has area been established, funding, enforcement?

The five marine preserves cover 15.3% of Guam's coral reefs. They were implemented in 1997 but did not become legally enforceable until January 2001. Financing mainly comes from the

federal government; enforcement from the territorial government.

Give rough figure of how much Guam is currently spending for MPA.

Between the money allotted to the Division of Aquatic and Wildlife Management, and various MPA research grants awarded to the University of Guam Marine Lab, the total is several hundred thousand dollars per year.

Determining an effective size of MPAs needs to be know; having too many too little, is that enough in terms of size?

When you're sizing an MPA, it depends on your goals and what you are trying to protect; when final locations were chosen, they were chosen based on public hearings with input from locals.

Is it better to have one big MPA or lots of smaller ones?

If you are trying to protect certain species, the size should be based on the home range of that protected species. If you want to protect/conserve a species, but are not particularly interested in enhancing adjacent fisheries, then the MPA should be quite a bit larger than the home range of the species. If you want to enhance adjacent fisheries through spillover of adult fish, then the MPA should not be too much larger than the target species' home range.

Establishing Village-based Marine Reserves in Samoa

Mr. Ropeti Etuati
Ministry of Fisheries
Apia, Samoa

Status of Reefs in Samoa

- total reef and lagoon are 23,100 hectares, mangrove and swamp area of 1,000 hectares
- not well endowed with coral reefs like all other Pacific islands
- little knowledge and information available
- Zann 1991: concluded that coral reefs in Samoa are the most degraded

Threats

- environmental degradation
- poor land management practices, agricultural chemicals
- Greedy Fishing: poisons

Community based fisheries management (1996): involvement by the community results in the "ownership" of fisheries management actions and regulations. If communities make their own conservation laws, as they have historically done in the past, they are more likely to respect them. Under community ownership, fisheries management measures are enforced by communities themselves.

Initial contact and Fono meeting

Village Undertakings

- Banning the use of dynamite and poisons to kill fish, smashing of corals to catch sheltering fish *(fa'amo'a)*, banning underwater torches for spearfishing at night
- Minimum size limits on fish;
- Establishment of fish reserves;
- Advisory services provided by Government include technical and scientific assistance and training.

Results

- 75 coastal villages with Fisheries Management Plans
- 57 by-laws
- 11 in process and awaiting approval
- 65 fish reserves

- fish consumption survey - household (2001): high catch rates in villages with management plans
- increased fish stocks and coral growth in fish reserves

Monitoring and enforcement by village communities:

Village by-laws are put together by the village council, then taken to an attorney

Administration & Affiliation:

- Fisheries (MAFFM)
- DEC
- South Pacific Regional Environment Programme (SPREP)

Conclusion

The management of coral reefs and nearshore marine environment in Samoa seems to be the responsibility of a few government departments

The involvement of communities in the decision making process should be encouraged to ensure the successful implementation of managing the coral reefs, lagoons and/or any inshore fisheries resources.

Summary

- Community involvement results in the ownership of fisheries management actions and regulations to ensure successful implementation of coral reef management.

- It is primarily a two-way undertaking: primarily a village undertaking, combined with a government undertaking through the Fisheries agency. Village control is dominant.

- MPAs and reserves must be integrated with coastal zone and land use management.

Q & A Session

How diverse are the fishing communities in Samoa? (Asked because part of the problem in Caicos is that there are too many groups)

There's only one Samoan community. We have mostly commercial fishing, but the program is looking more at subsistence level.

Does the fisheries ministry keep accurate records of fish exports?

Yes.

How are other agencies involved?

In Samoa we have the advantage that fisheries, agriculture, and forestries are all under one department. So other agencies are involved in the meetings.

Are there evaluative processes/reviews involved with regards to the community fisheries management?

We conduct a review after six months using a quantitative approach; we focus on how villages participate in activities, at quality of work done, through interviews of village people. In addition, we are trying to get our research teams to help community learn how to do their own monitoring.

