American Samoa Capacity Assessment

An Analysis of Issues Affecting the Management of Coral Reefs and the Associated Capacity Building Needs in American Samoa

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NOAA CORAL REEF CONSERVATION PROGRAM

An Analysis of Issues Affecting the Management of Coral Reefs and the Associated Capacity Building Needs in American Samoa

PREPARED FOR:

Coral Reef Management Network in American Samoa & NOAA's Coral Reef Conservation Program

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Acknowledgements

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The concepts and methods described in this document have evolved over many years and benefited from the ideas, experience and wisdom of many people, from scientists to spiritual leaders, from policy makers to practitioners, and draw especially from the work of Stephen B. Olsen, Director of the Coastal Resources Center at the University of Rhode Island, a key author of Increasing Capacity for Stewardship of Oceans and Coasts (National Research Council 2008) and the lead advisor of our consultant team. This capacity assessment process has been designed in close consultation with the NOAA Coral Reef Conservation Program.

White-spotted surgeonfish schooling over a reef. Photo Credit: D. Paul Brown

Cover Photo: "Sundog" over American Samoa. Photo Credit: Anita Pritchett

Summary of Major Findings and Recommendations

American Samoa is in a strong position to improve management of its impressive coral reef resources. While the territory does face significant challenges, overall its coral reefs are in relatively good condition and the issues affecting them are not intractable. In particular, development pressure on the American Samoan islands is not excessive and can be managed to protect coastal ocean and reef health.

The coral reefs that surround much of American Samoa are essential to the culture and the long-term function of the local economy. Long-term projected trends of coral ecosystem heath are not encouraging. The diagnosis is pretty clear. Population will continue to increase, and in all likelihood, the goods and services that coral reef ecosystems provide to society will continue to decline. The prescription, we believe, is rooted in a long term strategy aimed at building adaptive capacity to respond to this central challenge. We recommend investment in a multi-dimensional capacity building strategy that builds on the momentum of this analysis with implementation aimed at both early wins and long term system changes. First and foremost, capacity building is about orienting efforts toward change and interpreting what change is possible given limited capacity. This requires comprehending factors of organizational behavior, appreciating the complexity of change, the limitations of top-down mandates, the benefits of inclusive and meaningful engagement, the inevitability of unexpected disruptions, and the connection between individual aspirations and collective action.

Conceptual knowledge of what needs to be changed is a key first step and is offered here. Unfortunately, given the multi-dimensional, emergent and dynamic nature of coral reef management, many of the recommendations in this report may already be dated and require adjustment to reflect current reality. Nevertheless, the conceptual knowledge within this report is intended to provide a structure to develop a capacity building action agenda. It requires leadership and strong interpersonal skills in order to gain commitment for implementation of a capacity building action plan, welcoming alternative viewpoints, managing conflict and adaptively learning from implementation of the capacity building action plan. Technical skills are needed to gather, manage and disseminate stories and results of capacity building efforts. Facilitation skills are essential for keeping the capacity building process in motion. Together, these competencies work together in transformative ways to create change.

Skillfully applying these competencies is one major challenge of enabling a capacity building action plan. Another is dealing with the complexity of coral reef management and the dynamic and unpredictable nature of circumstances outside of anyone's control at any scale. Unexpected events, both positive and negative, will influence the capacity building process. Political, economic and social situations change at such a pace that basic awareness of these changes is critical. With high rates of staff turnover, reliance on outside contractors, new actors entering and old actors departing, simple situational awareness is essential. As noted below, the ebb and flow of elected leaders creates enormous uncertainty. The time horizons required to show "return" on investment for capacity building are far outmatched by short term financial priorities of job creation and economic development.

Adding these elements together, investing in capacity building is a steep climb. It is an unknown path that does not provide standard markers for success along the way. It also is the greatest challenge of our time if we as a society are to respond to the changes that we see around us. We believe investment is warranted in sound, stable and long-term

capacity building programs and that there will be a cascade of positive benefits for those serious about implementing, sharing their results, and learning by doing.

Key findings and recommendations include:

- Formal commitment to protect coral reefs is relatively high in American Samoa. Its Coral Reef Initiative (CRI) and Coral Reef Advisory Group (CRAG) are strongly supported by the Governor. Key actors at the Department of Commerce with coral reef management responsibilities are highly motivated and committed to preserving and protecting reef health. The level of commitment in the system may or may not continue at the current high level after upcoming gubernatorial elections.
- Understanding and working within the complex cultural context and governance structure of American Samoa is essential. Coral reef management in American Samoa is both enhanced and complicated by the nested levels of how authority is defined and expressed in the territory, including at the family, community and village level (through the fa'amatai system) as well as at the levels of the Territorial and the US Federal government. Support of communities and villages for coral reef management is paramount. Accordingly, coral reef governance structures, programs and capacities must be built that thoughtfully integrate across these coexisting systems.
- Capacity to manage coral reefs in American Samoa is generally not hampered by a lack of scientific and technical information regarding the status, extent, and threats to reefs, nor regarding the technical measures needed to improve reef health. Rather, capacity is limited to adequately promote, fund and implement well-understood measures such as improved land management practices, programs to increase natural resource knowledge and stewardship values, enhanced enforcement of existing regulations, controlling unwise development, etc. Measures and processes to improve communication between scientists and managers should be pursued and strengthened with the goal of scientists pursuing funding for projects that provide information that is expressly needed by managers.
- The Department of Commerce is currently the principal agency within the American Samoa CRAG, and it bears the majority of the managerial and administrative burden for CRAG functions. Although DOC's capacity for, and commitment to, coral reef management is high, overall functionality in the coral reef management system could be increased by seeking a more balanced distribution of authority and responsibility among CRAG member agencies and by increasing administrative capacity and improving administrative function within CRAG and its member agencies.
- For reef conservation to truly succeed, it is imperative to build an understanding among decision makers and the general public that the economic and cultural value of the territory's reefs is very high and that preserving reefs and coastal ocean health is utterly essential to the long term health and well-being of American Samoa and its inhabitants.

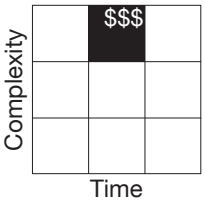
Most of the specific recommendations are linked to the major goals of the American Samoa coral reef management priorities, while others are more crosscutting in nature. They are presented here in tabular form to provide an overview, with more detail provided in the text of the document. While we identify some potential collaborators, each of these recommendations will need champions to implement them as well as a long-term sustained strategy to link them

together and build capacity incrementally and continually to adapt and improve the management and governance of coral reefs in the US.

LEGEND

TIME SCALE	COMPLEXITY SCALE	MONETARY SCALE
Short = <1 year	**Low** = somewhat context independent recommendations such as "best practices" and "standard operating procedures" that have fairly high certainty of building capacity.	**$** - Less than $5,000
Medium = 1 to 2 years	**Medium** = context is more important and the recommendation may require either coordination of technical expertise that may or may not be present in the system, or may require a degree of social engagement and relationship building that creates a common ground; i.e. either socially or technically complicated.	**$$** - Between $5,000 and $20,000
Long = >2 years	**High** = Context is highly dependent and the recommendation may require strategies that are adaptively implemented and address dynamic, emergent, non-linear and complex conditions.	**$$$** - Between $20,000 and $100,000
		$$$$ - Greater than $100,000

EXAMPLE

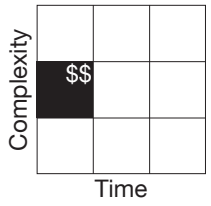
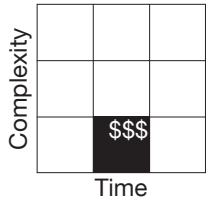
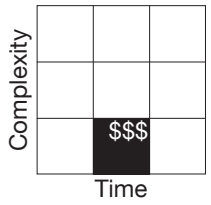


This graphic shows project time scale of 1 to 2 years (**Medium**) with complexity scale equal to **High** and monetary scale between $20,000 and $100,000 (**$$$**).

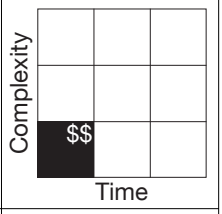
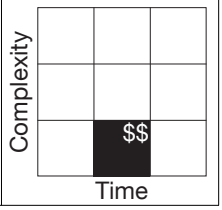
PRIORITIZATION

Recommendations are prioritized as **H** (High, orange shading), **M** (Medium, yellow shading) or **L** (Low, beige shading) and are presented in priority order from highest to lowest priority within their respective Goal categories. The prioritization was developed in consultation with the American Samoa J-CAT members who were asked to rate each recommendation. The highest 17 rated recommendations are ranked as **H**, the next 14 as **M**, and the lowest 14 as **L**.

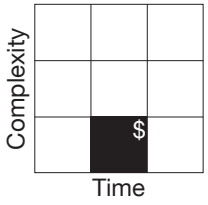
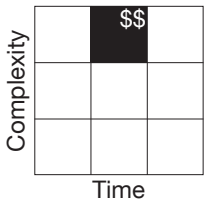
Recommendations to Support Goal 1:
Maintain and improve the status of fish stocks through protection and sustainable use

Page # / Priority	Capacity Building Strategy / Recommendation / Potential Partners		Complexity / Time / Cost
52 **M**	**R 11.1**	**Identify Direct Consumption of Local Fish for Local Population**: In our interviews, it remained somewhat unclear to what degree the American Samoan population is dependent on the consumption of local fish to meet its nutritional needs. This need, to the degree that this information is truly lacking, should be addressed. Gather available information describing the level to which the American Samoan population is dependent on locally caught fish for their nutritional needs and gather additional information as necessary to define. A clear understanding of this issue could lead to more informed fisheries management decision making. **Potential Partners: CRAG, NOAA Fisheries PIRO, Samoa Affairs, Le Tausagi**	
50 **M**	**R 9.4**	**Maintain and Expand Marker Signs and Buoys for Community-based Fisheries Management Program (CFMP):** Enforcement within the CFMP remains a challenge for the program. An identified gap is the lack of clear signs and marker buoys that explain what is and is not allowed where. The CFMP would be enhanced by determining the need for additional signs and markers, as well as the maintenance budget for signs and markers, and obtaining a sustainable source of funding to maintain an adequate array of signs and markers. **Potential Partners: MPA villages, Office of Samoan Affairs, Dept. of Public Safety-Marine Patrol**	
53 **L**	**R 11.2**	**Fund Fish Aggregating Devices (FADs) for CFMP**: Fostering a shift in fisheries effort from reef species to pelagic species could help rebuild reef fish abundance and improve biodiversity and trophic structure on the coral reefs of American Samoa. Fish aggregating devices (FADs), which serve to concentrate pelagic species and improve the success of fisheries targeting them can be part of a strategy to accomplish such an effort shift. Investigate providing funding for Managed Marine Areas (MMAs) in the Community-based Fisheries Management Program that are looking into installing FADs, which could potentially help them shift fishing effort from reef species and improve reef health. **Potential Partners: SPREP, The Secretariat of the Pacific Community, Village leaders, Office of Samoan Affairs**	

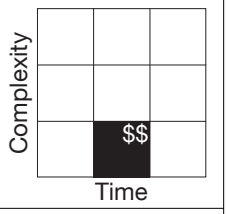
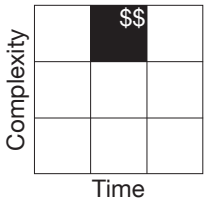
Recommendations to Support Goal 2:
Improve coastal watershed quality and enhance coral reef health by reducing land-based sources of pollution

Page # / Priority	Capacity Building Strategy / Recommendation / Potential Partners		Complexity / Time / Cost
40 **H**	**R 3**	**Wood Chipper for Piggeries:** Piggeries have improved their practices by employing "dry litter" management that requires volumes of wood chips. Complete purchase of a requisitioned chipper and secure a sustained source of funding to maintain and replace chipper(s) as needed to continue and expand dry litter piggeries. **Potential Partners: ASCC Land Grant, NRCS, AS Department of Agriculture, AS-EPA**	
34 **M**	**R 1.3**	**Outreach Programs on Importance of Land Use Permits/Storm Water Management:** Public and community outreach on the importance of obtaining proper land use permits and applying best storm water management should be enhanced and extended. **Potential Partners: Le Tausagi, Land-based Sources of Pollution working group, Office of Samoan Affairs, PNRS, CRAG, NOAA Fisheries PIRO**	

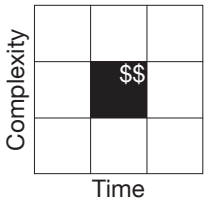
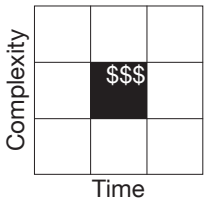
Recommendations to Support Goal 2:
Improve coastal watershed quality and enhance coral reef health by reducing land-based sources of pollution

Page # / Priority		Capacity Building Strategy / Recommendation / Potential Partners	Complexity / Time / Cost
53 **M**	**R 12**	**Phosphate Ban:** The phosphate detergent ban (Executive Order, "EO") contained errors in its wording (using the word "phosphorous" rather than "phosphate") causing problems with its legal enforceability. The wording should be fixed and the EO should be elevated into law. If the ban is formally codified in law, Customs Officers should be trained to recognize and interdict non-complying detergents at the port of entry. **(See Recommendation 14.2 Develop List of Training Modules Needed).** **Potential Partners: CRAG, Climate Change LAS working group, Customs, AS-EPA, PNRS**	
53 **L**	**R 13**	**Increase Trained Engineers in American Samoa**: Watershed health and the quality of earth change projects is being negatively impacted by a lack of trained engineers in the territory. It is widely recognized that there is a lack of qualified engineers in American Samoa and that engineers are particularly difficult to retain within the system, resulting in inadequate and substandard design on many projects, leading to poor control of stormwater, wastewater, sediments and nutrients reaching the coastal ocean and coral reefs. This is a difficult and intractable problem to solve. A potential process to increase the availability of qualified engineers to the territory could be to link with an off-island university and a third party funder to create a scholarship program that trains engineers in the appropriate skill set in exchange for a pledge to work for at least two years in American Samoa on natural resource conservation issues. Hiring and retaining staff with the appropriate technical skills is problematic across the coral reef management system, and general recommendations to address this issue are presented elsewhere. **Potential Partners: AS-EPA, PNRS, CRAG, University of Hawaii**	

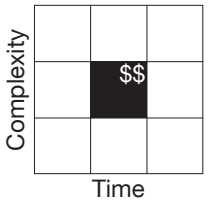
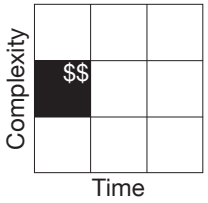
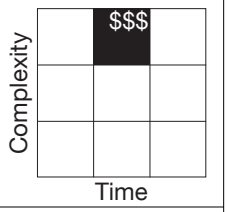
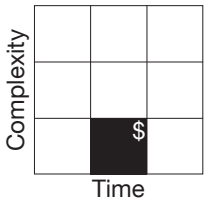
Recommendations to Support Goals 1 and 2:
Maintain and improve the status of fish stocks and reduce land-based sources of pollution

Page # / Priority		Capacity Building Strategy / Recommendation / Potential Partners	Complexity / Time / Cost
34 **H**	**R 1.2**	**Further Grow and Support the Le Tausagi Model**: Le Tausagi is a successful model for disseminating coral and natural resource information and should be grown and supported. **Potential Partners: Samoan Affairs, CRAG, All four LAS working groups, Media, NOAA Fisheries PIRO**	
41 **H**	**R 4.6**	**Coral Reef Status Report and Presentation**: Every one to two years create and present a holistic data report on the status of American Samoa coral reefs to the Governor, legislature, the Office of Samoan Affairs, and communities. Le Tausagi can be used to help craft and present this report **(see R 1.2 Further Grow and Support the Le Tausagi Model).** This sort of "report out" could be grown into a highly public, ceremonial presentation that involves and engages communities, school children, civic groups, etc. and becomes an important part of the larger effort to promote and publicize coral reef conservation among elected officials, community leaders and the general public. **Potential Partners: CRAG, NOAA Fisheries PIRO, Le Tausagi, All four LAS groups**	

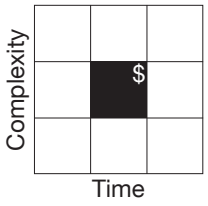
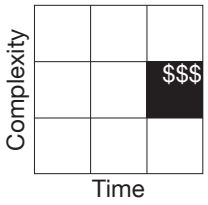
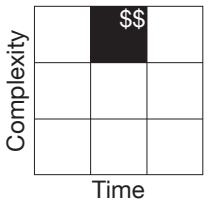
Recommendations to Support Goals 1 and 2:
Maintain and improve the status of fish stocks and reduce land-based sources of pollution

Page # / Priority	Capacity Building Strategy / Recommendation / Potential Partners		Complexity / Time / Cost
48 **H**	**R 9.1**	**Expert Monitoring, Surveillance and Enforcement (MSE) Consultation:** While there is a strong sense that the capacity to adequately enforce both aquatic and terrestrial based regulations is inadequate, there remains much uncertainty regarding exact roles, responsibilities, underlying mandates, etc. across the enforcement infrastructure. There is clearly a complex patchwork of enforcement responsibilities dispersed across multiple agencies with different enforcement officers possessing different mandates and varying knowledge of a complex suite of regulations that span terrestrial and aquatic coverage areas. A key first step in improving enforcement overall, and improving its efficiency, is engaging experts in monitoring, surveillance and enforcement (such as NOAA Office of Law Enforcement) to compile a comprehensive accounting of what enforcement personnel exists in what agencies, what their exact responsibilities are and what specific authorities and laws establish their legal mandate. This accounting should incorporate an analysis of OLE's Joint Enforcement Agreement with DPNR, including what services DMWR receives from OLE, how their partnership works, when, how often and how frequently trainings happen, who runs them, who can participate, and any limitations on subject matter. Agencies/programs with enforcement responsibilities include: • DOC/CZM and PNRS • DMWR • ASEPA • Marine Patrol Unit of Office of Public Safety This effort can serve as a needs analysis and the basis for a more strategic approach to adding enforcement capacity in American Samoa. DMWR enforcement is understaffed (currently 8 officers, should be at least 10, as many as 15). Night time enforcement, including of the night time scuba fishing ban, is a recognized gap. Based on the result of the expert consultation, a source of sustainable funding should be pursued to staff an adequate compliment of officers to enforce terrestrial and marine regulations. (The current Sport Fish Restoration grant funding cannot be used for this need). **Potential Partners: NOAA OLE, DMWR, AS-EPA, DPA-Marine patrol, PNRS**	
49 **H**	**R 9.2**	**9.2 Create a Suite of Enforcement Training Modules and Match to Officer Needs:** Building on the analysis suggested in **R 9.1 above,** and in consultation with NOAA OLE, a targeted set of trainings should be developed to improve enforcement capacity and function. DMWR Enforcement officers would likely benefit from trainings on the following topics: "Enforcement 101" and creation of enforcement SOPs; Importance of environmental regulations; Why enforcement matters; Communicating enforcement regulations to the public; Interacting effectively with Mayors and village leaders/matai on enforcement matters; and Effectively presenting enforcement cases to the judiciary. To the degree possible, creating training modules and specific trainings that bring together officers from disparate agencies and programs can help to foster inter-agency collaboration and create synergies that can result in improved efficiency and exploration. **(See also Recommendation 14.1: Training Program).** The Federal Law Enforcement Training Center (FLETC www.fletc.gov) should be engaged as a potential source of financial support and training materials. NOAA OLE can give better guidance on how to access these services. **Potential Partners: NOAA OLE, DMWR, AS-EPA, DPA-Marine patrol, PNRS, PIMPAC, MPA villages, Office of Samoan Affairs**	