Coral Reefs of American Samoa – an introduction in pictures

Dr. Andy Cornish
Coral Reef Coordinator
American Samoa

Summary notes from power point presentation and discussion

Biodiversity in Samoa

There are 250 species of corals (in American Samoa) and 900 species of fish, of which none are known to be endemic. We also have soft coral species (including sea fans) although diversity is quite low.Most of reefs are narrow fringing reefs although there are also 2 atolls

Status of reefs
Recovering from crown of thorns starfish infestation and hurricanes;

The main threats are from natural events like coral bleaching, Samoa is probably due for another hurricane; also overfishing; watershed degradation (increase in population), pollution in harbor from tuna canneries.

The highest biodiversity is found around Tutuila, although some species are only found at the atolls. For instance, the coral scientist on the recent Townsend Cromwell surveys reported 87 species in one dive at Amanave, Tutuila, more than anywhere else he visited. The high diversity is probably due to this island being the largest in the territory and having the most diverse habitats. Coral reefs here are pretty much recovered from recent natural disasters away from the harbor although the reefs receive the highest fishing pressure.

Ta'u has good fish populations and more large fish than Tutuila although its reefs are quite barren. Ofu & Olosega have more developed reefs and, seemingly, a greater abundance and diversity of reef fish than T'au although some corals are dying in the lagoons within the National Park, probably from increased sea surface temperatures.

Rose Atoll and Swains Island are both small atolls with apparently low fishing pressure. Both have high coral cover although diversity is remarkably low at Swains and it appears to be in a slower stage of recovery from some devastating event than elsewhere in the territory.

Swains has a brackish water lagoon with few species of fishes living there at the moment and dense layers of algae. Rose Atoll-1973 declared a wildlife refuge by the US Fish and Wildlife Service; giant clam population is popular in the lagoon; Rose Atoll Wildlife Refuge is the only no-take marine reserve in American Samoa; attracts a fair share of pelagic fish; green turtles are seen; studies show that they travel primarily to Fiji.

Q & A Session

Did you see much coral bleaching on your surveys of American Samoa in February

Some bleaching was evident at most locations although only a few shallow lagoons were badly affected.

Are the major threats from natural events as opposed to man-made activity?

Yes at present although anthropogenic impacts are likely to increase in severity in the near future due to the rising population.

Community based MPAs in Am Samoa

Mr. Flinn Curren & Ms. Fatima Sauafea
Department of Marine and Wildlife Resources
American Samoa

American Samoa has a heterogeneous society, with immigrants from outside that don't have their own communal land.

The Department of Marine and Wildlife Resources (DMWR) has a community-based fisheries management program that can serve as the "stepping stone" for the process to establish 20% of American Samoa's coral reefs as no-take areas.

- communities volunteer to work with DMWR in this program-they apply to DMWR to establish marine protected areas,
- communities develop fishery management plans with DMWR assistance,
- communities monitor and enforce.

Four village currently in the community-based fisheries management program: Poloa, Alofau, Vatia, Aoa

Lessons learned

- It is necessary to follow the protocol with the traditional village leadership of chiefs as the primary decision makers;
- Displaced fishers need to go elsewhere.
- Reserves have been established for different lengths of time.
- Village leaders & DMWR meet every 1 or 2 weeks to plan reserve. After the plan is done, they meet every month.
- This community-based fisheries management program is similar to the Samoan project, and has benefited from the participation of the Samoan officials.
- The marine reserves established under the DMWR community based management program fit in IUCN category #6 (see Appendix 2).

Funding for this program: federal, local, and some from SPREP

Do these 3 communities have areas where they can go to fish? Are the fishermen able to walk around to areas that they can use; are there concerns about fishing in other villages?
Not known.

Etuati commented: for any sacrifice, there must be an alternative or compensation for displaced fishing; this is one question that must come from the planners, e.g. using agriculture to gain proteins instead of fish.

What's the plan on expanding the program?
Slow expansion.

How often do you meet with the villages, how's enforcement done?
There's not much enforcement, except from the Coral Reef Initiative funding which provides two conservation officers to DMWR.

How many people are relying on subsistence fishing for income?
Don't know. There's a lot of recreational fishing. Commercial fishing is small scale.

Is that for reef fish or pelagic?
Just for reef fish.

Facilitated Discussions

I. Criteria for selecting no-take marine protected areas

Coral Reef Criteria

- Governor's letter stresses nearshore areas where man's impacts are greatest
- Select coral reef and associated habitat. The group recognized that this is usually defined as reefs < 100 m depth. Moreover, the group agreed to emphasize near-shore reef areas < 50 m depth. The group agreed that MPA potential sites should also include deeper waters.

Designation of MPAs must consider unanticipated fishing gears and methods.

Ecological Criteria:

- Ensure representativeness of different types of reefs.
- Protect all ecosystem's components.
- Protect multi-species habitat, including all fish and invertebrates.
- Protect species of concern and their habitat. (turtle nesting beaches).
- Emphasize near-shore < 50m depth, but not excluding deeper reef < 100 m.
- Protect areas experiencing impacts.
- Protect wilderness areas.

To protect reefs, we must also protect associated habitat.

Social Criteria

- Work to attain social acceptance; this is essential. The main question of interest for villages is if the MPA will increase fish catch
- Define degree to which MPA would affect activities of residents..
- Get approval of village council.
- Use DMWR community-based fisheries management program as the stepping stone to establish these MPAs. Office of Samoan Affairs would take lead with the villages, an d work with DMWR.

The MPA must be culturally acceptable.

How can we build social acceptance?

Must have approval of village council otherwise it is top down, should be bottom-up. Use the community-based process as a stepping stone to MPA. In Samoa, there is an IUCN project that is looking at district-level; the initial stages of American Samoa program was through Samoan village council and mayors.

Economic Criteria

- Compensate displaced fishers such as alternative employment or alternative fishing sites.

It's OK to say that the MPA could, in the long term, increase fish catch in adjacent areas, but this is not a certainty.

There also may be an increase in tourism potential, but tourism is low right now, and it may take a long time to develop.

Pragmatic Criteria

- Ensure that sites are accessible so that enforcement is possible, but that shouldn't result in setting aside all accessible fishing areas as no-take areas.
- Establish 20% of our coral reefs as no-take areas by 2010 to accomplish the Governor's goal.
- Designate the largest no-take area as possible that is still acceptable to village. Small is OK though if that's all that's possible.
- Demarcate MPAs using depth contours, reflective markers and landmarks (points). Shape: greater simplicity for ease of enforcement. Where possible use landmarks, e.g. point to point to designate a bay.
- Recognize that near-shore coral reefs are priority areas.
- Integrate the management of these marine reserves with coastal land use and watershed management. This can be done through the existing American Samoa Coastal Zone Management statutes and regulations, including such management tools as Special Management Areas.

Don't oversell the potential benefits of the MPA to the village. This is a caution to the education outreach program. These reserves should have reasonable goals – e.g., it enhances conservation; will protect habitat; will have long term benefits for future generations. Don't make specific promises about fish stock increase in the reserve, just emphasize the long-term goals to benefit future generations.

Regional Criteria

- Emphasize the regional significance of American Samoa coral reefs relating to the reefs of Samoa. There is some preliminary oceanographic evidence of a gyre between the two Samoa's which might make each country's reefs both the source as well as the downstream drop-out sites for each others' reef fish populations.
- Emphasize how our MPA system will contribute to a regional system of MPAs, by protecting the upstream areas seeding American Samoa reefs, and the areas where American Samoa reefs are seeding.