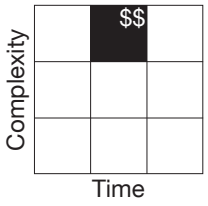
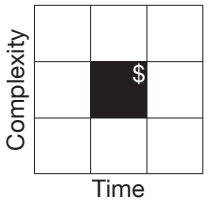
Recommendations to Support Goals 1 and 2:
Maintain and improve the status of fish stocks and reduce land-based sources of pollution

Page # / Priority	Capacity Building Strategy / Recommendation / Potential Partners		Complexity / Time / Cost
33 **M**	**R 1.1**	**Inform Judges, Legislators, Mayors, Fono, Community Leaders on Importance of Natural Resource Conservation**: Providing outreach and field experience to key decision makers to encourage an understanding of the cultural and economic importance of reefs and to motivate them to actively support coral reef conservation efforts is an identified need in the system and is currently included in two LAS's and the Le Tausagi strategic plan. **Potential Partners: Le Tausagi, All four LAS working groups, Samoan Affairs, CRAG, Fono, Governor's office, NOAA Fisheries PIRO**	
50 **M**	**R 9.5**	**Legal Review of Enforcement Regulations/Environmental Attorney**: Certain fisheries regulations lack clarity, causing problems when adjudicating fisheries cases. Subjecting relevant fisheries (and potentially EPA or CZM related regulations) to legal review and possible updating or re-drafting to enhance clarity could improve outcomes when pursuing environmental cases in court. This could be accomplished with internal capacity or via a contractor. The NOAA PIRO GC may be able to provide assistance through Joint Enforcement Agreement trainings. **Potential Partners: NOAA Fisheries PIRO, Le Tausagi, CRAG**	
35 **M**	**R 1.5**	**Build School Curriculum for Marine Science**: Encourage coordination between AS DOE and ASCC to create curricular elements that build literacy on coral reef and ocean science and conservation among K-12 students. **Potential Partners: CRAG, DMWR, Le Tausagi, NOAA Fisheries PIRO, PREL, Sea Grant, DOE, ASCC**	
54 **M**	**R 14.1**	**Assess Territory-Wide Training Needs**: The first step in developing a coordinated and effective training program for natural resource professionals in American Samoa is to carefully evaluate who needs to be trained in what and to develop appropriate long term training and technical support approaches that can meet the needs of local staff to carry out their jobs effectively. **Potential Partners: CRAG**	

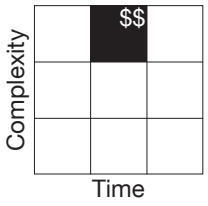
Recommendations to Support Goals 1 and 2:
Maintain and improve the status of fish stocks and reduce land-based sources of pollution

Page # / Priority	Capacity Building Strategy / Recommendation / Potential Partners		Complexity / Time / Cost
54 **M**	**R 14.2**	**Develop List of Training Modules Needed**: After completing **Recommendation 9.1 and Recommendation 14.1**, a list of specific training modules needed should be developed. Trainings and technical support needs identified during the capacity assessment process include: • "How to" for reef monitoring staff, including how to collect, analyze and communicate data; • "How to" for currently robust GIS program to build capacity to use GIS to better inform management decision making, and how to use GIS to better communicate science in lay-man's term; • "How to" for grant writing, administration, reporting, and project management for super-visors and managers; • "MPA 101": Rules and regulations, governance structure, benefits, etc. of different types of MPAs; • Coral reef ecology, coral bleaching response, coral ID, reef fish ID; • BMPs, piggery management, sediment and erosion control, quarry management practices; • Resilience, tsunami, earthquake, cyclone and emergency management response (Homeland Security or FEMA could be source of funding and materials); • "How to" for Community-based Fisheries Management Program deputies; and • How to communicate and operate effectively with villages and within the fono and matai system. This module could engage community leaders (e.g. clergy, fono representatives, women's groups, matai) that have been successful partners with territorial government agencies on LAS development and implementation (e.g. from Amouli or Faga'alu). • **Potential Partners: DMWR, AS-EPA, NOAA Fisheries PIRO, PNRS, CZMP, CRAG, Homeland Security, FEMA, PRIMO, Governor's office**	
35 **L**	**R 1.7**	**Social Marketing Campaign**: A focused social marketing campaign about the linkage be-tween coral health and the Samoan way of life that reinforces the interdependence between natural resource health and general social well-being should be pursued. **Potential Partners: Le Tausagi, All four LAS working groups, CRAG**	
49 **L**	**R 9.3**	**Target Judges and Legislators for Specific Trainings**: In addition to taking key judges, legislators and other decision makers out on field based "learning journeys," **(R 1.1 Inform Judges, Legislators, Mayors, Fono, Community Leaders on Importance of Natural Re-source Conservation)** to enhance their understanding and appreciation of the importance of marine and natural resource protection, these leaders would also benefit from targeted trainings on specific enforcement regulations and related matters. Similar to **R 9.2** above, creating trainings that bring together leaders and practitioners from disparate agencies and spheres of influence will en-hance collaboration and learning in the system. **(See also R 14.1: Training Program).** This could take the form of an Enforcement Round Table meeting where mangers, scientists, officers, prosecutors, judges and legislators can sit down together and discuss all their roles, responsibilities, challenges, loop holes, problems, successes and conduct a SWOT analysis. Initial outputs of such a collaboration could include reaching consensus on which types (i.e. terrestrial or fisheries) and which specific regulations are most poorly understood and how any further training should be tar-geted to produce the most impact. **Potential Partners: Le Tausagi, CRAG**	

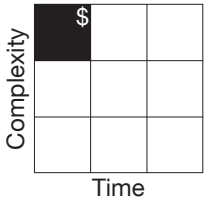
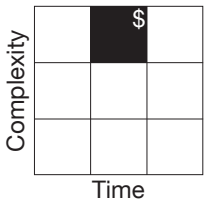
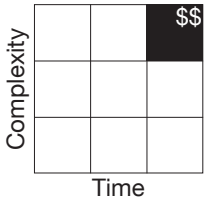
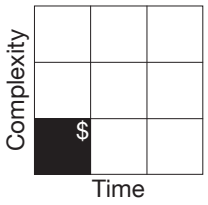
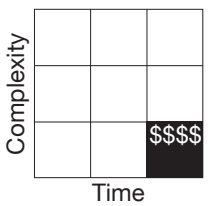
Recommendations to Support Goals 1 and 2:
Maintain and improve the status of fish stocks and reduce land-based sources of pollution

Page # / Priority	Capacity Building Strategy / Recommendation / Potential Partners		Complexity / Time / Cost
55 **L**	**R 14.3**	**Develop Specific Training Modules**: After a culled list of modules is finalized **(Recommendation 14.2)**, the specific modules need to be developed. Much of this material has been created in other places and can be adapted to fit the American Samoa context. Potential sources of training materials and modules are listed below. These sources will not necessarily have material directly relevant to the American Samoa context, but can provide a sense for the types of training materials available. • PIMPAC • NOAA Office of Law Enforcement • Center for Watershed Protection • Train-Sea-Coast (www.un.org/Depts/los/tsc_new/TSCindex.htm) • IW:Learn (iwlearn.net) • IUCN MPA Program (iucn.org/about/work/programmes/marine/marine_our_work/marine_mpas) Capacity will also need to be built to create training modules in the Samoan language. **Potential Partners: PIMPAC, CRAG, NOAA OLE, NOAA Fisheries, TNC, SPREP**	
55 **L**	**R 14.4**	**Match Modules to Staff Needing Training and Role Out Training Program**: Training should be executed in an efficient manner that, when relevant, brings together staff from different parts of the management system that creates synergies and opportunities for new collaborations, cross-pollination, and the development of new ideas. For example, trainings could be shared between DWMR enforcement officers and the Marine Patrol Unit of the Office of Public Safety. **Potential Partners: DMWR, DPS-Marine patrol, AS-EPA**	

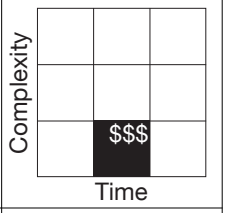
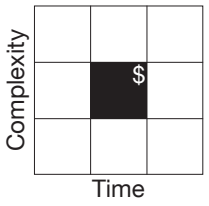
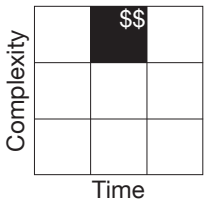
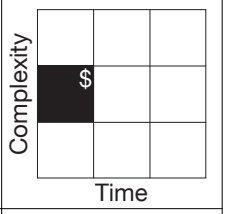
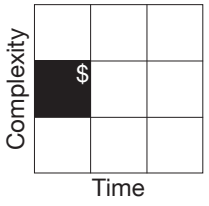
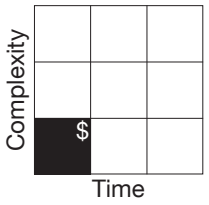
Recommendations to Improve MPA Function and Integration (not an American Samoa PSD recommendation)

Page # / Priority	Capacity Building Strategy / Recommendation / Potential Partners		Complexity / Time / Cost
42 **H**	**R 5.1**	**Align MPA Goals Within American Samoa**: The territory should continue to build on the energy created by the process leading to the expansion of the National Marine Sanctuary of American Samoa to work toward a true integrated MPA network in American Samoa. A potential path forward would be to convene a facilitated process, potentially organized around the objectives of the Fisheries LAS, to gather together representatives of all the territory's MPAs to discuss and help align goals among them. The National Marine Sanctuaries program is a potential source of funds to help align goals and build capacity within the territory for MPA actions over next 3-5 years. **Potential Partners: CRAG, DMWR, NOAA Sanctuary, NPS, Fisheries LAS working group, PIMPAC, NOAA Fisheries PIRO**	

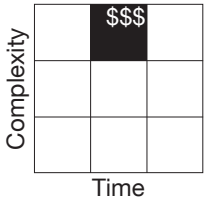
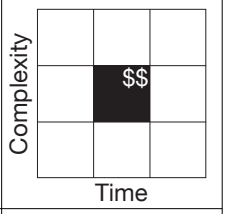
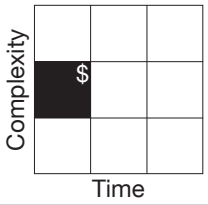
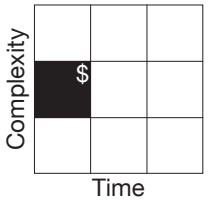
Recommendations to Support Goal 4:
Develop initiatives that encourage a communal "sense of guardianship" of the environment in American Samoa's communities (note this goal is not a Priority in the American Samoa PSD)

Page # / Priority	Capacity Building Strategy / Recommendation / Potential Partners		Complexity / Time / Cost
52 **H**	**R 10**	**Integrate Plans at the Village Level**: Cooperation and "buy-in" at the villages is enhanced by coordinating plans (e.g. MPA, Wetland, watershed, etc.) together at the scale of the village. This is primarily accomplished through Conservation Action Plans (CAPs) and the Participatory, Learning and Action (PLA) process, and these and other similar mechanisms should be encouraged and expanded. Without coordination, villages can be overwhelmed by multiple plans. **Potential Partners: CRAG, All four LAS groups, Le Tausagi, Office of Samoan Affairs, NOAA Fisheries PIRO**	
34 **H**	**R 1.4**	**Scholarships for Samoans to Complete Degrees Relevant to Marine Resource Management**: Seeking dedicated funding for long-term educational elements such as a scholarship for Samoan students that pursue marine science education could decrease staff turnover and increase long-term internal capacity. The creation of a Marine Science Laboratory in American Samoa, as has been proposed, could be an important element in developing interest and training of local residents in the marine sciences. **Potential Partners: DMWR, CRAG, Fisheries LAS working group, ASCC**	
46 **M**	**R 8.2**	**Encourage Samoan Applicants:** The America Samoan government should promote measures to increase the proportion of Samoans in technical, managerial and leadership natural resource positions. This is a long-term and complex issue that will require integrating strategies at many levels. Measure could include: • Encouraging Samoans currently employed in natural resource positions to visit schools and communities to tell their stories and communicate that such career options are available, interesting and important. • Creating job fairs popularizing natural resource positions, potentially with the assistance of currently employed Samoans as described above. • Carefully studying and documenting what strategies worked that led to Samoans obtaining the appropriate training, landing jobs in the natural resource field, and excelling in their jobs. Build on these successes to the degree possible. The goal of increasing the number of Samoans employed in natural resource fields can and should be carefully tracked and monitored. **Potential Partners: CRAG, ASCC, Le Tausagi, Sea Grant**	
35 **M**	**R 1.6**	**Build Capacity to Collect Lessons Learned in Promoting Stewardship at the Community Scale**: Strategies that have been proven to work, (such as the fautasi boat race), that recognize and respect that land use decisions are made at the family level, that empower families and communities to embrace stewardship, and create a sense of village pride in stewardship activities should be collected, documented and shared. **Potential Partners: Office of Samoan Affairs, CRAG, Le Tausagi, All four LAS groups, NOAA Fisheries PIRO**	
47 **L**	**R 8.3**	**Create New Human Relations Position to Increase Hiring and Retention of Samoan Job Applicants:** While outside of the strict purview of building capacity to manage coral reefs, if attracting, hiring and retaining Samoan applicants is deemed a high enough priority, the American Samoan government could investigate creating a full time human relations position dedicated to creating and coordinating programs to promote these goals, including those **ideas mentioned in R 8.2 above.** **Potential Partners: CRAG, Human Resources, DMWR**	

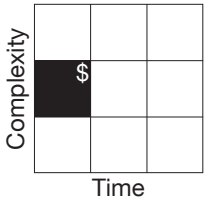
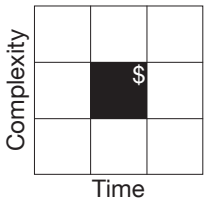
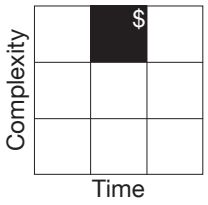
Recommendations to Support Goal 5:
Ensure collaborative management to effectively protect coral resources by focusing CRAG's efforts and attention on priority threats and actions (note this goal is not a Priority in the American Samoa PSD)

Page # / Priority	Capacity Building Strategy / Recommendation / Potential Partners		Complexity / Time / Cost
38 **H**	**R 2.6**	**Dedicated CRAG Financial Administrator**: CRAG should hire a Financial Administrator who serves as the point of contact, and is solely responsible for implementing all finance needs within CRAG and the CRI awards, including budgeting, tracking, and reporting. This staff member should be engaged throughout the CRAG process and participate in CRAG meetings, project development, and management cycles. **Potential Partners: CRAG members, LAS working groups**	
37 **H**	**R 2.3**	**Create Terms of Reference (TORs) for All CRAG Participants and Examine CRAG Roles**: After creating a set of documents detailing and clarifying CRAG purpose and process, clear, written Terms of Reference (TORs) should be created for all CRAG participants. Creating a TOR for the CRAG Chair would encourage the examination of ideas like moving the CRAG center of power from one agency (DOC) or having a non-voting member be the chair of CRAG (e.g. the NOAA Management Liaison or a representative from ASCC). **Potential Partners: CRAG members**	
37 **H**	**R 2.5**	**CRAG Data, Records and Project Management**: The CRAG website could be enhanced to be a repository of institutional memory. For example, the website could include an online database (non-public, with access restricted to appropriate staff) that allows projects (including LAS projects), existing awards and reports, procurement process status, grants expenditures to date and remaining balances, and CRAG initiatives to be easily tracked by managers, members, and project PIs. **(See R 4.4 Centralized Database)** **Potential Partners: CRAG members**	
37 **H**	**R 2.2**	**Clarify and Document CRAG Purpose and Create CRAG "Handbook":** There is a lack of a formalized, clear, and documented governance structure, defining CRAG and its code of conduct. A clear, written document that articulates how CRAG functions as a collaborative and identifies its purpose, decision-making process and protocols, meeting schedules, etc. should be developed and disseminated. **Potential Partners: CRAG members**	
36 **H**	**R 2.1**	**Timing of Coordinator Position**: The CRAG coordinator is a two-year position, and changes simultaneously with the CRI award, creating a loss of continuity of relationships and systems understanding. Adjusting the timing and funding for the changeover of the position that allows overlap between the existing coordinator and the new hire during an award cycle would help maintain continuity and reduce the loss of institutional memory associated with the current coordinator transition process. May require addressing issues of hiring processes and general bureaucratic function. **See R 7.1 Inform Key Leadership and R 7.2 Facilitated Intervention to Develop Solution Strategies.** **Potential Partners: CRAG members**	
38 **H**	**R 2.8**	**Continued Focus on Priority Sites**: Much capacity has been built from the transition of the Local Action Strategies at the scale of the jurisdiction to Management Plans that focus on priority sites. If CRAG chooses to build upon this positive trend, building upon pilot demonstrations that integrate across LAS themes, such as climate change, reducing LBSP, fisheries, MPAs, etc. at local sites such as Faga'alu is needed. Capacities to accomplish this are being developed currently and should be documented and strengthened. **(see also R 14.1: Training Programs)** **Potential Partners: CRAG, LAS working groups, Office of Samoan affairs**	

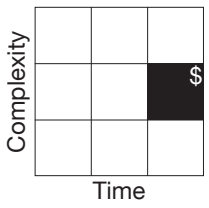
Recommendations to Support Goal 5:
Ensure collaborative management to effectively protect coral resources by focusing CRAG's efforts and attention on priority threats and actions (note this goal is not a Priority in the American Samoa PSD)

Page # / Priority	Capacity Building Strategy / Recommendation / Potential Partners		Complexity / Time / Cost
46 **H**	**R 8.1**	**Create Clear Guidance for Job Responsibilities to Improve Retention**: A key component of improving job retention and lowering turnover can be improving job preparedness, training, and morale. Tools to do this include creating written SOPs and job handbooks **(see also R 2.3 Create Terms of Reference (TORs) for All CRAG Participants and Examine CRAG Roles)**, creating information sharing programs, new employee mentoring programs, introductory training courses, distance learning opportunities and other strategies to close the gap between staff Knowledge Skills and Abilities (KSAs) and those needed to effectively fulfill their job duties. While low salaries can affect job retention and turnover, in many cases improving preparedness and performance can improve morale in ways that are more important than, or at least offset to a degree, salary concerns. **Potential Partners: CRAG members**	
37 **L**	**R 2.4**	**Other Measures to Enhance CRAG Independence and Equity**: If enhancing CRAG equity and independence is considered to be desirable, moving CRAG offices to an independent location discrete from DOC would serve to enhance this goal. **Potential Partners: CRAG members**	
38 **L**	**R 2.7**	**Encourage DOE Participation in CRAG**: DOE participation in CRAG should be encouraged. DOE need not be a formal CRAG agency, but could have a designated liaison that attends CRAG meetings and facilitates coordination. **(See also R 1.2: Further Grow and Support the Le Tausagi Model).** **Potential Partners: DOE, CRAG**	
43 **L**	**R 6.2**	**Employ Simple Tools to Enhance Integration**: Professionals who study how organizations work together recommend creating a scale clearly articulating different levels or degrees of working together and asking participants to rate where they think they are, and even where they wish they were, along that scale. It is important to note that degrees are not better or worse, just an honest reflection of the situation. Employing a scale such as the one below can help define and clarify working relationships and lead to fruitful discussions about any desired changes in the current relationships. 1. NETWORKING: Sharing information and ideas 2. COOPERATING: Helping distinct members accomplish their separate individual goals 3. COORDINATING: Working separately on shared goals 4. COLLABORATING: Working together toward a common goal but maintaining separate resources and responsibilities 5. PARTNERING: Shared goals, shared decisions and shared resources within a single entity These techniques could be valuable in assessing and investigating roles and responsibilities among CRAG member agencies – **see R 2.2 Clarify and Document CRAG Purpose and Create CRAG "Handbook" and R 2.3 Create Terms of Reference (TORs) for All CRAG Participants and Examine CRAG Roles** **Potential Partners: CRAG members**	