If the American Samoa MPA system is part of a regional system, this could enhance funding potentials for resource management and enforcement purposes, including South Pacific Commission (SPC) and SPREP. We should have a workshop about reserves, focusing on the benefits to the region: include SPC, SPREP, & SamoaFisheries Department. (The SPREP report of MPAs didn't include American Samoa.)

II. Stakeholder involvement

Major stakeholders and roles	
CRAG	Coral Reef Advisory Group: coordinating government body
DMWR	Department of Marine and Wildlife Resources: "gateway" to community
OSA	Office of Samoan Affairs: liaison to local village councils (Approach the Office of Samoan Affairs (OSA) to select liaison with village council)
Village Councils	Chiefs are decision-makers. Fa'asamoa way must be respected. (Matai system). Village Council protocol must be followed. Must deal with high chiefs of village. In meetings with village council, should have the Office of Samoan Affairs there, along with the Director of DMWR or Deputy – Government must show that top leadership is involved.
Village members	Resource users will provide input, local knowledge. Must include those people who personally know and use reef, i.e. women

Jurisdictional issues and comments

- Villages believe their lands extend from the mountain out to the sea.
- Some areas, such as offshore banks that are recommended by scientist/management group may be claimed by a village. That will need to be determined by OSA.
- If it is unclear if any village claims jurisdiction, make sure notification is made to villages recommended by OSA as having potential jurisdictional claims.
- The island is divided into counties with many villages—it may be expeditious to use the county as a unit to discuss MPAs; this may work better for some counties than others.
- For isolated reefs, need to figure out how these will be monitored and enforced.

Stakeholder Involvement

- Ensure that all relevant Government Agencies are involved so there is no duplication of effort.
- Preselect areas as potential MPA's – then go to OSA to select villages who meet the

criteria for involvement.

- Use community-based fisheries management project as the "stepping-stone" for no-take MPA designation process. Include areas already designated as community-based fish management reserves. A public survey was done two years ago on the fisheries problems. This was the start of the community based program.
- Develop a cooperative agreement outlining responsibilities and process between village and government to formalize the MPA management.
- Sign a written agreement between DMWR's (or relevant agency) Director and village council leader(s), if appropriate.
- Educate the villages. If village agrees to participate, DMWR will come to give a presentation. Educating these villages and all stakeholders is essential.
- Develop a management plan in conference with the village council and DMWR (or relevant agency).
- Meet with each village one at a time to discuss problems and how MPA can help address problems. Honor protocol and recognize that each village uses their reef differently and have identified different problems.
- Include areas in National Marine Sanctuary and National Park Service and Rose Atoll Wildlife Refuge.

The criteria used to determine the capacity of the villages to participate in community-based management program with DMWR include:

- How much willingness they have to work on this project.
- What problems/ impacts they are experiencing.
- How well organized the village community is.

Miscellaneous comments from discussion

- In the DMWR project, surveys were done in eleven villages, not all are working on plans yet, but OSA are working to educate them of benefits.
- Some villages already have rules and regulations, for example, swimming ban on Sundays and/or no destructive fishing methods (dynamite, poison, nets).
- Help was requested by villager: could Government deal with outsiders who are fishing in the village area (especially at night)? *No conclusion to this question.*

- How to get several villages involved in larger MPA?
- Will villages be willing to establish larger no-take areas away from immediate vicinity of villages? YES! For example, for the large area from Vatia to Fagasa, we would need both villages to agree, as well as the leadership from Pago Pago. Go to Office of Samoan Affairs to identify which villages should be involved.
- Establishing no-take zones in areas further away from villages would be easier for those villages that claim ownership to those areas In these remote areas, must also include other areas too, e.g. National Park, other Government agencies.
- Any historic sites in MPAs still could be accessed. This is no-take not no-entry.

Comments from Village Leaders on Stakeholder participation in MPAs.

Simona Lauti

Education—convincing villagers is difficult and time consuming. Enforcement needs improvement. DMWR needs to increase capacity.