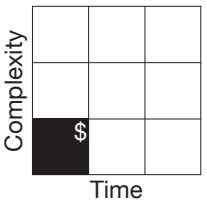
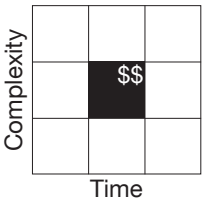
Recommendations to Support Goal 5:
Ensure collaborative management to effectively protect coral resources by focusing CRAG's efforts and attention on priority threats and actions (note this goal is not a Priority in the American Samoa PSD)

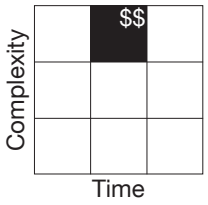
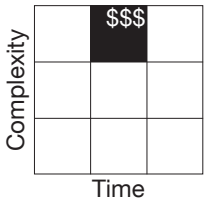
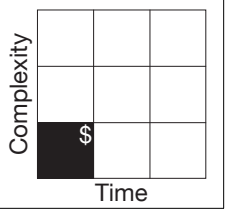
Page # / Priority	Capacity Building Strategy / Recommendation / Potential Partners		Complexity / Time / Cost
45 **L**	**R 7.1**	**Inform Key Leadership**: Conduct interviews and other investigations to detail and describe the primary challenges of financial administration (e.g. slow and cumbersome financial/ procurement process, slow hiring and staffing processes). Carefully document these challenges and then create a detailed briefing to be delivered to key leaders across territorial agencies with bureaucratic responsibilities that are causing inefficiencies in the coral reef management system. **Potential Partners: CRAG members**	
46 **L**	**R 7.2**	**Facilitated Intervention to Develop Solution Strategies**: Building on the description of specific bureaucratic and staffing problems identified and detailed in the investigation conducted under **Recommendation 7.1, above**, the identified issues should be explored and discussed in a facilitated, cross-level forum to help improve transparency, gain a shared understanding of how this issue effects program managers, and develop a shared commitment to update and amend processes and procedures, including the development of unambiguous standard operating procedures (SOPs) and a process for promptly removing persistent bureaucratic barriers and resolving grievances. Such a facilitated, targeted and limited training, bringing together program managers, financial staff and high level leaders, could yield very real and tangible benefits that will improve coral program success and lead to improved morale and performance across the system. **Potential Partners: CRAG members**	
43 **L**	**R 6.1**	**Planning and Budgeting Schedule**: There is an opportunity to improve integration among the American Samoa Coastal Management Program (ASCMP) components (PNRS, Wetlands, GIS, Ocean Resource Planning), which are the primary recipients of US Coastal Zone Management (CZM) funds and the DOC and CRAG member agencies, which are the recipients of NOAA CRCP funding. If there is a desire to improve this integration, the two groups – CRAG and ASCMP – should conduct planning and budgeting on a common schedule. CRCP management liaison can be an important facilitator of this process. **Potential Partners: PNRS, CRAG, ASCMP, NOAA CRCP, US CZM**	

Recommendations to Support Goal 7:
Support and foster sharing and learning between the two Samoas for environmental management (note this goal is not a Priority in the American Samoa PSD)

Page # / Priority	Capacity Building Strategy / Recommendation / Potential Partners		Complexity / Time / Cost
42 **H**	**R 5.2**	**Further Develop the "Two Samoas Initiative"**: Build on the recent funding of a coordinator for the Two Samoas Initiative to further develop and integrate an MPA network, using the Two Samoas Initiative annual meeting to discuss network implications, progress, lessons learned and opportunities for collaboration. Identify a key partner (e.g. the Secretariat of the Pacific Regional Environment Programme (SPREP)) to facilitate and host the Two Samoas Initiative and guide capacity building efforts: • Facilitate consultations with both parties; • Establish ideal consultation mechanisms; • Commission capacity/needs assessment for building the Two Samoas Initiative; • Develop capacity building program; and • Monitor and evaluate progress. **Potential Partners: CRAG, LAS working groups, PIMPAC, NOAA Fisheries PIRO, SPREP, Samoa Fisheries, MNRE**	

Recommendations to Improve Scientific Data Collection and Alignment with Management Needs (not an American Samoa PSD recommendation)

Page # / Priority	Capacity Building Strategy / Recommendation / Potential Partners		Complexity / Time / Cost
40 **H**	**R 4.1**	**Compile Comprehensive List of Monitoring Programs**: Compile a comprehensive list of all federal and territorial monitoring programs that collect coral reef and other relevant natural resource data in the jurisdiction. Program features to be assessed should include: • Is the data collected directly relevant to increasing the capacity to adequately manage coral reefs? • Is data collected being adequately analyzed and disseminated? • Are there up to date written data collection and QA/QC protocols? • Is data stored in a centralized and readily accessible location? • Are there other barriers to collecting high quality monitoring data? **Potential Partners: DMWR, CRAG, NOAA Fisheries PIRO & PIFSC**	
40 **M**	**R 4.2**	**Identify Practical Capacity Gaps**: After compiling and assessing existing monitoring programs, identify practical gaps in generating useful data to inform specific management actions, including: • Staffing/Staff time • Resources • Capacity and ability to analyze and disseminate data • Equipment and supplies (Identified gap to be closed: Certain nutrient analysis reagents are being deemed "hazardous" and are not being allowed into the territory. Coordinate with the Coast Guard, USEPA and NPS to allow entry of these reagents). **Potential Partners: NPS, Coast Guard, USEPA, DMWR, CRAG**	

Recommendations to Improve Scientific Data Collection and Alignment with Management Needs (not an American Samoa PSD recommendation)			
Page # / Priority	**Capacity Building Strategy / Recommendation / Potential Partners**		**Complexity / Time / Cost**
40 **M**	**R 4.3**	**Carefully Manage Territory-wide Monitoring**: After completing the careful monitoring capacity assessment detailed in **R 4.1 and 4.2 above**, create an integrated and coordinated monitoring plan focused on funding only those programs that collect data demonstrably useful to improving coral reef management. This plan should reduce duplication and overlap, and collect only data that is relevant and useful to management, and most critically, remove financial support from monitoring programs that collect data but do not consistently analyze and disseminate the data in a clear, publicly available and useful form. **Potential Partners: CRAG, NPS, DMWR, NOAA**	
41 **M**	**R 4.4**	**Promote the Use of Territory-wide Centralized Data Storage**: Capacity should be built to streamline and centralize data storage to improve access and safe back up of existing data among coral reef practitioners, including: • DMWR monitoring data • Land use permit cases • DOC grants programs files (see Recommendation 2.5 CRAG Data, Records and Project Management) **Potential Partners: CRAG, NOAA, DMWR, DOC, AS-EPA**	
41 **L**	**R 4.5**	**Investigate Novel Partnerships for Collecting Data**: American Samoa could be very well situated to capitalize on third party, NGO or private enterprise based monitoring that uses volunteers that pay to participate in activities such as coral reef, reef fish, and water quality monitoring. **Potential Partners: CRAG members**	

1.0 Introduction

1.1 Purpose and Objectives

For over ten years, partners within the NOAA Coral Reef Conservation Program (CRCP) and the US-flagged States and Territories with coral reefs (hereafter jurisdictions) have expressed a major concern over lack of capacity to effectively manage coral reefs in the jurisdictions. Through these discussions, and an external review process, CRCP decided to support a capacity assessment process to better understand specific issues, needs, and gaps within and across all jurisdictions to help better support decision making to build coral reef management capacity. However, the first question remained "Capacity to do what specifically?" To answer this question, CRCP and the jurisdictions completed a series of steps to define key threats to reefs and prioritize what needs to be done to manage and conserve coral reefs and show measured results at the national and jurisdictional levels. The results of these processes are described in the NOAA CRCP National Goals and Objectives document and the Coral Reef Management Priority documents (hereafter priority setting documents or PSD) for each of the seven jurisdictions with coral reefs (American Samoa, the Commonwealth of the Northern Mariana Islands, Florida, Guam, Hawai`i, Puerto Rico, and the US Virgin Islands). Upon completing these plans in 2010, CRCP has decided to now follow-up on the priority setting process to assess the capacity of the jurisdictions to implement these goals and objectives and has selected a partnership consultant team led by SustainaMetrix.

While this capacity assessment process was based on the capacity to implement toward the Priority Goals and Objectives and Priority Sites as set forth in the priority setting documents, the context of coral reef management is dynamic and adaptations to the priorities have already been made and priorities will continue to evolve. Nevertheless, the priority setting document process remains the lens through which the capacity assessment is directed since NOAA uses these documents to prioritize financial and technical support through cooperative agreements and to some extent the jurisdictions use them to set financial priorities and budgets.

This document is the result of the application of an approved methodological process described in more detail in Section Two. The focus is on the capacity to implement the coral reef management priorities with respect to:

- Institutional and governance frameworks (e.g. legal framework/mandates and enforcement, political will, etc.);
- Capabilities in local strategic planning (i.e. marine, coastal and watershed spatial planning), management, enforcement, and evaluation;
- Staff recruitment and retention mechanisms;
- Staff leadership, training, and development needs;
- Technical assistance, information and data needs, equipment, and related concerns; and

- Coordination among agencies and partners/high quality collaboration (e.g. data sharing, turf issues, conflict resolution)

This assessment is based on common language that we are using across the seven jurisdictions and a glossary of terms is provided in Appendix A. The primary focus is at the scale of American Samoa territorial government programs, which are mandated to manage local coral reefs. This primarily includes the local agencies within the Coral Reef Advisory Group: the American Samoa Department of Commerce (including the Coastal Zone Management Program (CZMP)), the Department of Marine and Wildlife Resources (DMWR), the American Samoa Environmental Protection Agency (ASEPA), the National Park of American Samoa (NPAS), and the American Samoa Community College (ASCC). Other agencies and organizations that work in close association with territorial natural resource agencies and were an integral part of the capacity assessment discussions are the Fagatele National Marine Sanctuary (FBNMS); NOAA National Marine Fisheries Service (NMFS), US Department of Agriculture, the National Fish and Wildlife Foundation (NFWF), the American Samoa Department of Education (DOE) and the Office of Samoan Affairs (OSA). While there is overlap with other programs not mentioned here, prior to beginning the substantive work of each capacity assessment, we developed an operational consensus on players that are considered "in" the assessment, and those that are tangential to it.

1.2 Audience for the Report

As stated in the "National Goals and Objectives", the CRCP has pledged to shift away from managing individual resources to taking a more integrated ecosystem approach. The ecosystem approach recognizes that environmental issues cannot be addressed separately from the social, economic, political, and governance issues of the associated human population. It calls on practitioners to identify and promote changes in human behavior that are required to restore and sustain the desired qualities of ecosystems (UNEP/GPA 2006). In consideration, the audience for this report is for both the federal management agencies that are in a position to support capacity building efforts in American Samoa and the people in American Samoa who are contributing to the management of coral reefs. This includes agencies within CRAG and other territorial government partners, federal agencies present in American Samoa, as well as partners such as DOE and Le Tausagi, the Coalition Of Reef Lovers (CORL), members of civil society, market forces, philanthropy, etc., and others interested in building capacity to manage coral reefs (e.g. the Pacific Islands Managed and Protected Areas Community (PIMPAC)). The report is also intended for those involved in field operations, management, and policy/decision making regarding issues of coral reef management in American Samoa.

Samoa Flying Fox. Photo Credit: SustainaMetrix

2.0 Methods for Assessing Capacity for Coral Reef Management in American Samoa

A gorgonian seafan in outer Pago Pago Harbor. Photo Credit: Ben Carroll

The findings in this report are the result of a detailed process of inquiry into the coral reef management system in American Samoa that began in November 2011, with a detailed document review and discussions with key NOAA personnel. The assessment continued with in-depth telephone interviews, email correspondence, and extensive in-person interviews and focus groups conducted during a site visit in April 2012 with a wide range of stakeholders throughout the American Samoa reef management system. Interviews, including both new contacts and follow-ups with subjects interviewed previously either in person or by phone, continued after our return from the territory. (See Appendix B). The methods used are detailed in our methods document, "Coral Reef Management Capacity Assessment Methodology," and are also summarized, briefly, in the remainder of this section.

2.1 J-CAT Process

As part of the process of inquiry into capacity needs, we convened a small standing committee of "key informants" with in-depth knowledge and deep personal involvement in coral reef management in American Samoa that we dubbed the Jurisdictional Capacity Assessment Team, or "J-CAT." We held six meetings with this group, either by conference call or in person, between February and July 2012 including one during our April 2012 site visit. We collaborated with J-CAT members during scheduled meetings, as well as on an ad hoc basis, to:

- Share available information at key points in the capacity assessment process;
- Create a shared communication strategy about the capacity assessment process;
- Customize the methods based on local context;
- Coordinate an efficient process of data collection;
- Provide input to assist in prioritizing capacity building needs;
- Analyze and summarize results and recommendations; and,
- Make the overall process as useful as possible.

Members of the American Samoa J-CAT team were committed to providing on-going insights into the assessment process including prioritizing case studies and current activities to be used to illuminate capacity issues, providing contact names of on-site interviewees, and coordinating with respective agency representatives to ensure participation of all key players. This document was developed and carefully reviewed in consultation with the American Samoa J-CAT.

2.2 Aligning With Priority Goals and Priority Sites

The American Samoa PSD lays out a set of clear, strategic management priorities, organized into goal statements, with specific objectives listed under each goal. It also identifies two "high priority geographic areas to apply these goals and objectives." The PSD strongly guided our initial approach to the capacity assessment, essentially framing the assessment in terms of understanding the capacity present in the system to accomplish the goals and objectives detailed in it.

From this starting point, we adaptively deployed a set of methodological tools aimed at building our understanding of the system and illuminating current capacity gaps, as well as persistent barriers to building capacity (hereafter referred to as "gaps and barriers"), as they related to realizing the goals and objectives in the PSD. An early step in this process was to review existing strategic plans and site based management plans that contained strategic actions or projects within. These documents primarily consisted of the four most recent drafts of Local Action Strategies (Fisheries Management, Land-Based Sources of Pollution, Climate Change, and Population Pressure) and site-based plans including the Faga'alu Watershed Management and Conservation Action Plan, the Climate Resiliency Responses For Amouli Village, American Samoa (2012-2013), and Marine Protected Area plans including the American Samoa Marine Protected Area Network Strategy (2007) and the Marine Protected Area Program Master Plan (2008). From these plans we developed a detailed matrix, cross-referencing the extensive lists of projects proposed in the plans with the appropriate Goal and Objective in the PSD. It quickly became apparent that the number of proposed projects was so vast that we needed to cull the list to a more manageable number, prior to investigating the capacity present to implement each.

2.3 Case Studies and Current Activities

To develop a list of feasible projects and initiatives that could be used to illuminate capacity gaps and issues, a process was used to determine a set of "case studies" and "current activities."

"Case Studies" were used to take advantage of long-term or historical coral management experience to better understand capacity strengths, challenges, gaps, and enabling conditions of American Samoa. The case studies were not aimed to evaluate past or current efforts. However, they provided the foundation for the development of a "local capacity story" in the jurisdiction and highlighted strengths to build on, and persistent barriers that need to be addressed to effectively build capacity to conserve coral reefs. In addition to the long-term/historical experience of larger programs and initiatives (i.e. Case Studies), the assessment explored more specific, smaller scale "Current Activities", drawn from existing plans and programs, to understand more immediate capacity strengths, challenges, gaps, and enabling conditions for existing efforts that are a priority for the jurisdiction.

We worked closely with the J-CAT to rank this list of case studies and current activities, based primarily on the criterion of the utility of each project to illuminate immediate gaps and persistent barriers in the system (rather than the success or failure of the project, its importance, state of completeness, etc.). Based on this ranking we selected three ongoing coral reef management initiatives to investigate as detailed case studies and 11 more discrete and current efforts or projects to investigate as "current activities."

After arriving at the culled list, we developed a list of key contacts associated with each, and developed a plan to interview each contact to build our understanding of how the project fits into the larger coral reef management system in the territory and how it could illuminate capacity gaps and persistent barriers as well as successes in building capacity and managing coral resources. The case studies and current activities became a primary line of inquiry in most of our interviews and provided a framework by which discussions could evolve to cover broader capacity issues. We prepared detailed qualitative summaries of each interview, and collated them in several ways, including gap and barrier "issue themes" as well as groups of related potential short-mid term solution strategies, long term capacity building approaches, and existing success stories. A complete list of the final case studies and current activities is presented in Tables 1 and 2, below.

Table 1: Current Activities

Local Action Strategy	Current Activity
American Samoa Coral Reef Fishery Management: A Local Action Strategy 2009-2014	**Objective 2.3:** To promote and facilitate the development of a network of no-take Marine Protected Areas (MPAs) to assist the territory in efforts to meet the 20% goal, in addition to continuing the development and incorporation of other MPAs into a wider network to ensure the long-term health and sustainability of the region's coral reefs.
	Objective 2.4: Update/strengthen fishing regulations to include seasonal takes, size limits, catch limits, and prohibit take of low abundance large species such as humphead wrasse, bumphead parrotfish, and all sharks.
	Objective 2.5: Improve enforcement of fishing regulations.
American Samoa Local Action Strategy Focus Area: Land Based Sources of Pollution	**Action/Project 3.1.e:** Reduce nutrient loading by enforcement of High Phosphate Detergent Ban.
	Action/Project 3.1.f: Provide support to the Land Use Permit (LUP) and Project Notification and Review System (PNRS).
	Action/Project 1.2.h: Reduce sediment load by developing good sediment control construction practice.
	Action/Project 1.2.d: Reduce nutrient loading by bringing piggeries in the territory into ASEPA compliance.
Site Based Plans	**Climate Resiliency Responses For Amouli Village, American Samoa (2012-2013)** **Flooding Objective 2:** By 2012, Amouli to work collaboratively with ASCC Land grant and USDA Soil Conservation in actively planting trees on identified unstabilized stream banks and coastal areas.
	Faga'alu Watershed Management and Conservation Action Plan **Objective 5:** By 2012, Faga'alu village has established and adopted storm water regulations consistent with the American Samoa Water and Erosion Management Plan.
Outreach and Education Related	**Le Tausagi Outreach Efforts.**
	Nu'uuli Participatory, Learning and Action (PLA) Watershed Management Project – Community Stewardship.

Table 2: Case Studies	
Case Study	Title
1	Implementation of Coral Reef Initiative (CRI) and Annual Grant Award
2	Land-Based Pollution Local Action Strategy Plan (round one)
3	American Samoa Territorial MPA Initiative – including Marine Protected Area Strategy Plan (2007) and MPA Program Master Plan (Oram, 2008)

2.4 Timeline for Coral Reef Management in American Samoa

We also developed a detailed timeline of key events affecting coral reefs in American Samoa, and their management, from 1900 to the present. This timeline builds off of the work prepared by Dr. Peter Craig in the Natural History Guide to American Samoa (Craig 2002). It was intended to be more inclusive and features natural events such as tsunamis and bleaching events, as well as key governance milestones, from general things like the establishment of American Samoa as a US territory, to specific acts, laws and rulings that directly affect coral management. We printed out, on a long sheet of paper (~8 feet), a physical timeline and brought it with us to meetings during the site visit for review and input. Interviewees expressed interest in both sharing information to further build the timeline, as well as in seeing this information documented in one place. All were encouraged to "grab a Sharpie" and add new events. With strong input, the timeline became far more detailed and complete during the course of our visit and afterwards via email (see Appendix C for a tabular representation of the timeline, including these additions). While the timeline was quite useful for our process, we believe (and hope) the information will be far more valuable to all involved in coral reef management as a narrative and learning tool that summarizes the evolution, adaptation and response to coral reef ecosystem change in American Samoa and to help make the case that a commitment to building capacity is needed into the future to keep the momentum strong.

The final timeline was based upon a rich documentation of interviews and anecdotes as well as historical information published across disciplines by lead authors investigating the system from perspectives in social science, humanities and natural science who focused research on American Samoa.