We all need patience.

With the success of the community based fisheries management, then there will be success of MPA "no take" areas program.

Monitoring must be done scientifically—in cooperation with Monitoring and Evaluation Committee.

Viliamu Misifoa, Alofau village pulenu`u (mayor)

With increase in fish population observed in reserve, there has been increase in sharks; this is a problem for villagers.

If there is need for enforcement in reserve; could ask for technical assistance from DMWR. Need to find ways to deal with enforcement issue. Enforcement from Government could be focused more on education to achieve compliance. Include enforcement issues from the beginning.

Pito Malele

Enforcement: Village members will be the key witnesses—then they need to call DMWR or NMFS for follow through. There needs to be a clear procedure for quick response: educate village council who to call for enforcement.

With strong village council, you will have good compliance

Marine protected area designation process

(this is a compilation of the comments and advice recorded during this discussion. A more detailed process and timeline follows)

Groundrules

CRAG has the mandate to carry out the Governor's goal of 20% reefs as no-take areas. Scientists and Managers need to work together to develop consensus recommendation for developing MPAs in priority areas. Scientific/Management input should be at village workshops. At these workshops all the important ecological areas around the entire territory need to be identified. Scientists/Managers need to recommend areas from their professional perspective, including biological and ecological reasons, socio-economic considerations, and enforcement needs. Scientists and managers needs to develop a consensus recommendation of priority no-take MPAs. CRAG will evaluate and validate these recommendations, then contact OSA, in order to contact the appropriate villages.

First Steps: Preparation

Government will work in partnership with the villages making sure it is a coordinated effort, with DMWR as the gateway to the community, and with advisory support from CRAG. DMWR/CRAG should initiate the public education outreach effort. Use chiefs who are currently working with the community-based fisheries management program as spokespeople. The recommendations verified by CRAG would be translated into layman terms for village workshops.

(DMWR needs to do employ one management person to oversee the MPA effort.) Through survey, DMWR will gather traditional information on reef uses, types of use, levels of use, locations of use, also do more extensive interviews with stakeholders. Need to talk again to those village councils who are involved with the community-based fisheries management program to evaluate the benefits of their MPAs, and decide if there needs to be any potential modification of management agreement, or to discuss alternative locations for the fishing that was done previously in the MPA.

Next Steps: Village Workshops and Buy-in

Administer questionnaire before workshops to gather information on the status of public knowledge of the coral reef.

DMWR/OSA identify the villages with jurisdiction in the priority areas and start workshops there. Have workshops on the topic first, and include all the different groups in village and document their traditional knowledge. Government would provide technical support to the workshops, including scientific input on ecological criteria, translations. Government could also provide training for village leaders, then use these chiefs as leaders to speak at workshops with their own, and perhaps other, village councils.

Maintenance

Once area is designated, then a formal agreement would need to be signed with village(s). With government playing a supporting role, the village would enforce their MPA themselves. Government would also help with a monitoring regime. Government and the village would periodically meet to discuss management of their areas.

Designation process to establish no-take marine protected areas.

Year One and Two objectives– 2002 and 2003

By October 2002	Public Awareness Programs DMWR/CRAG initiated
July 2002	Scientists and Managers identify data gaps, develop consensus recommendation on sites and management regimes for MPAs
July 2002	Identify Villages with jurisdiction in these priority areas, with DMWR/OSA capacity to participate.
August – November 2002	Questionnaire and interviews in these villages including identifying sites of local significance.
August –November 2002	Prepare selected village leaders to presents at workshops DMWR.
Starting in January 2003	DMWR, CRAG, OSA have workshops in these villages, with participating village leaders presenting, and government scientists/managers providing technical support in lay terms.