2.5 Site Visit and In-person Interviews

The SustainaMetrix consultant team visited American Samoa between April 22 and April 29, 2012. During this visit the team engaged in a series of detailed interviews and focus groups, aimed at:

- exploring the case studies and current activities and capacity issues relating to them (and the broader natural resource management system) with key actors involved in it;
- seeing the relevant physical locations and assets (e.g. offices, equipment, field stations, labs, etc.) available to the coral reef management system;
- further developing the timeline;

- seeing and experiencing first hand the natural and built features of the American Samoan environment (including towns, villages, topography, agriculture, industry, ports, reefs, etc.); and
- reviewing, discussing and integrating this information with the J-CAT in an in-person meeting held on April 29, 2012.

2.6 Data Analysis and Report Out

Our investigation of current activities and case studies did yield specific, and often quite detailed information about gaps and barriers to successful implementation of the projects, but are not presented here in a project by project review, as that would be both tedious and would not illuminate the bigger picture. The findings presented here, rather, represent a more comprehensive analysis and synthesis of information that has been triangulated from a multitude of sources. In general terms, the analysis of issues, along with short and longer-term strategies that are recommended to address these issues, are informed, in roughly equal measure, by:

- A review of dozens of documents relevant to the system;
- Over 40 in-depth interviews with key actors in the system;
- Development of the timeline, case studies and current activities as defined above,
- Our discussions with, and feedback from, the J-CAT;
- Our immersion in and contributions to the professional literature of coastal governance, capacity assessment, organizational behavior and other related disciplines; and
- Our professional judgment, informed by similar assessments in locations around the world.

A cruise ship disembarks in Pago Pago Harbor. Photo Credit: SustainaMetrix

3.0 Context For Managing Coral Reefs in American Samoa

3.1 The Territory of American Samoa

American Samoa is an unincorporated United States Territory located approximately 4,200 kilometers south of Hawai`i. It is the most southern of all U.S. territories and is the only U.S. jurisdiction in the South Pacific. American Samoa has a land area of 199 square kilometers and a total population of 68,420, as of the 2010 census. Population has been growing rapidly recently, more than tripling since 1960 and increasing by about 12,000 people per decade since 1980. There is some disagreement in published estimates whether or not population growth in the Territory is slowing, or may have even peaked. The US Census shows a net drop of 1,772 (3.1%) in population from 57,291 in 2000 to 55,519 in 2010 (http://2010.census.gov/news/releases/operations/cb11-cn177.html). Conversely, the World Bank estimates the American Samoan population at 68,420 in 2010 and still growing steadily from their estimate of 57,625 in 2010 (http://data.worldbank.org/country/american-samoa). One (possibly overly aggressive) estimate puts the expected population in 2015 at over 100,000 (Woods and Poole Economics, Inc. 2007 as cited in Crossett, Clement, and Rohmann 2008). The true direction of population growth in American Samoa appears unresolved and remains a very important issue for the territory to determine.

Current population density for the territory stands at about 354 people/km^2 and 460/km^2 on Tutuila, and over 1,000/km^2 within the flatter, developable coastal zone. For comparison, population density on O`ahu (the densest Hawaiian island) is around 600/km^2 and around 230/km^2 for the state of Maryland. The median household income of American Samoa was $17,018 in 2000 (compared with a US median of $49,445) and 61% of the population is below the poverty line (Crossett, Clement, and Rohmann. 2008). American Samoa possesses limited local resources and opportunities for economic growth, self-sustainability and economic security. The Territory is considered a "container economy" with heavy reliance on external sources for primary resources and lacks diverse economic opportunities. The government sector and tuna canneries are the top employers, employing well over half of all employed Samoans. Unemployment is chronically high, averaging well over 20% in recent years. In 2009, one of the territory's two canneries closed, decreasing activity within the fishing industry and significantly affecting the economy. There remains a predominance of low wage jobs in American Samoa, and the employment outlook is expected to remain problematic. These conditions appear to be leading to an increase in social problems such as illegal drug use in the territory.

Despite its small size, American Samoa is an ecological treasure. The Territory consists of five volcanic islands and two atolls, all of which are surrounded by fringing coral reefs. Coral reefs in the Territory exhibit high biodiversity, with more than 2,700 species found so far. More than 250 species of coral are known, compared to about 65 in Hawaii. However, continued threats from development, pollution, climate change, overfishing, and more, challenge the future state of these resources. Ameri-

can Samoa demographics, economy and environmental assets are well summarized by Crossett, Clement, and Rohmann (2008).

3.2 Cycles of Adaptive Management

The timeline in Appendix C was prepared to illustrate a history of actions that related to coral reef management in American Samoa. It is important to note that capacity has been built to conduct coastal zone management and coral reef management over a relatively recent time frame. The timeline does not include three thousand years of traditional coral reef management practices, yet this strong aspect of Samoan tradition is an essential aspect upon which capacity must be built. A brief analysis of what could be described as three distinct eras of marine/coastal management in American Samoa is presented simply as context for the enclosed set of recommendations.

Era of Traditional Management and Governance: 3000 years before present to 1900

For over three thousand years, traditional systems have been in place that have included management of fisheries and actions in the coastal zone. While much remains unknown about how the systems have changed over time, recent work from Jones et al. (2012) summarizes historic fishing methods in American Samoa. The work describes in detail the cultural practices and social structures that were in place that indicated a very high connection between community food security and management of coastal and marine systems. Jones et al. note, *while individual and family fishing occurred on an almost daily basis, villages also organized communal drives for certain fish species, and men sometimes fished outside the lagoons under the leadership of a fishing expert, a tautai. There were rules that certain fish were to be given to the chiefs, and restrictions were occasionally made regarding the lagoon and its resources. All of these practices were, in essence, under the control of the village and its decision-making body, the village fono*. The village structure was the central organizing management unit in Samoan society system with the smallest unit being the extended family (aiga), headed by a dominant male member (matai), who converged to form a group of village leaders (fono) (Mead 1928). The fono then led the village and effectively moderated the activities of the village members by coordinating harvests and assigning tasks. This system effectively maintained what may be described as dynamic equilibrium between the social and natural system and is still present today.

Era of Transition from Traditional Ecosystem Governance 1900 to 1980

At the turn of the Twentieth Century, American Samoa became a US territory that began a transition from heavy reliance on local marine resources for food security toward linkages to a more globalized economy. During World War II, the U.S. took advantage of the geographic position of American Samoa for a military staging ground for attacks against the Japanese. Infrastructure of roads, sanitation and hospitals were rapidly improved, bringing with them infusions of American culture. In the years after the war, American Samoa became more linked to a growing global economy and the port became active receiving regular shipments of food and resources from around the world. Eating habits and preferences changed over time that increased demand for food shipped in, reflecting a shift from traditional culture to a more globalized culture (Keighley et al. 2006). Following global trends, American Samoa also began to face a number of public health issues, including obesity, diabetes, and heart dis-

ease among others. Traditional management of marine resources that included taboos regarding harvest of certain marine species became more relaxed as Christianity replaced more traditional forms of worship. Dual flows of in-island and out-island migration marked this era with a general increase in population and development pressure and decrease in management of coastal and marine resources.

Era of Increased Federal and Territorial Government Directed Coastal and Marine Management: 1980 to Present

With the advent of a wide range of environmental laws in the US between 1960-1980, federal funding was allocated to American Samoa to develop a refuge at Rose Atoll in 1976, Coastal Zone Management Program in 1980, the Marine Sanctuary on Fagatele Bay in 1986 and the National Park of American Samoa in 1988. In 10 short years, three federal agencies had a presence in one way or another on the island. As identified in the timeline, a range of activities occurred and capacities to manage coastal and marine systems have been built over the past thirty plus years. Beginning largely through the practice of coastal zone management, management capacity was increased, although issues of staff turnover, grants management, differential power dynamics, identifying local candidates to fill positions, data to inform management decisions etc. were identified as barriers. The formally constituted management structures also led to tension with the long-standing traditional management structures that still dominated Samoan culture. Issues associated with land-use, erosion, loss of coastal habitats, land-based sources of pollution and fisheries were becoming more important to leaders in the territorial government and members of the community and were expressed as increasing demand for improved management of the territory's natural resources. While far from perfect, over a relatively short time-period American Samoa has been developing a responsive, iterative management system that is beginning to link traditional systems with contemporary governance structures. The coral reef conservation initiative that began roughly in 1993 (with the removal of nine long-liners grounded on a reef in Pago Pago harbor) afforded the island an opportunity to participate on a national/global stage that underscored the imperative of coral reef management beyond just coastal zone management, and the immediacy and capacity required to manage reef ecosystems. For more detail on the four distinct generations of coral reef management see Appendix D. The fourth, and most current generation, is marked by the development of the American Samoa Priority Setting Document (that is the basis for this capacity assessment) and a strategic move to define priority sites for coral reef management that are tied to NOAA cooperative grant requests and other activities. The current generation marks a "quantum leap" into more focused strategic planning, multi-agency involvement, and goal setting and provides a basis upon which the recommendations contained in this report are positioned. There remains however, a highly dynamic context within which coral reef management occurs that will likely demand a continued focus on capacity building. These and other issues are presented as current day context.

Capacity assessment participants review the American Samoa Timeline. Photo Credit: SustainaMetrix

4.0 Analysis of Issues Affecting Coral Reef Management Capacity and Capacity Building Recommendations

4.1 Principal Issues Affecting the Capacity to Manage Coral Reefs in American Samoa

Fatima Sauafea-Leau at a community meeting in Faga'alu. Photo Credit: SustainaMetrix

After review of dozens of background documents, including the PSD, six meetings with the J-CAT, and over 40 in depth, semi-structured interviews exploring the case studies and current activities, as well as other topics, a distinct set of issues that enhance and constrain capacity to manage coral reefs in the territory were identified. The issue analysis is based on an appreciation of a legacy of traditional marine management capacity that remains present and many recent accomplishments in building capacity within administrative structures that have only been in place for roughly 30 years. In this section, we describe how these issues (defined as both challenges and opportunities) impact various aspects of the coral reef management system, present some representative examples of where capacity has been successfully built within the system to address specific issues and describe specific actions that can be taken to build capacity within the system. The issues we present are based on an analysis of the data by the consultant team and input by the J-CAT. Given the highly dynamic, complex nature of the system, we believe CRAG has the best perspective to set annual priorities to define how capacity building aspects are sequenced and prioritized. In general, the issues align well with the issues presented in the appendices of the PSD, and are similarly grouped into those that describe the broader enabling environment (after Olsen, Page and Ochoa 2009) and those that are more specific to the management of coral reefs. The first group, encompassing the enabling environment, includes the need for:

- Clearly expressed, unambiguous goals against which coral reef management efforts can be measured;
- Formal commitment to enhanced reef management that includes commitment from government through formal mandates, publicly expressed support by traditional management systems and the commitment of financial resources required for long-term program implementation through funding partners; and

- Well-informed constituencies composed of the general public and stakeholders in both the private sector and government agencies that are supportive of coral reef stewardship.

Addressing this group of three issues (considered in Section 4.2 Enabling Environment for Enhanced Coral Reef Management) will require some capacity building strategies that can and should reside within CRAG and its partners, as well as some that clearly lie beyond the scope of CRAG. The second set (considered in Section 4.3 Issues that Affect Capacity to Manage Coral Reefs) consist of matters that can be dealt with primarily by strategies to build capacity within CRAG and its member agencies.

4.2 Enabling Environment for Enhanced Coral Reef Management

4.2.1 Goals

A set of clearly expressed and unambiguous goals must be present for successful coral management. Certainly, the PSD, and the four LAS's and site based management plans for coral reef conservation and the process that led to them (under CRCP's guidance, with local staff and manager engagement), are excellent examples of the system recognizing this need, and working pro-actively to fill it. The LAS documents and site based plans, such as Faga'alu and Amouli, lay out clear and detailed goals, along with a myriad of proposed actions to accomplish the articulated goals.

Although the Territory and NOAA CRCP have worked to define and articulate mutual goals, these strategies have the potential to lose predominance in the management structure, and are seldom referred to during the coral reef management process other than when pursuing funding opportunities. This effect is exacerbated by high turnover in the system, as new staff were often not around when plans and programs were developed, and are not clear what their specific role in implementing them is. In order to increase functionality, it is therefore important that goals are made time bound, with measurable outcomes, and instilled in the management process on a regular basis in a manner that survives the turnover of key staff. Many specific recommendations are suggested below that will help to improve staff retention and increase institutional memory in the event of staff turnover, which together will help goals and objectives maintain their relevance and penetration over time.

4.2.2 Formal Commitment

Defining and characterizing the degree of formal commitment to coral reef management in American Samoa is complicated by the nested levels of how authority is defined and expressed in the territory. At one level, commitment has been built over thousands of years through the traditional fa'amatai (hereafter "matai") governance system that is expressed primarily at the family, community and village level. Far more recently, commitment and capacity to conserve natural resources have been built at the level of the American Samoa territorial government. Similarly, the US federal government expresses its commitment through a range of programs, plans and actions delivered by a range of agencies. Accordingly, coral reef governance structures, programs and capacities must be built that thoughtfully integrate across these coexisting systems.

Expressed commitment to coral reef management is currently quite high in the territorial government. A major expression of this strength is the fact that the Coral Reef Initiative and CRAG are formally

mandated, with the expressed support of the Honorable Governor Togiola T.A. Tulafono. This commitment is further evidenced by the Governor's role as an active member of the US Coral Reef Task Force (USCRTF). As a member of the USCRTF, Governor Tulafono has leveraged a number of relevant efforts during his term, specifically in regards to natural disaster relief, climate change adaptation, and sanctuaries development.

Within the matai system, commitment to promoting reef conservation and management is variable, affected by issues such as the strength, knowledge and commitment of the village chief. In some villages, conservation rules are strongly enforced across all members of the community while in other villages enforcement is more uneven. In general, coordination of coral reef management across villages is extremely important but difficult to accomplish in practice due to the level of coordination required across the complex matai system, making the uniform promotion of programs, outreach activities or enforcement activities a continued challenge. Leadership, many of our interviewers noted, was highly dependent on key individuals. Many noted that formal commitment at both the level of the territory and the community varies depending on individual leaders of agencies, programs, or villages. Where strong leaders have emerged, demonstrating strong commitment, passion, and a deep understanding of both coral reef threats and socio-cultural protocol, management activities that support coral conservation have succeeded. However, these leadership skills vary in both the territorial government as well as in communities, impacting the degree of formal commitment including allocation of staff or community time, funding, and development/enforcement of policies and procedures that enhance coral reef conservation.

The existence of the CRI and CRAG has built significant capacity to accomplish specific goals within the system, although challenges remain, including:

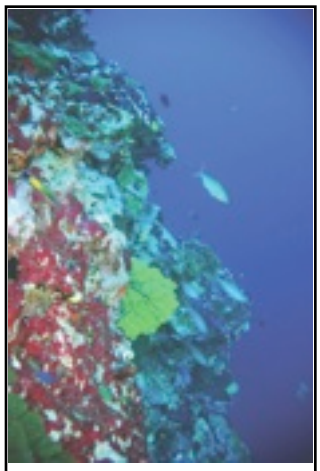
- Directors are and will likely continue to be political appointees, underscoring the need to continually brief new administrations and actively participate in the transition process. The cultural context of familial, community, and hierarchical ties and obligations provides some degree of continuity for commitment to coral reef management, but the arrival of new administrations often presents a challenge to define the new degree of commitment.
- The majority of reef conservation funds utilized by the territorial government are sourced from federal agencies (predominantly NOAA, augmented by NPS, USFWS, NRCS etc.), requiring significant local resources to manage and account for funds. Given the economic context of American Samoa, it is unlikely this situation will change. Therefore formal commitment to effectively integrate, to the degree desirable across agencies, will be an ongoing capacity opportunity.
- The judiciary generally does not always emphasize the need for enforcement of natural resource violations.
- There is a low level of NGO presence in American Samoa to support non-governmental interests, seek additional funds and leverage locally derived resources.

- The likelihood of increased tourism, specifically SCUBA diving related tourism, may provide further economic justification for increased commitment for coral reef management.

Many of the specific recommendations developed below will help to further build support for, and commitment to, a robust coral reef management infrastructure in the territory. These include measures to improve understanding of issues affecting natural resource and coral reef management among key stakeholders (**Recommendation 1: Build Informed and Supportive Constituencies**) and to strengthen coordination and commitment among CRAG member agencies (**Recommendation 2: Build Capacity Within the Current CRAG Governance Structure**), leading to an enhanced commitment to pursue natural resource stewardship across American Samoa.

4.2.3 Supportive and Informed Constituencies

It is broadly accepted among actors in the coral reef management system (including essentially all of our interviewees) that building broad-based support for natural resource conservation among a wide range of constituencies is critical. This issue is well known to CRCP and is addressed in some detail in Appendix Two of American Samoa's PSD as well as in many local management plans.



Coral Wall at Whale Rock in outer Pago Pago Harbor. Photo Credit: Ben Carroll

Perceived difficulties in building constituency support include:

- There is a range of stakeholders and players involved in coral reef management (from users to managers and at the levels of the territorial government and the matai system), each with their specific interests, cultural disparities, and preferred method of and/or language for communication. This diverse constituency offers challenges in reaching all players with a single and uniform message.
- Young people are disconnected from natural resources as cultural ties and use of resources has changed over time with the change to a cash economy. Many Samoan young people do not swim and very, very few have ever snorkeled or experienced reefs firsthand. With the onslaught of western culture and technological distractions, traditional practices and understanding of resource use and management are being displaced.
- The public is often skeptical of restrictive conservation measures. It is difficult to demonstrate direct and immediate positive impacts from programs that require sacrifice, such as those from fisheries restrictions and permanently closed areas.
- Senators and judicial employees are not all well-informed about natural resource issues and do not always understand or appreciate the implications of certain actions on the resource, or why that is important, especially relative to other pressing issues.
- As a small island community with close familial and cultural ties, some conservation measures (such as enforcement) are challenging.

- According to a study on the public perspectives on coastal resources (Turner 2005), communities in American Samoa felt they knew very little about the resources (particularly coral reefs), the importance of biodiversity, or any ecosystem functions other than sheltering fish. Those causing damage to coral reefs frequently did not perceive a connection between their behavior and consequences for the coral reef, and failed to recognize implications of their own lifestyle.
- With established and often inflexible guidelines and principles, it is difficult to change school curricula. Adding new topics not required by the American Samoa Department of Education (for example natural resource management, environmental education, marine science and climate change) can be challenging, as it requires considerable initiative from decision-makers and teachers, as well as access to appropriate resources and training to implement new material.

SUCCESS STORY

The territory has many strong programs that promote public awareness of natural and coastal resource conservation issues, such as the popular Coastal Week Ocean Challenge fautasi boat race and the Enviro-Discoveries camp run by the Le Tausagi environmental educators network. Run by the American Samoa Coastal Management Program (ASCMP), under the jurisdiction of the Department of Commerce (DOC), the fautasi boat race creates a fun activity that engages participants from villages across the territory while promoting coastal conservation themes like "The Choice is Yours: Save it or Waste It." Le Tausagi, which means "the morning song of the bird", is a multi-agency partnership begun in 1994 that brings together environmental educators from across the American Samoa territorial government to collaborate on education and outreach programs in schools and villages. The popular Enviro-Discoveries summer camp, hosted by the Department of Commerce Coastal Zone Management Program, is a summer program run by Le Tausagi teaching kids about topics such as soil and water quality, forestry and natural resources, climate change, coral reefs, fisheries and wetlands.

Additionally, the American Samoa Community College carries out several activities both through formal education and community outreach. Some of these programs include demonstration projects on sustainable agriculture and forestry practices (e.g. aquaponics, agro-forestry, coastal stabilization). Additionally, ASCC helps community groups implement watershed restoration projects such as coastal revegetation work and removal of invasive species and debris. Specifically in Nu'uuli, the ASCC worked directly with church youth groups to remove invasive species and replant native vegetation. ASCC provides classes and internships to encourage youth to get involved in marine science. This includes development of an internship program that places students in local natural resource agencies where they can gain skills and learn from on the job experience. Finally ASCC provides accredited coursework to build core skills of existing teachers such as language, writing, reading, and math. This work will increase the ability of teachers to provide sound education to kids and also qualifies them for potential pay raises from skills training.

SUCCESS STORY

The National Park Service has been working for years in communities in which they lease land to manage the park system. This partnership has grown stronger through an effort by NPS to engage community members by creating staff positions that enable them to directly benefit from the Parks existence. The Park Service hires and trains locals to help remove invasive species and maintain trails. To make this effort feasible within the national government system, NPS has developed a partnership with a national non-governmental organization that can facilitate short-term hires, and develop and manage grant proposals to support the work.

RECOMMENDATION 1: Build Informed and Supportive Constituencies

1.1 Inform Judges, Legislators, Mayors, Fono, Community Leaders on Importance of Natural Resource Conservation

Providing outreach and field experience to key decision makers to encourage an understanding of the cultural and economic importance of reefs and to motivate them to actively support coral reef conservation efforts is an identified need in the system and is currently included in two LAS's and the Le Tausagi strategic plan. This goal should be supported and aggressively pursued and will entail:

1. Identifying and creating a list of decision makers that could benefit from "learning journeys" to help them experience both the beauty and value of reefs and other marine resources, as well as the on-the-ground realities that resource agency staff (scientists, enforcement officials, environmental educators, etc.) face as they do their jobs.
2. Creating a discrete set of learning journeys, led by staff specifically trained to direct the journey ("guides") that highlight and showcase various aspects of the natural resource management system.
3. Matching identified decision makers with the most appropriate learning journey and guide and scheduling and delivering the experience.

1.2 Further Grow and Support the Le Tausagi Model

Le Tausagi is a successful model for disseminating coral and natural resource information and should be grown and supported. Identifying and supporting liaisons at local schools that can help facilitate and improve collaboration between Le Tausagi educators and the schools can enhance the penetration of Le Tausagi into Samoan schools. Monitoring the number of schools with an active liaison, with a goal of increasing this number, can provide a direct metric for assessing success. Le Tausagi is also a key vehicle to deliver messages targeted in **Recommendation 1.1**, above and should be trained and supported to do so **(See also Recommendation 9.2)**

1.3 Outreach Programs on Importance of Land Use Permits/Storm Water Management

Public and community outreach on the importance of obtaining proper land use permits and applying best stormwater management should be enhanced and extended. Increasing public understanding of how using best practices will benefit the environment and improve general social welfare in the long run can help build support for, and compliance with, regulations. This information is currently integrated into the successful fautasi challenge, and this sort of approach should be encouraged and expanded. Le Tausagi could again be a partner in this effort.

1.4 Scholarships for Samoans to Complete Degrees Relevant to Marine Resource Management

Seeking dedicated funding for long-term educational elements such as a scholarship for Samoan students that pursue marine science education could decrease staff turnover and increase long-term internal capacity. Support could be pursued for students to train at ASCC, or for scholarships that encourage Samoans to train at universities off-island in exchange for a guaranteed period of service on American Samoa. Similarly, loan programs can be structured to offer a measure of loan-forgiveness in exchange for service in the territory. Funding for such training could come directly from resource agencies in exchange for a guarantee of service. Tuition assistance to support current employees in resource agencies to pursue additional education to improve job skills should also be encouraged.

To provide high quality training, capacity may need to be built at ASCC to improve science programs and to better account for laboratory fees that currently are not adequately tracked and properly appropriated. The creation of a Marine Science Laboratory in American Samoa, as has been proposed, could be an important element in developing interest and training of local residents in the marine sciences.

1.5 Build School Curriculum for Marine Science

Encourage coordination between AS DOE and ASCC to create curricular elements that build literacy on coral reef and ocean science and conservation among K-12 students. ASCC or DOE could enhance capacity to achieve this goal by researching existing relevant curricula used elsewhere and by potentially partnering with outside entities that have developed similar curricula. DOE should work closely with ASCC to provide relevant content into the developed curricular elements. Le Tausagi could be a strong partner in researching, developing and implementing a coral reef and ocean conservation and science curriculum. Encourage DOE to promote ASCC students to pursue projects to mentor and encourage K-12 student to pursue marine science, to satisfy the ASCC students' service learning requirement.

1.6 Build Capacity to Collect Lessons Learned in Promoting Stewardship at the Community Scale

The Seal of American Samoa.
Photo Credit: SustainaMetrix

Promoting stewardship at the village level, and optimizing communication and coordination between governmental agencies and programs and local communities, is a complex challenge that takes place within a context of both thousands of years of traditional culture and a rapidly modernizing economy. These goals can be enhanced by carefully documenting and communicating what works and other lessons learned. Strategies that have been proven to work, (such as the fautasi boat race), that recognize and respect that land use decisions are made at the family level, that empower families and communities to embrace stewardship, and create a sense of village pride in stewardship activities should be collected, documented and shared.

1.7 Social Marketing Campaign

A focused social marketing campaign about the linkage between coral health and the Samoan way of life that reinforces the interdependence between natural resource health and general social well-being should be pursued. If radio dramas are perceived to have the potential to impact social norms in American Samoa (as they do in other settings), than a radio soap opera in Samoan that features a fictitious village that commits to holistic stewardship strategies based on a unfolding drama (featuring boat racing, feasting, traditional fa'asamoa, etc.) could be an effective strategy. Reef and ocean conservation messages could also be integrated into original Samoa-based TV dramatic programming, which currently are popular in the territory.

4.3 Issues that Affect Capacity to Manage Coral Reefs

The second set of issues and associated recommendations described below consist of matters that can primarily be addressed internally, by building strategies *within* CRAG, and its member agencies.

4.3.1 Structure of the Coral Reef Initiative (CRI) and Coral Reef Advisory Group (CRAG)

Addressing capacity challenges and improving function within the structure of CRAG has the potential to pay dividends across the Coral Reef Initiative, and across the larger coral reef management infrastructure. CRAG's member agencies are the AS Department of Commerce, the AS Department of Marine and Wildlife Resources, the AS Environmental Protection Agency, the American Samoa Community College, and the National Park of American Samoa. CRAG is defined on its website as:

> **an inter-agency task force established to provide the Government of American Samoa with advice, guidance and project management regarding coral reef related issues. Instrumental to its success is the direct and active role that each of the five agencies play in collaborative project development and implementation.**

In reality, CRAG management falls largely to DOC, which is the recipient of CRCP coral management funds and is charged with disbursing and managing these funds. The Deputy Director of DOC serves as CRAG Chair. CRAG essential staff and the CRAG/CRI Coordinator are housed at DOC, and most day-to-day decisions regarding funding, mandates, and implementation are made within DOC.

It appears that this situation has become somewhat self-reinforcing, as DOC has built additional capacity to manage its CRAG responsibilities as the other member agencies have ceded responsibility and lessened their efforts to support CRAG functions, resulting in an ever greater concentration of CRAG responsibility and effort within DOC. While DOC is generally effective in its role as the de facto CRAG lead, a more balanced CRAG process, with a more distributed power structure and better engagement and collaboration among all CRAG agencies, could improve overall coral reef management in American Samoa. There does appear to be willingness both within DOC and across the other member agencies to seek a more distributed and balanced management structure within CRAG.

RECOMMENDATION 2: Build Capacity Within the Current CRAG Governance Structure

2.1 Timing of Coordinator Position

The CRAG coordinator is a two-year position, and changes simultaneously with the CRI award, creating a loss of continuity of relationships and systems understanding. Adjusting the timing and funding for the changeover of the position that allows overlap between the existing coordinator and the new hire during an award cycle would help maintain continuity and reduce the loss of institutional memory associated with the current coordinator transition process. This may require addressing issues of hiring processes and general bureaucratic function. **See Recommendations 7.1 Inform Key Leadership and 7.2 Facilitated Intervention to Develop Solution Strategies.**

2.2 Clarify and Document CRAG Purpose and Create CRAG "Handbook"

There is a lack of a formalized, clear, and documented governance structure, defining CRAG and its code of conduct. A clear, written document that articulates how CRAG functions as a collaborative and identifies its purpose, decision-making process and protocols, meeting schedules, etc. should be developed and disseminated. This document, along with written Terms of Reference for all individuals on CRAG (**2.3, below**), could be adapted into a handbook for new hires that clearly describes the CRCP grant process, CRAG financial processes, the LAS process, and CRAG history and decision-making.

2.3 Create Terms of Reference (TORs) for All CRAG Participants and Examine CRAG Roles

After creating a set of documents detailing and clarifying CRAG purpose and process, clear, written Terms of Reference (TORs) should be created for all CRAG participants. If there were a desire to enhance the autonomy and independence of CRAG and increase equity among CRAG partners, creating a TOR for CRAG Chair would encourage the examination of ideas like moving the CRAG center of power from one agency (DOC) or having a non-voting member be the chair of CRAG (e.g. the NOAA Management Liaison or a representative from ASCC).

2.4 Other Measures to Enhance CRAG Independence and Equity

If enhancing CRAG equity and independence is considered to be desirable, moving CRAG offices to an independent location discrete from DOC would serve to enhance this goal. Additionally, basing the NOAA CRCP Management Liaison in American Samoa would enhance coordination between NOAA and CRAG and would be a prerequisite for considering having the Liaison serve as CRAG Chair.

2.5 CRAG Data, Records and Project Management

The CRAG website could be enhanced to be a repository of institutional memory. For example, the website could include an online database (non-public, with access restricted to appropriate staff) that allows projects (including LAS projects), existing awards and reports, procurement process status, grants expenditures to date and remaining balances, and CRAG initiatives to be easily tracked by managers, members, and project PIs. This will require updating the current website's content management system, and training staff in how to use it, so that updates and enhancements can readily be made util-

izing existing capacity. In addition to improving electronic access to these records, creating an organized and centralized location to store all funded project records and reports in a user friendly manner would improve institutional memory and enhance efficiency. New hires should be encouraged to use the website to understand past and current projects and documents related to the work they were hired to carry out. **(See Recommendation 4.4 Centralized Database)**

2.6 Dedicated CRAG Financial Administrator

Currently, the administration of CRCP and other grants funds disbursed by DOC is added on to the job responsibilities of existing DOC financial staff, creating inefficiencies. CRAG should hire a Financial Administrator who serves as the point of contact, and is solely responsible for implementing all finance needs within CRAG and the CRI awards, including budgeting, tracking, and reporting. This staff member should be engaged throughout the CRAG process and participate in CRAG meetings, project development, and management cycles.

2.7 Encourage DOE Participation in CRAG

If there is a desire to truly improve penetration of natural resource and coral reef educational content within the American Samoa school system, DOE participation in CRAG should be encouraged. DOE need not be a formal CRAG agency, but could have a designated liaison that attends CRAG meetings and facilitates coordination. **(See also Recommendation 1.2: Further Grow and Support the Le Tausagi Model).**

Capacity assessment kickoff meeting chaired by Lelei Peau. The lengthy site visit itinerary is visible in the foreground. Photo credit: SustainaMetrix

2.8 Continued Focus on Priority Sites

Much capacity has been built from the transition of the Local Action Strategies at the scale of the jurisdiction to Management Plans that focus on priority sites. If CRAG chooses to build upon this positive trend, building upon pilot demonstrations that integrate across LAS themes, such as climate change, reducing LBSP, fisheries, MPAs, etc. at local sites such as Faga'alu is needed. Capacities to accomplish this are being developed currently and should be documented and strengthened **(see also Recommendation 14: Training Programs).**

4.3.2 Data Collection, Analysis, Communication and Use in Management

A robust scientific infrastructure that generates high quality data that is transmitted to decision-makers in a timely and useful manner is key to good coral reef management. Tensions can arise, however, over the financial resources devoted to scientific data gathering versus to programs directly, or indirectly, supporting coral conservation and management. In times of tight financial resources it is especially critical to balance these spending priorities and to ensure that resources devoted to scientific data gathering provide useful information specific to management requests.

Key capacity challenges relevant to the issue of data to inform management include:

- Much of the existing data collected are not readily analyzed, interpreted and communicated in a manner that is useful to decision makers and stakeholders;
- Fisheries population assessments are expensive to conduct and population data is limited for most species of fishery or ecological importance;
- Fisheries managers have sometimes argued that they do not have adequate data to institute conservation measures;
- Reef monitoring is dispersed across multiple programs with low coordination and integration; and
- Scientific data tends to reside on various computers, with no centralized data portal, making access difficult.

Together, these capacity challenges combine to create a situation where policies are not being informed by the best science in an optimal manner.

SUCCESS STORY

Mangers have noted both some successes in using data to inform decision-making and improvements to capacity in this field. For example, The American Samoa EPA and ASCMP used data from the hospital quantifying the number of cases of leptospirosis and from which villages cases were reported, combined with piggery location information. This information was analyzed by GIS and became the basis for an outreach effort that drew the connection from piggeries located adjacent to local waterways to negative impacts on human health. The use of this data enabled these programs to foster community support and land use policy for changes in piggery management that previously had proven very difficult. EPA and ASCMP are now promoting alternative methods (i.e. dry waste) for piggery management that are safer for both human health and the environment, including potentially

reducing nutrient flows to coral reefs. Many community members are interested in converting piggeries from wash down to dry waste methods which improves smell, water quality, and also can provide some income from composting manure to be sold for farming.

RECOMMENDATION 3: Wood Chipper for Piggeries

Piggeries have improved their practices by employing "dry litter" management that requires volumes of wood chips. Complete purchase of a requisitioned chipper and secure a sustained source of funding to maintain and replace chipper(s) as needed to continue and expand dry litter piggeries.

RECOMMENDATION 4: Generate and Communicate Data to Inform Management

4.1 Compile Comprehensive List of Monitoring Programs

Compile a comprehensive list of all federal and territorial monitoring programs that collect coral reef and other relevant natural resource data in the jurisdiction. Program features to be assessed should include:

- Is the data collected directly relevant to increasing the capacity to adequately manage coral reefs?
- Is data collected being adequately analyzed and disseminated?
- Are there up to date written data collection and QA/QC protocols?
- Is data stored in a centralized and readily accessible location?
- Are there other barriers to collecting high quality monitoring data?

4.2 Identify Practical Capacity Gaps

After compiling and assessing existing monitoring programs, identify practical gaps in generating useful data to inform specific management actions, including:

- Staffing/Staff time
- Resources
- Capacity and ability to analyze and disseminate data
- Equipment and supplies

(Identified gap to be closed: Certain nutrient analysis reagents are being deemed "hazardous" and are not being allowed into the territory. Coordinate with the Coast Guard, USEPA and NPS to allow entry of these reagents).

4.3 Carefully Manage Territory-wide Monitoring

After completing the careful monitoring capacity assessment detailed in **Recommendations 4.1 and 4.2** above, create an integrated and coordinated monitoring plan focused on funding only those programs that collect data demonstrably useful to improving coral reef management. This plan should reduce duplication and overlap, and collect only data that is relevant and useful to management, and

most critically, remove financial support from monitoring programs that collect data but do not consistently analyze and disseminate the data in a clear, publicly available and useful form.

4.4 Promote the Use of Territory-wide Centralized Data Storage

Capacity should be built to streamline and centralize data storage to improve access and safe back up of existing data among coral reef practitioners, including:

- DMWR monitoring data
- Land use permit cases
- DOC grants programs files **(see Recommendation 2.5 CRAG Data, Records and Project Management)**

4.5 Investigate Novel Partnerships for Collecting Data

American Samoa could be very well situated to capitalize on third party, NGO or private enterprise based monitoring that uses volunteers that pay to participate in activities such as coral reef, reef fish, and water quality monitoring. Organizations such as Earthwatch (earthwatch.org), Blue Ventures (blueventures.org) and the School for Field Studies (fieldstudies.org) create programs to do this sort of work, and could be investigated by the American Samoa government.

4.6 Coral Reef Status Report and Presentation

Every one to two years create and present a holistic data report on the status of American Samoa coral reefs to the Governor, legislature, the Office of Samoan Affairs, and communities. Le Tausagi can be used to help craft and present this report **(see Recommendation 1.2 Further Grow and Support the Le Tausagi Model)**. This sort of "report out" could be grown into a highly public, ceremonial presentation that involves and engages communities, school children, civic groups, etc. and becomes an important part of the larger effort to promote and publicize coral reef conservation among elected officials, community leaders and the general public.

4.3.3 Integration and Coordination Across Federal and Territorial Management Agencies

Integration across the management agencies responsible for coral reef management in American Samoa is relatively high. The Coral Reef Initiative is administered by CRAG, which is charged with coordinating coral reef project management and implementation across its member agencies. This provides a useful structure that does promote inter-agency integration in the territory on coral related matters. As discussed above, there are several discrete measures that can build on these strengths, improve CRAG's function and enhance integration across its member agencies **(see Recommendation 2)**.

As with many other jurisdictions, one of the main challenges with integration of efforts lies in the nature of the American Samoa CRI as a cross-agency program that relies heavily on voluntary commitment and coordination among agencies whose mandate and funding are often directed toward implementing very specific federal policies (e.g. Coastal Zone Management Act, Clean Water Act). As such, there is an inherent challenge in prioritizing coral specific work because staff time and agency priorities

are often driven by funding and mandates that come through federal partner programs (e.g. NOAA, EPA) that manage implementation of specific policies and funding. Coral conservation efforts need to be designed to utilize existing mandates and agency priorities while avoiding being a "drop in the bucket" within much larger and more complex programs. Site based efforts (e.g. Faga'alu and Amouli) in American Samoa have shown great progress in addressing this issue as they allow each agency to work within their mandate to support projects that reduce threats in priority coral reef areas.

An additional challenge lies around integrating efforts across the multi-tiered structure of MPAs in American Samoa. At present, there are federal, territorial and community-based MPAs active in the territory, creating a need for careful coordination to provide clear and consistent messages that are easily understood by stakeholders. American Samoa has a robust and extensive network of MPAs, especially after the historic expansion of the small Fagatele Bay National Marine Sanctuary to the expansive National Marine Sanctuary of American Samoa. Managing and coordinating this expansion will provide a focal point for the territory to explore strategies to integrate MPA management across federal, territorial and community structures.

RECOMMENDATION 5: Integrate Across MPA Network

5.1 Align MPA Goals Within American Samoa

The territory should continue to build on the energy created by the process leading to the expansion of the National Marine Sanctuary of American Samoa to work toward a true integrated MPA network in American Samoa. A potential path forward would be to convene a facilitated process, potentially organized around the objectives of the Fisheries LAS, to gather together representatives of all the territory's MPAs to discuss and help align goals among the parks. The National Marine Sanctuaries program is a potential source of funds to help align goals and build capacity within the territory for MPA actions over next 3-5 years.

5.2 Further Develop the "Two Samoas Initiative"

Build on the recent funding of a coordinator for the Two Samoas Initiative to further develop and integrate an MPA network, using the Two Samoas Initiative annual meeting to discuss network implications, progress, lessons learned and opportunities for collaboration. Identify a key partner (e.g. the Secretariat of the Pacific Regional Environment Programme (SPREP)) to facilitate and host the Two Samoas Initiative and guide capacity building efforts:

- Facilitate consultations with both parties;
- Establish ideal consultation mechanisms;
- Commission capacity/needs assessment for building the Two Samoas Initiative;
- Develop capacity building program; and
- Monitor and evaluate progress.

RECOMMENDATION 6: Enhance Integration Within the American Samoa Government

6.1 Planning and Budgeting Schedule

There is an opportunity to improve integration among the American Samoa Coastal Management Program (ASCMP) components (PNRS, Wetlands, GIS, Ocean Resource Planning), which are the primary recipients of US Coastal Zone Management (CZM) funds and the DOC and CRAG member agencies, which are the recipients of NOAA CRCP funding. If there is a desire to improve this integration, the two groups – CRAG and ASCMP – should conduct planning and budgeting on a common schedule. CRCP management liaison can be an important facilitator of this process.