Year three and four objectives– 2004 and 2005

- Complete first third of village workshops and agreements for MPAs.
- Negotiate the first third of the MPA agreements with villages, including boundaries; DMWR/OSA/VILLAGES.
- Implementation in first third of MPAs.
- Village-primary role in establishing MPAs.
- Government-supporting role to the village.

Year five to seven objectives– 2006 - 2008

- Complete the final two-thirds of the MPA agreements.
- Begin implementation on final two-thirds of MPAs.

Assumptions for establishing no-take marine protected areas in American Samoa

An underlying assumption in this whole effort is that when the group identifies 20% of the territory's coral reefs as no-take areas, they must recognize subsistence fishing needs, and how to sustain subsistence fishing in these MPAs.

MPAs must be flexible.

MPAs should also address land-based issues.

Government Agencies should include all of these issues when presenting to villages.

Before Workshops there needs to be a public awareness programs in Samoan, in T.V,

News, radio, get the scientific information, translated into lay terms on how MPAs work.

Plan outlines for each objective

1. Public awareness program

- Education Coordinator DMWR/CRAG will be hired.
- Need to develop detailed budget for the Coordinator.
- He/she will coordinate with DMWR personnel.
- Need to start as soon as possible so need to develop work plan with milestones and dates.
- Goal is to start outreach by October 2002 with a major push in first 6 months, then on-going after that.
- Utilize participating village leaders as spokespeople in public outreach effort, and in workshops.

Goals of Public awareness program

- Inform people about current conditions of coral reefs, the purpose and benefits of MPAs "no take" areas.
- Could use simple handouts, newspaper articles, radio shows (especially talk shows), TV, video; teacher workshops (10/02 start)

  These efforts are intended to get people ready for participating in MPA designation and implementation process (step #3)

Target Audiences

- Decision-makers
- Fono
- Chiefs
- Other decision makers
- Schools
- General public
- Churches
- Fishermen

  Don't be redundant with villages already participating in community-based programs.

2. Scientists/Managers consensus recommendations

- Gather all currently available need additional support to do this information, write review of all these previous studies, identify trends.
- National Ocean Service (NOS) is mapping AS coral reefs, and other habits to be complete mid-2003 using satellite imagery. Need to compare/contrast previous data with NOS data.

- Biostatistician is to be hired in 2003.
- *Thompson Cromwell* survey results will be released at end of August; will include Coral Reef Ecosystem Inventory (CREI) data on corals, fish, rapid assessment.
- To do now - Using top ten reports, gather the information to use in public outreach effort, and in scientist/manager's work.
- Put together matrix of criteria and identify reports with relevant information.

The data review should consider the following:

- GIS technician starting July 2002 input layers of data get all data together in folder to prepare for them. Include as data in selection process.
- Biostatistician to be hired in 2003 to analyze coral reef monitoring data.
- Review CPUE data from DMWR fishing efforts.
- Identify areas with traditional sites of importance.
- Analyze creel survey results up to 1995 (it just started up again and it is now ongoing).
- Get information on land-based sources of population (sediments) on near shore areas. EPA is starting to look at this connection between land and sea.

Further considerations

- Possibly hire an outside expert to do a site characterization report and review the available data, trends and data gaps. (Could use University of Guam)
- Use NOS intern national MPA initiative <inventory survey>. Maybe expand scope of this work plan early 2003.
- Proposed study by Eric Treml to look at current patterns to identify larval dispersement patterns, so can use this information to recommend MPA sites. (Fagatele Bay National Marine Sanctuary will help support this).
- University of Guam habitat utilization proposal currently in Sea grant review process-constituent review—could use letters of support.
- Should use MPA effort to make the connection between land and sea; should include regulations on watershed with designation of MPAs

Phase I of Step #2:

- Rapid review of literature (completed by 7/02) Dave Wilson (DMWR) will lead effort: suggest list of top papers- by e-mail to CRAG membership.
- Next CRAG meeting to confirm type of areas (asap).
- Second CRAG meeting (1st week of July) when CRAG establishes scope of work and then talk to OSA..
- Make preliminary recommendations for priority areas for MPA (by 7/02).

Phase II of Step #2

- ξ More detailed review and analysis (start at latest 12/02) takes 3-4 months.
- ξ Review of new information from NOS to compare to results of Phase I.
- ξ CRAG is hiring a new CRI coordinator who will coordinate work. The scope of work for the position will be written next week and should include many of these tasks. New hiring will be expedited so the position may be filled within 2 months by August 2002, but possibly it could take as long as six months.

3. Identify villages in priority areas

OSA should have an informational meeting with village mayors with general overview and information about questionnaire, survey. These should be over two or three meetings as part of their regular Monday meetings in the month of July.

4. Develop and administer questionnaire to villages identified in 3

The questionnaire and survey should be started in August, and it could take four months for eleven villages, and continue through November 2002.

Next Steps for # 5, 6, 7

Starting in January 2003, have a workshop for training village representative.

Ask OSA to provide nominations for three representatives from each participating villages. These would be trained as a facilitator, rapporteur, and liaison. NOTE: A woman could be in one of these jobs.

The desired outcome from these village workshop is a decision about MPA from the village council: steps #6 and #7.

Note that these workshops could be done with many villages by the "county" system.

8. Implementation

Village takes the lead, government plays supporting role

For more isolated area, enforcement is a concern.

In the village, the Management and Enforcement Committee is the lead.

American Samoa government could take larger role in enforcement. Enforcement is currently under discussion between Samoa and American Samoa for talks in August 2002.

Information Needs for accomplishing this designation process for no-take MPAs
ξ ocean currents
ξ offshore reef area locations
ξ accurate assessment of coral reef areas
ξ spawning aggregation sites
ξ elder fishermen interviews

- ξ traditional sites of importance
- ξ source of information on local knowledge. Request audiotapes of interviews with elderly fishermen conducted 4 – 5 years ago for – one year span. Make every effort to obtain tapes & transcribe them.

Process for Establishing an MPA in an Area Outside of Village Control

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Workshop Participants

Apelu Aitaoto	Department of Commerce
Jack Anesi	Department of Marine and Wildlife Resources
Jody Arthur	Lewis and Clark College
Gene Brighouse	Department of Commerce
Andy Cornish	CRAG Coordinator
Peter Craig	National Park of American Samoa
Josh Craig	American Samoa Environmental Protection Agency
Flinn Curren	Department of Marine and Wildlife Resources
Nancy Daschbach	Fagatele Bay National Marine Sanctuary
Guy DiDonato	American Samoa Environmental Protection Agency
Anwar Kareem	
Brian Keller	Florida Keys National Marine Sanctuary
F. Kiroma	Department of Marine and Wildlife Resources
Simona Lauti	Adminstrative Services
Afuvai Leiato	
Pito Malele	ASCC Land Grant
Bernard Matatiuma	American Samoa Environmental Protection Agency
Yvonne Mika	Department of Marine and Wildlife Resources
Viliamu Misifoa	Alofau village
Meghann Otineru	Department of Commerce
Eva Pasko	National Park of American Samoa
Lelei Peau	Department of Commerce

Penetekoso Peau	Samoana High School
Rachel Peters	Americorps
Evan Pfaff	American Samoa Environmental Protection Agency
Tafaoata Puletasi	Americorps
Etuati Ropeti	Samoa Ministry of Fisheries
Martina Sagapolu	National Marine Fisheries Office of Law Enforcement
Tuipagai Sakaio	Alofau village
Sila Samuela	Department of Marine and Wildlife Resources
Fatima Sauafea	Department of Marine and Wildlife Resources
Matthew Sene	Department of Marine and Wildlife Resources
Edwin Seui	Department of Marine and Wildlife Resources
Jeff Shively	Territorial Energy Office/Pago Pago Dive Club
David Tarnas	Marine and Coastal Solutions International, Inc.
Rosia Tavita	Department of Commerce
Tepora Toliniu	Department of Marine and Wildlife Resources
Faleselau Tuilagi	Department of Marine and Wildlife Resources
Ufagafa Tulafono	Department of Marine and Wildlife Resources
Mark Tupper	Guam
Afa Uikirifi	Department of Marine and Wildlife Resources
Selaina Vaitautolu	Department of Marine and Wildlife Resources
Dave Wilson	Department of Marine and Wildlife Resources
Leland Yandall	Department of Marine and Wildlife Resources
Lemuelu	Department of Marine and Wildlife Resources