6.2 Employ Simple Tools to Enhance Integration

Professionals who study how organizations work together recommend creating a scale clearly articulating different levels or degrees of working together and asking participants to rate where they think they are, and even where they wish they were, along that scale. It is important to note that degrees are not better or worse, just an honest reflection of the situation. Employing a scale such as the one below can help define and clarify working relationships and lead to fruitful discussions about any desired changes in the current relationships.

1. NETWORKING: Sharing information and ideas
2. COOPERATING: Helping distinct members accomplish their separate individual goals
3. COORDINATING: Working separately on shared goals
4. COLLABORATING: Working together toward a common goal but maintaining separate resources and responsibilities
5. PARTNERING: Shared goals, shared decisions and shared resources within a single entity

These techniques could be valuable in assessing and investigating roles and responsibilities among CRAG member agencies – **see Recommendations 2.2 Clarify and Document CRAG Purpose and Create CRAG "Handbook" and 2.3 Create Terms of Reference (TORs) for All CRAG Participants and Examine CRAG Roles.**

4.3.4 Retaining Institutional Knowledge and Memory

One of the most highly noted capacity issues is turnover within key positions in the coral reef management system which is chronically high, influenced by both short statutory limits on the duration of key positions and by a general tendency for non-natives to pursue time-limited contracts, complete them, and then leave the jurisdiction. These factors combine to greatly reduce the retention of institutional memory within the system, creating a steady stream of new actors arriving on the scene needing to be "brought up to speed" before they can advance the coral reef management agenda.

Specific capacity challenges include:

- The principal investigators of many projects stay in the jurisdiction for a short period (usually around two years). During this time, they inherit projects from previous contractors who wrote the proposals. They also leave behind project proposals to be implemented by the next contractor. This situation leads to PIs who may not be fully interested in, or committed to, carrying out projects they did not develop, undermining continuity and long-term strategic planning; and
- Past and current project records and documentation are not organized, centralized and are difficult to access. This can lead to duplication of efforts and/or at a very minimum a lack of building on past efforts that can improve coral reef management through adaptive management.

The current impediments have lead to frustrations, which tends to undermine staff motivation and morale.

4.3.5 Bureaucratic Processes & Staffing

Interviewees were all but unanimous in stating that the bureaucratic process for implementing government led actions is not working satisfactorily or at least in an optimal fashion. Common issues raised included very long procurement processing times and the substantial bureaucratic requirements needed to navigate financial processes, resulting in very long times needed from concept to implementation. In some cases, it was noted that attempting to overcome bureaucratic hurdles was thwarted by an inconsistent work ethic within some agencies and a lack of will to overcome obstacles. In general, structures varied among agencies and groups and the level of professionalism in running meetings, responding to requests, etc. is not viewed as equal across agencies and departments.

Shallow fringing reef, American Samoa. Photo Credit: Anita Pritchett

Many interviewees also expressed that challenges exist in hiring and retaining qualified staff, and that these issues are compromising the capacity to manage coral assets at the highest level. High staff turnover results in a loss of institutional knowledge, leading to the continued loss of opportunities within the coral management community. Furthermore, a lack of skills and training opportunities to carry out the designated scope of work of each new employee (e.g. MPA basics, enforcement strategies, communications training on scientific concepts, and technical skills such as GIS, etc.) is seen by many as hampering capacity within the agencies.

Local Samoans often have a lack of opportunities to receive formal training in the field of natural resource management and science, leading to an overall lack of homegrown talent. This lack of qualified locals places employers in a tight position in which the short-term solution is to hire off-island expertise who may have little local context and commitment. Potential contributors to the syndrome were identified as insufficient educational opportunities in American Samoa, cultural barriers, dual language challenges, lack of regular engagement between resource management agencies and the education sector, funding limitations, and a lack of training opportunities.. Even when students are motivated and capable, due to the lack of local opportunities, they must pursue education off-island. Once trained, these individuals often settle into jobs off-island where salaries are generally higher than those offered locally, leading to a net 'brain drain' or outward migration of skilled students and workers.

SUCCESS STORY

Despite the above stated challenges, there are several examples in which local staff were hired without a strong background and qualifications for their job, but on the job training, motivation, and good leadership has resulted in excellent staffing capabilities. Specific examples by which staff were trained on the job include GIS staff in the ASCMP GIS program. Outside contractors were brought in to both support development of GIS products, but more importantly to pass on skills building to local staff who were new to GIS. Over time, various contractors have provided on the job training to local staff to build their qualifications and abilities to complete the work of existing contractors. DMWR currently houses a contract position whose function is also to support local staff with skills building that will lead them into supervisory positions. Given the challenges in gaining opportunities to learn coral reef management related skills, this approach was noted as one of the best capacity building methods for local hires.

RECOMMENDATION 7: Build Capacity to Improve Administrative Function

7.1 Inform Key Leadership

Conduct interviews and other investigations to detail and describe the primary challenges of financial administration (e.g. slow and cumbersome financial/procurement process, slow hiring and staffing processes). Carefully document these challenges and then create a detailed briefing to be delivered to key leaders across territorial agencies with bureaucratic responsibilities that are causing inefficiencies in the coral reef management system.

7.2 Facilitated Intervention to Develop Solution Strategies

Building on the description of specific bureaucratic and staffing problems identified and detailed in the investigation conducted under **Recommendation 7.1**, above, the identified issues should be explored and discussed in a facilitated, cross-level forum to help improve transparency, gain a shared understanding of how this issue effects program managers, and develop a shared commitment to update and amend processes and procedures, including the development of unambiguous standard operating procedures (SOPs) and a process for promptly removing persistent bureaucratic barriers and resolving grievances. Such a facilitated, targeted and limited training, bringing together program managers, fi-

nancial staff and high level leaders, could yield very real and tangible benefits that will improve coral program success and lead to improved morale and performance across the system.

RECOMMENDATION 8: Strategies to Reduce Staff Turnover and Improve Staff Retention

8.1 Create Clear Guidance for Job Responsibilities to Improve Retention

A key component of improving job retention and lowering turnover can be improving job preparedness, training, and morale. Tools to do this include creating written SOPs and job handbooks **(see also Recommendation 2.3 Create Terms of Reference (TORs) for All CRAG Participants and Examine CRAG Roles)**, creating information sharing programs, new employee mentoring programs, introductory training courses, distance learning opportunities and other strategies to close the gap between staff Knowledge Skills and Abilities (KSAs) and those needed to effectively fulfill their job duties. While low salaries can affect job retention and turnover, in many cases improving preparedness and performance can improve morale in ways that are more important than, or at least offset to a degree, salary concerns.

8.2 Encourage Samoan Applicants

The America Samoan government should promote measures to increase the proportion of Samoans in technical, managerial and leadership natural resource positions. This is a long-term and complex issue that will require integrating strategies at many levels. Measure could include:

- Encouraging Samoans currently employed in natural resource positions to visit schools and communities to tell their stories and communicate that such career options are available, interesting and important.
- Creating job fairs popularizing natural resource positions, potentially with the assistance of currently employed Samoans as described above.
- Carefully studying and documenting what strategies worked that led to Samoans obtaining the appropriate training, landing jobs in the natural resource field, and excelling in their jobs. Build on these successes to the degree possible.

The goal of increasing the number of Samoans employed in natural resource fields can and should be carefully tracked and monitored.

8.3 Create New Human Relations Position to Increase Hiring and Retention of Samoan Job Applicants

While outside of the strict purview of building capacity to manage coral reefs, if attracting, hiring and retaining Samoan applicants is deemed a high enough priority, the American Samoan government could investigate creating a full time human relations position dedicated to creating and coordinating programs to promote these goals, including those ideas mentioned in **Recommendation 8.2 above.**

4.3.6 Compliance, Enforcement and Regulatory Process

Compliance and enforcement can be viewed as two sides of the same coin. On one side, a well-informed and supportive constituency will tend to comply with regulations, making strict, expensive, and widespread enforcement efforts unnecessary. On the other side, a well-funded enforcement infrastructure, with good coverage and strong judicial follow-up will reduce the likelihood of persistent environmental violations among the public. Of course, a highly informed, supportive, and compliant group of users (including commercial and recreational fishers, scuba divers, boaters, etc.) that is unaccustomed to breaking environmental regulations is preferable to a system marked by frequent violations and strict enforcement. The key to improving overall regulatory compliance is simultaneously building constituent support, while also ensuring adequate enforcement to discourage violations.

The enforcement sector in American Samoa is chronically understaffed. Currently there are eight full-time enforcement officers in DMWR, which is considered inadequate. The insufficient number of enforcement officers is one of the most clear-cut examples of a lack of simple capacity negatively impacting the ability to adequately manage the coral reef resources of American Samoa. This lack makes it difficult for the enforcement system to adequately enforce existing fisheries regulations, resulting in the violation of rules and a lack of concern among rule breakers that they will be caught or punished. Similarly, there is inadequate capacity to enforce rules regarding construction and land use changes, resulting in projects with inadequate control of sediment and nutrient runoff.

American Samoa's judicial system also lacks adequate capacity to properly adjudicate violations when they do come before the court. Several interviewees mentioned that judges do not appreciate the gravity of certain violations in relation to other social issues and do not have a clear understanding of natural resource regulations. Additionally, the court at times will ask natural resource agencies to define appropriate fines, which the agencies lack the capacity or information to do. This results in many cases being thrown out, and diminishes efforts to instill compliance with existing regulations.

Other issues raised regarding enforcement and regulatory process included:

- A lack of clear and adequate rules and regulations (e.g. fisheries, phosphate ban) for users, judiciary, and managers;
- A lack of enforcement capacity (staff and skills) in DOC and DMWR in regards to communication, standard operating procedures and an understanding of why regulations exist;
- Funding limitations for enforcement (i.e. USFWS Sport Fish Restoration grants cannot support enforcement or print outreach);
- The need for an environmental attorney in the Office of Samoan affairs;
- Challenges of enforcement on a small island with tight familial ties and cultural tendencies;
- A lack of data to support improvement of regulations;
- The need for on-going training for deputized community members; and
- Given that there are multiple MPA programs, there is a complex patchwork of regulations that are challenging to comprehend, increase buy-in for, and enforce.

RECOMMENDATION 9: Build Capacity for Enhanced Enforcement and Compliance

9.1 Expert Monitoring, Surveillance and Enforcement (MSE) Consultation:

While there is a strong sense that the capacity to adequately enforce both aquatic and terrestrial based regulations is inadequate, there remains much uncertainty regarding exact roles, responsibilities, underlying mandates, etc. across the enforcement infrastructure. There is clearly a complex patchwork of enforcement responsibilities dispersed across multiple agencies with different enforcement officers possessing different mandates and varying knowledge of a complex suite of regulations that span terrestrial and aquatic coverage areas. A key first step in improving enforcement overall, and improving its efficiency, is engaging experts in monitoring, surveillance and enforcement (such as NOAA Office of Law Enforcement) to compile a comprehensive accounting of what enforcement personnel exists in what agencies, what their exact responsibilities are and what specific authorities and laws establish their legal mandate. This accounting should incorporate an analysis of OLE's Joint Enforcement Agreement with DMWR, including what services DMWR receives from OLE, how their partnership works, when, how often and how frequently trainings happen, who runs them, who can participate, and any limitations on subject matter. Agencies/programs with enforcement responsibilities include:

- DOC/CZM and PNRS
- DMWR
- ASEPA
- Marine Patrol Unit of Office of Public Safety

This effort can serve as a needs analysis and the basis for a more strategic approach to adding enforcement capacity in American Samoa. DMWR enforcement is understaffed (currently 8 officers, should be at least 10, as many as 15). Nighttime enforcement, including of the nighttime scuba fishing ban, is a recognized gap. Based on the result of the expert consultation, a source of sustainable funding should be pursued to staff an adequate compliment of officers to enforce terrestrial and marine regulations. (The current Sport Fish Restoration grant funding cannot be used for this need).

9.2 Create a Suite of Enforcement Training Modules and Match to Officer Needs

Building on the analysis suggested in **Recommendation 9.1 above**, and in consultation with NOAA OLE, a targeted set of trainings should be developed to improve enforcement capacity and function.

DMWR Enforcement officers would likely benefit from trainings on the following topics:

- "Enforcement 101" and creation of enforcement SOPs;
- Importance of environmental regulations;
- Why enforcement matters;
- Communicating enforcement regulations to the public;
- Interacting effectively with Mayors and village leaders/matai on enforcement matters; and
- Effectively presenting enforcement cases to the judiciary.

To the degree possible, creating training modules and specific trainings that bring together officers from disparate agencies and programs can help to foster inter-agency collaboration and create synergies that can result in improved efficiency and exploration. **(See also Recommendation 14: Training Program).** The Federal Law Enforcement Training Center (FLETC www.fletc.gov) should be engaged as a potential source of financial support and training materials. NOAA OLE can give better guidance on how to access these services.

9.3 Target Judges and Legislators for Specific Trainings

In addition to taking key judges, legislators and other decision makers out on field based "learning journeys," **(Recommendation 1.1 Inform Judges, Legislators, Mayors, Fono, Community Leaders on Importance of Natural Resource Conservation)** to enhance their understanding and appreciation of the importance of marine and natural resource protection, these leaders would also benefit from targeted trainings on specific enforcement regulations and related matters. Similar to **Recommendation 9.2 above**, creating trainings that bring together leaders and practitioners from disparate agencies and spheres of influence will enhance collaboration and learning in the system. **(See also Recommendation 14: Training Program).** This could take the form of an Enforcement Round Table meeting where mangers, scientists, officers, prosecutors, judges and legislators can sit down together and discuss all their roles, responsibilities, challenges, loop holes, problems, successes and conduct a SWOT analysis. Initial outputs of such a roundtable could include reaching consensus on which types (i.e. terrestrial or fisheries) and which specific regulations are most poorly understood and how any further training should be targeted to produce the most impact.

9.4 Maintain and Expand Marker Signs and Buoys for Community-based Fisheries Management Program (CFMP)

Enforcement within the CFMP remains a challenge for the program. An identified gap is the lack of clear signs and marker buoys that explain what is and is not allowed where. The CFMP would be enhanced by determining the need for additional signs and markers, as well as the maintenance budget for signs and markers, and obtaining a sustainable source of funding to maintain an adequate array of signs and markers.

9.5 Legal Review of Enforcement Regulations/Environmental Attorney

Some environmental regulations may be out of date or poorly drafted and could benefit from a legal review and possible updating or re-drafting to enhance clarity. This could be accomplished with internal capacity or via a contractor. NOAA Pacific Islands Regional Office (PIRO) can potentially provide guidance on this issue through Joint Enforcement Agreement (JEA) trainings.

4.3.7 Completing the Management Cycle

For many American Samoa coral activities, issues have been identified and plans developed, but repeatedly, formal adoption and funding falls far short of program needs, causing implementation to proceed at a fraction of the level envisioned during program planning, or not at all. We refer to this as the "implementation gap" and find it to be a common problem in American Samoa. Many rather detailed

project and program plans are never implemented and are referred to only to leverage additional funds. The continued creation of plans without full implementation can lead to a sense of "planning fatigue" among stakeholders, with losses in morale and commitment.

When plans are adopted, there can be a lack of strategic feedback and evaluation, so results and learning are not fed into the creation of new, refined plans, which is a key step in completing the management cycle. This situation is further exacerbated by a lack of a centralized database for tracking progress on projects/cases (e.g. status of land-use permits, procurement, and projects), or even often the proper filing of paper records that can be readily retrieved by new staff. Also contributing to this issue was the long lag time between preparing grant proposals (specifically the CRCP cooperative agreement) and money coming into the territory for use, which is almost a year. People, project needs, and priorities often shift during that time. Combined with lengthy procurement processes, use of funding for implementation can become tricky. Finally, the lack of a full-time CRI/CRAG financial administrator, the generally slow bureaucratic financial procurement process and the frequent turnover of project staff all combine to reduce the capacity to effectively implement coral reef management actions in the territory.

4.3.8 Capacity to Work Within Cultural Protocols Using Western Government Approaches

As an incorporated US Territory with a history, culture, and language independent from the United States, American Samoa faces challenges in marrying Federal initiatives into the cultural context of Samoa. Many of the coral reef initiatives in American Samoa are developed and mandated by the US, but do not specifically recognize the cultural setting of the Territory. In addition, agency staff is usually a mix of Samoans and off-island recruits, further emphasizing the need for careful consideration of the process in which coral reef management is pursued. The many differences between these systems of governance and protocols create challenges to finding a balanced and effective approach. Additionally, finding tools and methods for resource management efforts that are applicable to both tropical island settings and cultural systems is a challenge.

Fatima Sauafea-Leau with the Mayor of Faga'alu after a successful community meeting. Photo Credit: SustainaMetrix

For successful coral reef management, strategies must recognize the cultural setting of American Samoa, and utilize local strengths to develop methods that are relevant, effective, and considerate of the setting. In our interviews it was determined that initiatives must specifically:

- Bridge biological data and social data, to develop holistic plans for management efforts and actions;

- Incorporate high-level engagement between federal programs, local agencies, and the matai system throughout the process; and
- Include engagement at the family and community level, and increase capacity to convert the needs of the community into tangible outcomes.

SUCCESS STORY

Most respondents noted community based efforts as highly successful in addressing this issue. These include efforts run by the community based fisheries management program (CFMP), the No-take MPA program, site based initiatives (coordinating several local and federal agencies), NPS community efforts, and the ASCMP wetlands program. All of these programs are focused on engaging communities in management activities. The CFMP and site based plans have been particularly highlighted in that they include participatory processes that allow communities to directly decide on, develop, and implement management activities that meet both the needs of the communities, and the agencies who can provide support to them. Providing needed capacity and support to these programs is a key way forward to enhance coral reef management conservation efforts in the territory. Additionally, more recent site based efforts in Faga'alu and Amouli create a process in which local agencies can work within their mandated programs in one place to address all threats to that location with the potential for demonstrating measurable improvements to adjacent coral reefs.

RECOMMENDATION 10: Integrate Plans at the Village Level

Cooperation and "buy-in" at the villages can be enhanced by coordinating plans (e.g. MPA, Wetland, watershed, etc.) together at the scale of the village. This is primarily accomplished through Conservation Action Plans (CAPs) and the Participatory, Learning and Action (PLA) process, and these and other similar mechanisms should be encouraged and expanded. Without coordination, villages can be overwhelmed by multiple plans.

4.3.9 Capacity to Improve Fisheries Management

Many of the recommendations presented above, including those detailed under Recommendations 1 Supportive Constituencies, 4 Data to Inform Management, 9 Enforcement and 14 Training, are directly relevant to building capacity to improve fisheries management. Other specific recommendations to improve understanding and management of fisheries in American Samoa include:

RECOMMENDATION 11: Strategies to Improve Fisheries Management

11.1 Identify Direct Consumption of Local Fish for Local Population

In our interviews, it remained somewhat unclear to what degree the American Samoan population is dependent on the consumption of local fish to meet its nutritional needs. This need, to the degree that this information is truly lacking, should be addressed. Gather available information describing the level to which the American Samoan population is dependent on locally caught fish for their nutritional needs and gather additional information as necessary to define. A clear understanding of this issue could lead to more informed fisheries management decision making.

11.2 Fund Fish Aggregating Devices (FADs) for CFMP

Fostering a shift in fisheries effort from reef species to pelagic species could help rebuild reef fish abundance and improve biodiversity and trophic structure on the coral reefs of American Samoa. Fish aggregating devices (FADs), which serve to concentrate pelagic species and improve the success of fisheries targeting them can be part of a strategy to accomplish such an effort shift.

FADs can be part of a strategy to shift fishing effort from reef species to pelagic species, as these species are attracted to FADs that fishers can then target. Investigate providing funding for Managed Marine Areas (MMAs) in the Community-based Fisheries Management Program that are looking into installing FADs, which could potentially help them shift fishing effort from reef species and improve reef health.

4.3.10 Additional Strategies to Reduce impacts to Coral Reefs by Reducing Terrestrial Sediment and Pollutant Inputs.

RECOMMENDATION 12: Improve Phosphate Executive Order

The territory identified reducing the phosphate concentration of detergents being imported into American Samoa as a useful measure to control nutrient pollution reaching coral reefs. Unfortunately, the Executive Order banning phosphate-containing detergents had errors in it and customs officials have not been trained to recognize and interdict banned detergents entering the territory.

The phosphate detergent ban (Executive Order, "EO") contained errors in its wording (used the word "phosphorous" rather than "phosphate") causing problems with its legal enforceability. The wording should be fixed and the EO should be elevated into law. If the ban is formally codified in law, Customs Officers should be trained to recognize and interdict non-complying detergents at the port of entry. **(See Recommendation 14.2 Develop List of Training Modules Needed)**

RECOMMENDATION 13: Hire Sufficient Engineering Staff

Hiring and retaining staff with the appropriate technical skills is problematic across the coral reef management system, and general recommendations to address this issue are presented elsewhere **(See Recommendation 8: Strategies to Reduce Staff Turnover and Improve Staff Retention).** Additionally, overall watershed health and the quality of earth change projects is being negatively impacted by a lack of trained engineers in the territory.

It is widely recognized that there is a lack of qualified engineers in American Samoa and that engineers are particularly difficult to retain within the system, resulting in inadequate and substandard design on many projects and poor control of stormwater, wastewater, sediments and nutrients from reaching the coastal ocean and coral reefs. This is a difficult and intractable problem to solve. A potential process to increase the availability of qualified engineers to the territory could be to link with an off-island university and a third party funder to create a scholarship program that trains engineers in the appropriate skill set in exchange for a pledge to work for at least two years in American Samoa on natural resource conservation issues.

4.3.11 Strategies to Develop a Library of Training Programs to Improve Coral Reef Management

There is a strong expressed need for staff trainings throughout the natural resource management system of American Samoa. Trainings should be developed and offered in an integrated, strategic and synergistic manner that maximizes efficiency and cross-pollination among trainees. Additionally, there is a need to provide on-going training and technical support rather than one-off trainings. Long-term support is required to transfer knowledge, understanding, and skills. With a lack of academic opportunities to gain natural resource management training formally, it is key that training programs be viewed as filling this gap, requiring time and funding to ensure effective capacity building.

RECOMMENDATION 14: Training Program

14.1 Assess Territory-Wide Training Needs

The first step in developing a coordinated and effective training program for natural resource professionals in American Samoa is to carefully evaluate who needs to be trained and in what and to develop appropriate long term training and technical support approaches that can meet the needs of local staff to carry out their jobs effectively. Community-based Fisheries Management Program managers should be included in the assessment to ensure that trainings are offered and delivered at the community scale.

14.2 Develop List of Training Modules Needed

After completing Recommendations 9.1 and 14.1, a list of specific training modules needed should be developed. Trainings and technical support needs identified during the capacity assessment process include:

- "How to" for reef monitoring staff, including how to collect, analyze and communicate data;
- "How to" for currently robust GIS program to build capacity to use GIS to better inform management decision making, and how to use GIS to better communicate science in layman's term;
- "How to" for grant writing, administration, reporting, and project management for supervisors and managers;
- "MPA 101": Rules and regulations, governance structure, benefits, etc. of different types of MPAs;
- Coral reef ecology, coral bleaching response, coral ID, reef fish ID;
- BMPs, piggery management, sediment and erosion control, quarry management practices;
- Resilience, tsunami, earthquake, cyclone and emergency management response (Homeland Security or FEMA could be source of funding and materials);
- "How to" for Community-based Fisheries Management Program deputies; and
- How to communicate and operate effectively with villages and within the fono and matai system. This module could engage community leaders (e.g. clergy, fono representatives,

women's groups, matai) that have been successful partners with territorial government agencies on LAS development and implementation (e.g. from Amouli or Faga'alu).

14.3 Develop Specific Training Modules

After a culled list of modules is developed **(Recommendation 9.2 and 14.2)**, the specific modules need to be developed. Much of this material has been developed in other places and can be adapted to fit the American Samoa context. Potential sources of training materials and modules are listed below. These sources will not necessarily have material directly relevant to the American Samoa context, but can provide a sense for the types of training materials available.

- PIMPAC
- NOAA Office of Law Enforcement
- Center for Watershed Protection
- Train-Sea-Coast (www.un.org/Depts/los/tsc_new/TSCindex.htm)
- IW:Learn (iwlearn.net)
- IUCN MPA Program (iucn.org/about/work/programmes/marine/marine_our_work/marine_mpas)

Capacity will also need to be built to create training modules in the Samoan language.

14.4 Match Modules to Staff Needing Training and Role Out Training Program

Training should be executed in an efficient manner that, when relevant, brings together staff from different parts of the management system, including the CFMP, that creates synergies and opportunities for new collaborations, cross-pollination, and the development of new ideas. For example, trainings could be shared between DWMR enforcement officers and the Marine Patrol Unit of the Office of Public Safety.

Tutuila, American Samoa. Photo Credit: Anita Pritchett

5.0 Proposed Long-term Strategy for Building Capacity in American Samoa

The previous section features a set of short and near-term tactical capacity building recommendations that are possible within the current governance, institutional and organizational contexts. The focus is on implementing a set of actions that, if implemented, would likely add building blocks of adaptive capacity that address the current challenges of coral reef management. While there is no panacea or "silver bullets" for building capacity for coral reef management, the recommendations are mainly aimed at CRAG, its member agencies and current partners in coral reef management in American Samoa to provide a 1-3 year road map of what could be accomplished to increase capacity. This section presents a more integrated and strategic approach for how to approach, implement and track the sets of recommendations and develop longer-term capacity building strategies (3-10 years). A major challenge will be the unpredictable nature of circumstances outside of control of the coral reef management initiative. Political, economic and social situations can change without warning; experienced leaders leave and new hires enter the system; unexpected disruptions occur. This section places greater emphasis on a long term commitment toward capacity building. Specifically, the appropriate scale, ideal home, social networks, institutional structures, range of programs, and funding implications for overseeing capacity building efforts that build toward adaptive capacity, build resilience and withstand the unpredictable events that will unfold in the future.

5.1 Commitment to Periodic Capacity Needs Assessment

Central to the future of coral reefs is the question: does American Samoa have the capacity to cope with and adapt to the long-term pace of ecosystem change that's likely ahead and still have functional reefs to support local communities, regional fisheries, the potential for building a tourism economy, and the traditional way of life? The answer to this question lies in both adaptive capacity to embrace change and the resilience of the governance structures within which such capacity is built. Great progress has been made in developing a range of management responses to coral reef condition but the proper fit, interplay and scale of governance will likely be an issue into the future. We recommend using a range of effective diagnostic methods[1], with a consistent set of criteria to periodically assess the capacity to manage coral reefs and the governance structures within which they fit as a central feature of a long-term strategy. This would include a periodic review of the issues, such as every three to four years, and the degree to which the issues are important to key stakeholders. Such an assessment should include a review of the power relationships, the effectiveness of enforcement and compliance, best management practices and the degree to which there is formal commitment and supportive and informed constituencies for sustained coral reef management. CRAG can facilitate this dialogue and invite other key stakeholders from across civil society, market forces such as tourism and other forms

1 The methods used for this capacity building assessment could serve as a baseline from which to measure future changes, particularly if analysis of governance structures is featured as a unit of analysis.

of government. Engaging CRAG to specifically oversee a periodic review of coral reef management capacity would be a natural extension of the many shorter term, tactical recommendations presented here to strengthen CRAG structure and function.

5.2 Build Capacity for Ridge to Reef Watershed Management

Ridge to Reef management, particularly engaging in the community system, is complex and multi-dimensional, requiring a wide range of skills and a high degree of coordination. Capacity to do this work is building well in American Samoa and should be a major focus for future management actions. We recommend a regular summit on the topic approximately every two years to further learn from experiences at priority sites (such as Faga'alu, Vatia, Nu'uuli). The event should feature field trips, peer to peer mentoring and an examination of lessons learned. We recommend the focus on Ridge to Reef, and the community implications of effective ridge to reef management in the Samoan context, because we believe highly integrated and coordinated site-specific management actions at the scale of a watershed will make the most difference in American Samoa. Audiences should include field operations staff, managers and policy/decision makers, as well as the appropriate engagement with traditional authorities and community representatives.

This recommendation underscores the importance and continued emphasis on priority sites as a more manageable landscape unit that illustrates the diversity of settings in which coral management is occurring and the effectiveness of management and governance strategies. It is in these reference sites that, over the long term, monitoring and analysis should be focused to track efforts to adaptively and effectively steer management in response to the societal and environmental change that is likely to accelerate over the coming decades. It is also in these selected places where baselines of response to ecosystem change should be put in place to establish an objective, well-documented and long-term source of learning, knowledge and adaptation. These would be focal points for both social and natural science research that are built around asking questions regarding effectiveness of management. Ideally, the reference sites provide a range of case studies that are going to be crucial for any kind of training program described below. Ideally, summarizing progress in Ridge to Reef management would be shared and integrated regionally with activities under the Two Samoas Initiative.

Innovation in Ridge to Reef management strategies, and effective community engagement, marks a transition away from conventional command-and-control approaches to more cross-sector and collaborative strategies that build upon strong social networks and feature shared goals and a high quality collaborative processes. This is neither easy nor inexpensive, but from all indications it is necessary to build a shared knowledge base of what seems to be working on the ground to steer communities towards adaptation and resilience.

5.3 A Portfolio of Short-Term Training Modules

A key feature of a long-term capacity building strategy is an explicit focus on systematic learning that features a standard in-person training course, distance learning modules and events held as necessary to deal with current and emergent topics.

5.3.1 Standard American Samoa Coral Reef Management Training Course

On-site trainings are recommended to be conducted every two years, to respond to the staff turnover rate, and designed as a set of modules for American Samoa that address such topics as: drivers of coral reef decline, how to implement marine spatial planning, and methods to increase the engagement with local communities. Routine trainings are a well-established practice for building knowledge and skills for effective coral reef management and could feature a formal process for new staff (at all levels) to build a basic understanding of coral reef management issues and convey current knowledge and lessons learned.

There are many sources available for building a custom curriculum and lessons learned for structuring training modules. For example, Pacific Islands Managed and Protected Areas Community (PIMPAC) has been an active resource for capacity building in the region and should be a continued partner. The Coastal Resources Center at the University of Rhode Island is developing a set of modules for the certification of professionals involved with MPAs. Custom modules for three levels of participants (field operations, management staff and policy and decision makers) have been prepared, applied and tested in East Africa. The CRC/WIOMSA certification program is only one source of training materials, there are many others that may be more appropriate for American Samoa.

Rules for participation should enhance peer-to peer learning in the home office by applying the following conditions:

- Commit to staying on in the jurisdiction for two years (cannot be strictly enforced but presented as a general condition)
- Commit to sharing what has been learned with others involved in coral reef management
- Commit to completing, in a timely fashion, surveys that probe the benefits of such training

5.3.2 Produce Modules for Distance Learning

Create a set of pre-produced modules, such as courses that are filmed at the annual training institutes that are edited to optimize distance learning, and make them available on-line to staff from all levels (field operations, managers/directors, policy makers). These could include:

- Module on "the what": causes and drivers of land based sources of pollution, fisheries impacts and effects of climate change;
- Module on the "the how": policy cycle, marine spatial planning, marking marine zones, building political will, developing social media campaigns, improving quality of fisheries landings data;
- Module on sustainable financing and coordination of funding across agencies. Currently agencies do routinely connect on project specific examples, but a module on coordination of funding strategies will be needed as no single grant, federal program or even market-based strategy or innovative partnership (i.e. public-private, private-social, cooperative) will suffice. A portfolio of strategies is needed to address long-term financial support for sus-

tained efforts to manage coral reefs. Recent efforts associated with sustainable financing strategies in other jurisdictions are needed as models for the American Samoa territorial initiative. For example, with over 2.5 million tourists visiting the USVI each year, that territory has the opportunity to build capacity to take advantage of innovative potential funding sources, including tourism user fees, tourism and entry/exit fees and mooring user fees. Other mechanisms for generating funding to encourage conservation activities include cost and benefit sharing, investment and enterprise funds, and fiscal instruments and arrangements for private or community management of marine protected areas and facilities. Such potential sources of income should be tracked by staff in American Samoa to explore possible transferrable mechanisms for raising funds dedicated directly to reef conservation and management programs. A Protected Area Trust for American Samoa should be investigated as a potential mechanism to gather and disburse funds raised through the novel strategies recommended here.

- Module on fostering collaboration and trust that includes essential elements of effective meetings, fostering effective dialogue, conflict resolution, and decision-making.
- Module on codification of good practices for coastal zone management, marine protected areas etc. are made available to staff as the subject of mini-courses and trainings. An example is Code of Conduct for Responsible Fisheries (FAO 2007); and,
- Modules on dealing with persistent administrative barriers such as staff turnover, improved collaboration, better meetings, integration across agencies, and writing SOPs (standard operating procedures).

Materials for these types of modules may require custom production or may be available from a wide variety of sources such as Sea Grant, NOAA's Coastal Services Center, the Center for Watershed Protection, Caribbean Sea Large Marine Ecosystem, International Waters Learning Exchange and Resource Network (IWLEARN), and UN Train Sea-Coast. There are a growing number of publications that would be useful in developing these modules to build capacity and therefore do not bear repeating here[2].

5.4 Use Complex Projects as Capacity Building Case Studies

There are examples of reef management initiatives that illustrate the challenges of design and implementation that serve as case studies for examining what works and why. In American Samoa there are several potential initiatives that could be the subject of broader analysis to examine in more detail specific challenges that have prevented implementation. These could be joint exercises with ASCC and DOC and other CRAG member agency staff as a learning tool for students, managers and decision-makers to specifically focus on what capacities are needed to move an initiative through the five-step management cycle of issue analysis, program planning, formal approval, implementation and evaluation.

2 Reef Resilience Tool Kit, How's My MPA Doing, Healthy Reefs Healthy Communities, International Waters Experience Notes, World Fish Centers Lessons Learned 1804, Great Barrier Reef 2009 Baseline, GEF's International program.

For example, coordination of coral reef management across villages is extremely important but difficult to accomplish in practice due to the level of coordination required across the complex Matai system, customizing program delivery, coordinating with multiple agencies, and conducting effective outreach and enforcement activities. Leadership is highly dependent on key individuals and formal commitment at both the level of the territory and the community varies depending on individual leaders of agencies, programs, or villages. Where strong leaders have emerged coral conservation has succeeded. Documenting these actions in terms of case examples could be a practice that accelerates effective capacity building.

5.5 Strategies for Cultivating Local Leaders

American Samoa has produced a wide range of local leaders in coral reef management serving a wide range of roles in government, civil society and market forces. Leaders are experienced communicators, effective collaborators and play a central role in navigating support for a plan of action. While examples abound in the current American Samoa coral reef network, developing, mentoring and rewarding emerging leaders is essential. While creating feeder networks is a persistent barrier, there are a growing number of young people who are emerging leaders from American Samoa. Such young leaders are models for working effectively within the community, serve as potential mentors, and are role models that can motivate future leaders. Traditional approaches of peer-to-peer exchanges, participating in learning journeys, and further investment in professional development are sound. However, we recommend specific criteria to guide, encourage and reward young leaders, and continue to base leadership development within a traditional Samoan context. While a wide range of leadership cultivation literature exists, the following set of leadership characteristics from the NRC (2008) resonates particularly well for American Samoa:

- Critical and reflective thinking and a willingness to challenge the status quo and invite inquiry into potential new ways of doing and seeing;
- Ability to see the big picture, as well as the parts and their interrelationships – also known as system orientation;
- Skillful and honest communication, including listening skills and the ability to speak and write with clarity, vision and purpose;
- Openness to the diversity of world views and perspectives and ability to make choices, especially when a decision goes against popular thought or opinion;
- Strong linkage to traditional Samoan culture; and,
- Ethical foundation of word and action to navigate the political arena without susceptibility to corruption.

5.6 Principles of Building Adaptive Capacity

A summary set of principles to undergird a long-term capacity building strategy is as follows:

Principle #1: ISSUES MATTER! Building adaptive capacity needs to be directed at a set of issues, as described in detail in section 3.0 of this report. There should be direct links between the issues and this strategy. Issues should matter most to the people of the place and represent both challenges and opportunities. Issues change and may become more or less important over time and new ones will form in the coming years, some through crisis and others gradually over time. Therefore an adaptive strategy is needed to respond to the range of issues associated with management of coral reefs.

Principle #2: WHO'S THE AUDIENCE? Once the issues are identified, an assessment of capacity needs should follow that is directed at the appropriate "levels" in the management system (field operations, managers, decision makers). Capacity building can be directed at an individual, groups, teams, organizations, and across networks. What matters most is defining who currently needs the capacity and who may need such capacity in the future.

Principle #3: CAPACITY TO DO WHAT? Once the audience has been identified, the questions center around defining what capacity is needed and what it will accomplish. Identifying the competencies that are desired in precise terms is essential and best accomplished with clear and unambiguous goals.

Principle #4: CONTEXT IS KEY. There is no "one" strategy to build capacity, and if one strategy works well in one location, it may or may not work well elsewhere. Given the complexities in coral reef management, bundles of capacity building strategies are needed that fit in the local context, are timely, appropriate and balanced across audiences. While basic capacity building needs are mostly similar across American Samoa, issues may play out differently within the varied context of individual villages across the territory.

Principle #5: LONG-TERM AND SUSTAINED, BUILT ON SUCCESS. A long-term and sustained commitment to building capacity must address frequent staff turnover, shifts in the social and environmental issues, ongoing learning and the need for adaptation. Fortunately, such a long-term perspective seems to be evidenced across current federal, territorial and NGO partners. Such a long-term strategy must be built on successes within American Samoa to keep momentum strong.

Adaptive capacity is about building resilience and becoming less vulnerable to disturbance or change. While capacity is largely determined by the resources that are available to the system (e.g. technical, financial, social, institutional, political and environmental), it is made functional by the social processes and governance structures through which the resources are employed and mediated. Therefore, this document attempts to link the analysis of issues that influence both the resources within the system and the organizational structures through which they are mediated.

6.0 Conclusions in Context

Recently, over three thousand scientists signed a "Consensus Statement" at the end of the 12th International Coral Reef Symposium, held in Cairns, Australia, in July 2012. This statement concluded that:

> **Land-based sources of pollution, sedimentation, overfishing and climate change are the major threats [to coral reefs], and all of them are expected to increase in severity. Across the globe, these problems cause a loss of reef resources of enormous economic and cultural value. A concerted effort to preserve reefs for the future demands action at global levels, but also will benefit hugely from continued local protection.**
> (www.icrs2012.com/Consensus_Statement.htm)

This statement, which acknowledges the well-recognized threats to corals, yet maintains a role for "continued local protection … to preserve reefs", was publicly criticized by Australian coral ecologist Roger Bradbury, in the widely discussed Op-Ed in the New York Times, "A World Without Coral Reefs" (www.nytimes.com/2012/07/14/opinion/a-world-without-coral-reefs.html). In this article, Bradbury argues that:

> **The scientific evidence … is compelling and unequivocal, but there seems to be a collective reluctance to accept the logical conclusion — that there is no hope of saving the global coral reef ecosystem.**

This key question – whether or not coral reefs *can* be saved – was asked and discussed frequently in our interviews. It is our conclusion that the measures recommended in this document will, if implemented, not only help preserve coral reefs for future generations, but more importantly, they will help build resilience into the coupled physical/environmental *and* social/governance systems of American Samoa to help the territory adapt to the changes that are likely to come as it responds to the challenges ahead. It is our hope that this capacity assessment proves useful to the people of American Samoa.