Appendix 1

Goals for the MPA workshop

- Identify a process to establish 20% of American Samoa's coral reefs as no-take areas.
- Identify criteria for site selection for no-take areas.
- Establish a procedure to make sure that those stakeholders that need to be involved are involved in the process of establishing no-take areas.
- Establish a reasonable procedure and timeline for the designation process.

Appendix 2

Types of Marine Protected Areas that may be appropriate for American Samoa
(based on IUCN categories)

Managed for science or wilderness protection (strict nature reserve/wilderness area), e.g., Rose Atoll

Managed for ecosystem protection and recreation (National Park)

Managed for conservation of specific natural features (Natural Monument) Pago Harbor could fit here. Some seamounts? Banks? Reefs?

Managed mainly for conservation through management intervention (Habitat/species management areas) This could encompass any fish (or other species) habitat protection, e.g. Fagatele Bay National Marine Sanctuary.

Managed for landscape/seascape conservation and recreation (Protected Landscape/Seascape) The Palas would fit here. Steps Point. The area between Vaitogi and the airport. The Pola. The beach at Ofu.

Managed mainly for sustainable use of natural ecosystems (Managed Resource Protected Area) The community-based managed areas that are not exclusionary might fit here.

Appendix 3

Stakeholders for the MPA process in American Samoa

American Samoa Government
- Dept. of Marine and Wildlife Resources
- Dept. of Commerce
  - Coastal Zone Management Program
  - Fagatele Bay National Marine Sanctuary
- American Samoa Environmental Protection Agency
- American Samoa Community College

National Park of American Samoa

Recreational users
- Pago Dive Club
- Recreational fishers
- Commercial dive operators

Commercial fishers

Subsistence fishers

Landowners in the affected area

Village councils

Pulenu'u (village mayors)

Fono (local Legislature)

Appendix 4

Examples of MPA Selection Criteria (from misc. sources)

Ecological criteria

ξ diversity (habitat or species diversity)

- naturalness (lack of disturbance or degradation)
- dependency (degree to which a species depends on specific area)
- representativeness
- uniqueness
- integrity (degree to which area is a functional unit)
- productivity
- vulnerability
- protect rare or endemic species
- species of concern (e.g., whales, turtles, corals)
- importance to species (turtle beaches, fish spawning sites, seabird rookeries...)
- benchmark (degree to which area can serve as "control" site for other studies, etc)
- source/sink (species replenishment)
- resilience to perturbation (e.g., bleaching), population persistence

Regional criteria

- regional significance (biogeography)
- contribute to regional network of MPAs

Social criteria

- social acceptance
- public health (e.g., reduce pollutants)
- recreation/tourism
- culture (e.g., archaeological sites, other cultural uses)
- aesthetics (scenic value)
- conflicts of interest (degree to which MPA would affect activities of local residents)
- conflict and compatibility (degree to which MPA would resolve user conflicts)
- safety (degree of danger to public, e.g. swift currents or other hazards)
- accessibility
- research and education
- public awareness
- coastal protection

Economic criteria

- importance to commercially important species
- economic benefits
- tourism

Pragmatic criteria

- achievability
- urgency
- size
- degree of threat
- effectiveness
- opportunism
- availability
- restorability