Tutuila, American Samoa. Photo Credit: SustainaMetrix

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Waves breaking over the reef near the airport, American Samoa. Photo Credit: Anita Pritchett

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Appendix A: Glossary

Adaptive Management: A central feature of the practice of any form of ecosystem-based management is that it must respond positively to changing conditions and to its own experience. In other words, the practice of coral reef management must be grounded in a process of learning and adaptation. Adaptive management is not reactive management whereby the practitioner simply responds to the unexpected. It is rather a conscious process of examining the course of events as they unfold at larger, or smaller, spatial and temporal scales, and being cognizant of future projections and developing adaptation options in consideration of these dynamics. In other words, in the face of uncertainty, this includes being able to change or redirect decision-making based on the evolving outcomes.

Actions: Projects, procedures or techniques intended to implement an objective as defined in the priority setting documents.

Best Management Practices: Management measures or practices that are established and widely accepted as meeting the intent of coral reef conservation in a variety of disciplines (fisheries management, watershed management, biophysical monitoring, etc.)

Capacity: The overall ability of the individual or group to perform their responsibilities for coral reef management. It depends not only on the capabilities of the people (their knowledge, abilities, relationship and values), but also on the overall size of the task, the resources which are needed to perform them, and the framework within which they are discharged.

Capacity Building: Programs that are designed to strengthen the capacity (knowledge, abilities, relationship and values) to reach the goals as defined in the priority setting documents. This includes strengthening the institutions, processes, systems, and rules that influence collective and individual behavior.

Capacity Development: A widely recognized definition of capacity development was published by the United Nations Development Programme in 1997 as: "the process by which individuals, organizations, institutions and societies develop abilities (individually and collectively) to perform functions, solve problems and set and achieve objectives." We expand this definition to put greater emphasis on the strategic role of a facilitator in helping this process in an uncertain and changing environment. Our suggested definition is: "Externally or internally initiated processes designed to help individuals and groups to manage coral reefs and to enhance their abilities to identify and meet coral reef management challenges in a sustainable manner."

Capacity Strengthening: Capacity strengthening is part of the capacity development process and is set within a dynamic context and involves individuals, networks, organizations and even societies who have a stake in functioning coral reefs. It involves such processes as continuous learning, adaptation and innovation in dealing with unanticipated problems or issues. A central feature of capacity strengthening is assessing and reacting to current and future needs in order to improve the ability to learn and solve problems in the long-term.

Commitment: In the case of coral reef management and governance, commitment often refers to governmental commitment to the policies of a program and expressed by the delegation of the necessary authorities and the allocation of the financial resources required for long-term program implementation. When commitment is used in a different context it will be defined.

Conservation Action Plans (CAPs): The Nature Conservancy's process for "helping conservation practitioners develop strategies, take action, measure success, and adapt and learn over time." From Conservation Action Planning: Developing Strategies, Taking Action, and Measuring Success at Any Scale--Overview of Basic Practices. The Nature Conservancy 2005. Available in English and Spanish at:
http://conserveonline.org/workspaces/cbdgateway/cap/resources/1/TNC_CAP_Basic_Practices.pdf/download

Constituencies: While constituencies can be broadly defined, we use the word to define active support of the coral reef management program by a core group of well-informed and supportive people composed of stakeholders in the private sector, civil society and government agencies.

Coral Reef Management Priorities: Those goals and objectives that have been defined by a core group of coral reef managers and stakeholders in each of the seven jurisdictions and identified through a voting process as those that require immediate attention over the short term of 3-5 years. For the purposes of the capacity assessment, the term goals will refer to the highest-level results the jurisdiction seeks to achieve (e.g., stable, sustainable coral reef ecosystems), as articulated in the jurisdictional priority setting documents. These goals in general refer to efforts to understand and address the three

major threats to reefs; impacts from climate change, fishing, and land-based sources of pollution as well as other identified jurisdictional priorities.

Coral reef resilience: According to the Reef Resilience Toolkit (http://www.reefresilience.org/) website, resilience is more than being able to recover from a major disturbance, surviving bleaching, or resisting bleaching. For a coral community to be resilient, it must also be able to continue to thrive, reproduce, and compete for space and resources. For example, coral communities that have experienced bleaching but not mortality may be weakened and less able to thrive, grow, and reproduce in the competitive reef environment. Multiple factors contribute to resilient coral communities, some of them known and others to be discovered. Scientists are working to identify important factors (biological, physical and ecological) that managers can evaluate to determine the health or resilience of a coral community. It is important that managers build the capacity to be able to identify and better understand these factors, so management strategies can be focused on maintaining or restoring communities to more optimal conditions to maximize coral survival after stressful disturbances.

Core managers group: This term refers to the agencies/organizations involved in management of coral reefs in a jurisdiction not just a geographic site within a jurisdiction. Most locations have a core group like this and will be the central focus of the capacity assessment process.

Ecosystem approach: According to the COMPASS Scientific Consensus Statement, Ecosystem-based management emphasizes the protection of ecosystem structure, function and key processes; is place-based in focusing on a specific ecosystem and the range of activities affecting it; explicitly accounts for the interconnectedness among systems, such as between air, land and sea; and integrates ecological, social, economic and institutional perspectives, recognizing their strong interdependences.

Local Action Strategy (LAS): LAS's are a U.S. Coral Reef Task Force led initiative to identify and implement priority actions needed to reduce key threats to valuable coral reef resources in each U.S. coral reef jurisdiction. In 2002, the Task Force adopted the "Puerto Rico Resolution" which calls for the development of three-year LAS by each of the seven U.S. jurisdictions containing coral reefs: Florida, Puerto Rico, the U.S. Virgin Islands, Hawai'i, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands. These LAS's are locally driven roadmaps for collaborative and cooperative action among federal, state, territory, and non-governmental partners.

Marine Protected Areas (MPAs): Any area of the marine environment that has been reserved by federal, state, territorial, tribal or community law, mandate, regulation or declaration to provide lasting protection for part or all of the natural and cultural resources therein.

Nested Systems: Thinking in terms of nested systems is essential because issues of coral reef management impact upon, and are impacted by, conditions and actions at both higher and lower levels in an ecosystem and governance hierarchy. Some issues of coral reef management can be addressed more effectively at one level, and less effectively at another. The choice of the issue or set of issues to be addressed must therefore be made in full knowledge of how responsibility and decision making authority is distributed within a layered governance system. Planning and decision making at one scale, for example within a jurisdiction, should not contradict or conflict with planning and management at another – for example, at the scale of the nation. The reality is that such contradictions and conflicts are common across the world. A major challenge for the coral reef manager is to recognize these differences and work to either change them or select goals and strategies that recognize that such contradictions must be accommodated or resolved. In practical terms this means that a central feature of ecosystem approach is that all planning and decision-making must recognize and analyze conditions, issues and goals at least at the next higher level in the governance system. Thus, the ecosystem approach at the jurisdictional scale must – at a minimum – be placed within the context of governance at the smaller scale of the village or municipality while governance at the scale of a state/territory – at a minimum – be analyzed with an eye to governance at the scales of the village/municipality as well as that of the nation.

Objectives: The environmental, social, and institutional outcomes the jurisdiction must achieve to reach the end goal, generally actionable within a three to five-year time frame.

Participation: One of the defining characteristics of the practice of the ecosystem approach is its emphasis on participation and its relevance to the people affected by its practice of coral reef management. The ecosystem approach recognizes that the support of those whose collaboration is needed if a program is to be successfully implemented must be won by involving them in the processes of defining the issues that the program will address and then selecting the means by which goals and objectives will be achieved. Both individuals and members of institutions are more likely to comply with a management program when they feel that it is consistent with their values, responds to their needs and to their beliefs of how human society should function. Voluntary compliance by a supportive population lies at the heart of the successful

implementation of a program. A participatory approach helps stakeholders and the public to see the efforts of a program as a whole.

Site managers: Site managers: A person or persons designated with authority to manage the marine protected area at any level be it community, agency, state or federal.

Situation Analysis: A preparatory document for the priority setting process that summarized coral reef threats, condition and trends, key management issues, and goals of management agencies.

(**Key) Stakeholder:** A person, group, or organization that has direct or indirect stake in an organization that is involved with managing coral reefs.

Stewardship: Where equitable and sustainable forms of development are the ultimate goals of ecosystem approach, the practices of stewardship is the path to that destination. Ecosystem stewardship is an ethic practiced by individuals, organizations, communities and societies that strive to sustain the qualities of healthy and resilient ecosystems and their associated human populations. Stewardship takes the long-term view and promotes activities that provide for the well being of both this and future generations.

Appendix B: Interviews

Name	Institutional Affiliation and Title	Method
PRE-SITE VISIT		
Fatima Sauafea-Leau	NOAA Fisheries, PIRO	Phone (4/2)
Hideyo Hattori	DOC, CRAG Coordinator	Phone (4/4)
Doug Fenner	DMWR - Coral Reef Monitoring Ecologist	Phone (4/6)
Lucy Wiles	DMWR, MPA Program Leader	Phone (4/18)
MONDAY 4/23		
Ray Tulafono	DMWR, Director	In Person
Michael "Mike" Reynolds	NPS, Director	In Person
Jacinta Suataute Galea'i	DOE, Acting Director	In Person
Matt Le'i	DOE, Program Director	In Person
Fanuatanu Vaiaga'e	EPA, Director	In Person
Va'asa Simanu	EPA, Acting Director	In Person
Ephraim Temple	American Samoa Community College, ASCC Instructor, Sea Grant Extension Agent	In Person
Fatima Sauafea-Leau	NOAA Fisheries, PIRO	In Person
Hideyo Hattori	DOC, CRAG Coordinator	In Person
Kristine Bucchianeri	DOC, NOAA Regional Support Staff CRAG Coral Reef Program Specialist	In Person
Trevor Kaitu'u	DOC, Education Coordinator	In Person
Leifiloa Carol	DOC, Population LAS Coordinator	In Person
Lelei Peau	DOC, CRAG Chair, Deputy Director	In Person
Hideyo Hattori	DOC, CRAG Coordinator	In Person
Hideyo Hattori	DOC, CRAG Coordinator	In Person
Kristine Bucchianeri	DOC, NOAA Regional Support Staff CRAG Coral Reef Program Specialist	In Person
Trevor Kaitu'u	DOC, Education Coordinator	In Person
Leifiloa Carol	DOC, Population LAS Coordinator	In Person
Sandra Neria	DOC, ASCMP, Manager	In Person
Sean Morrison	DOC, ASCMP, Legal Advisor	In Person
Reinette Thompson-Niko	DOC, Finance Manager for CRAG/CRI awards	In Person
TUESDAY 4/24		
Reinette Thompson-Niko	DOC, Finance Manager for CRAG/CRI awards	In Person
Soli Tuaumu	DOC, ASCMP Wetlands/Mangroves	In Person
Marvis Vaiagae	DOC, ASCMP PNRS Coordinator for LU Division	In Person
Fa'amao Asalele	EPA, Assistant Director of Technical Programs	In Person

Name	Institutional Affiliation and Title	Method
Christianera Tuitele	EPA, Water Program Manager	In Person
Tumau Lokeni Iese	EPA, Water Program Education/Outreach/PLA/CAP	In Person
Nate Mease	EPA, attorney for EPA	In Person
Kuka Matavao	EPA, Water Program	In Person
WEDNESDAY 4/25		
Selaina Vaitautolu	DMWR – MPA, Community Based Fisheries Management Program	In Person
Joshua Seamon	DMWR – MPA, Community Based Fisheries Management Program	In Person
Ben Carroll	DMWR – Fisheries and Coral, Coral Monitoring	In Person
Nonu TuiSamoa	DMWR – Creel Program	In Person
Tafito Aitaoto	DMWR – MPA, Currently managing the No-Take MPA program	In Person
Sione Lam Yuen	DMWR – MPA, Currently managing the No-Take MPA program	In Person
Mike King	Coalition for Reef Lovers, Founder	In Person
Alice Lawrence	DMWR – MPA, previous MPA Coordinator	In Person
Malia Vaofanau	DMWR – Education Staff	In Person
Faga'alu Major Uso	Guam Exchange Program	In Person
THURSDAY 4/26		
Michael Reynolds	NPS, Director	In Person
Tim Clark	NPS, Marine Ecologist	In Person
Sean Eagan	NPS Chief of Resource Management	In Person
Peter Eves	DMWR – Enforcement Program	In Person
Wendy Cover	FBNMS Research Coordinator	In Person
Gene Brighouse	FBNMS Superintendent	In Person
Isabel Halatuituia	FBNMS Administrative Assistant	In Person
Emily Gaskin	FBNMS Special Event Coordinator	In Person
Seth Galea'i	ASCC President	In Person
Aufai Ropei Areta	ASCC Forestry Program	
Ephraim Temple	ASCC Instructor, Sea Grant Extension Agent	In Person
Kelley Anderson Tagarino	ASCC Marine Science Coordinator	
Tino Mao	DOC – PNRS Board Member	In Person
Apulu Veronika Mortenson	FBNMS Education, Outreach and Community Liaison	In Person
FRIDAY 4/27		

Name	Institutional Affiliation and Title	Method
American Samoa J-CAT		

POST-SITE VISIT

Kevin Doyle	Green Economy, Principal	Phone (5/4)
Peter Craig	Previous NPS	Phone (5/15)
Domingo Ochavillo	DMWR - Chief Fishery Biologist	Phone (5/29)
Gerry Davis	NOAA Fisheries – Habitat Division / AIC Science Advisor	Phone (5/29)
Mike Hamnett	Research Corporation University of Hawaii / AIC Advisor	

Appendix C: Timeline

Event	Date	Notes
American Samoa becomes Territory of US	1900	
First Reef Monitoring Transect in the Pacific recorded at Aua on reef flat by Alfred Mayor	1917	
Crown of thorns outbreak	1938	One local resident also mentioned to biologists that the only previous infestation occurred in the late 1920's (AECOS and Aquatic Farms, 1980)."
Port of Pago Pago became a training and staging area for the U.S. Marine Corps	1940s	During the War Years, the United States built roads, airstrips, docks and medical facilities exposing island residents to the American way of life.
Major runways constructed at Pago Pago airport	1942	Built over a reef flat - possibly the single most damaging event for coral reefs in the area produced by a construction project
USS Chehalis sinks at fuel dock	1949	Still has fuel aboard in 2009
Van Camp tuna cannery built in harbor (over reef flat)	1954	
Starkist tuna cannery built in harbor (over reef flat)	1963	
American Samoa ratified its territorial constitution	1967	
Crown of thorns outbreak	1970s	1978 COT outbreak documented on Tutuila in a Faga'alu Watershed document compiled in the late 90's.
American Samoa Community College (ASCC) was established	1970	
Rose Atoll National Wildlife Refuge Established	1973	
American Samoa Coastal Management Agency (ASCMP) was established	1980	
ASCC Designated a Land Grant College	1981	
Tropical Cyclone Esau	1981	
Beginning of long-term monitoring program at Tutuila by Birkeland and Green	1982	
Boat-based creel survey started	1985	
Beginning of long-term monitoring program at Fagatele Bay by Birkeland and Green	1985	
Fagatele Bay National Marine Sanctuary designated	1985	In response to a proposal from the American Samoa government to the (then) National Marine Sanctuary Program.
Department of Marine & Wildlife Resources established	1986	Originally the office of MWR
Tropical Cyclone Tusi	1987	
National Park of American Samoa established	1988	10,520 acres at Tutuila, Ofu and Ta'u
Public Notification & Review System (PNRS) established	1988-1995	Established to coordinate multi-agency reviews of land-use applications in the territory
Tuna canneries required to transport high-nutrient wastes daily to dump zones 5 miles off-shore	1988	
In-shore creel survey	1990	

Event	Date	Notes
Tropical Cyclone Ofa	1990	
Natural Resources Commission established for local endangered species	1990	Commission was inactive
Tropical Cyclone Val	1991	
Canneries required to stop dumping their wastes into the inner harbor	1991	Effluent piped to outer harbor - reduced nutrient loading on inshore reefs and improved water quality
Launch of international CRI in Barbados	1993	
Longliner ship Jin Shiang Fa runs aground at Rose atoll	1993	Spilled full fuel load - long term environmental impacts
Insular areas CR strategy (action plan) signed by 4 governors: 95'	1994	
MOU with State Department finalizing CRI	1994	
Mass bleaching event	1994	
All Islands Committee established	1994	
Le Tausagi started. Includes ASCC, Fagatele Bay NMS, PIRO, DOC, CZM, CRAG, NPS, SWC, EPA, DMWR, NRCS, DOE as external partner	1994	Multi-agency educational group established to coordinate outreach efforts.
AS Coral Reef Advisory Group established	1994	CRAG included agencies with jurisdiction on coastal areas and coral reefs to coordinate efforts (DMWR, DOC, ASEPA), later including NPS and ASCC.
Vaoto Territorial Marine Park	1994	120 acres located at Ofu, exchanged for the dredging of Faleasao Harbor
Sewage treatment plants in Tafuna & Utulei upgraded to increase primary treatment capacity	1994	Better and more waste treatment as opposed to dumping
DMWR Giant Clam hatchery for stock enhancement	1995-2002	
Scuba spear fishing gets popular	1996-1997	
US Domestic CRI Monterrey	1997	
Second Round of PNRS	1997	
"Blue Book" evaluation and "Green Book" budget	1998	ex. AS ship groundings, removal of ~ dozen grounded ships from harbor (from hurricane) cost $20 million.
Federal Executive Order 13089 established the United States Coral Reef Task Force (USCRTF)	1998	
Approximately 1,000 corals were removed from areas planned for causeways.	1999	Although a storm damaged most of the removed corals, over 300 colonies were transplanted into the footprint of one of the grounded vessels at Onesosopo near the mouth of the harbor. The survival, growth and live tissue status of 354 transplanted corals were evaluated in 2001 when 91–92% had survived and in 2005 when 60–78% had survived.
Executive Order 13089 amended to include coral reef jurisdictions	1999	
9 shipwrecks from cyclone in 1991 removed from harbor reefs	2000	
Task Force on Population Growth produced report on unsustainable growth in American Samoa	2000	Increased environmental pressure due to increased human population

Event	Date	Notes
the collection of "live rock" (coral fragments) is banned to allow reef recovery	2000	
AS hosts USCRTF	2000	
Oldest monitoring data as result of actions from remaining grounding ships	2000	
Coral Reef Conservation Act of 2000 (CRCA) (16 U.S.C. 6401 et seq.)	2000	Established the Coral Reef Conservation Grants Program, through which the CRCP makes available matching grants to government agencies, non-governmental organizations, and academic institutions for coral reef conservation activities, consistent with the purposes of the Act.
Governor Sunia became USCRTF member	2000	With promise to revive grounded vessels in PGG
AS Governor Sunia issued a statement establishing a goal of protecting twenty percent of American Samoa's coral reefs as no take MPAs	2000	Governor Tauese Sunia issued a statement establishing a complementary goal of protecting twenty percent of American Samoa's coral reefs as no take MPAs, where "extraction of coral reef fish, corals or other resources would be prohibited"4. The Governor tasked the American Samoa Coral Reef Advisory Group with developing a plan, consistent with E.O. 13089. Letter to DOC (Lelei Peau) mandating the 20% goal
The USCRTF developed the National Action Plan To Conserve Coral Reefs	2000	
Poloa became the first MPA village for the Community-based Fisheries Management Program (CFMP)	2001	28-Mar
Alofau became the second MPA village for the CFMP	2001	29-May
Vatia became the next MPA village for the CFMP	2001	17-Oct
Establishment of National Oceanic and Atmospheric Administration (NOAA) Coral Reef Conservation Program (CRCP)	2001	
The use of scuba-assisted fishing at night is banned due to overfishing	2001	Reduced fishing pressure
Sea Grant Program established at American Samoa Community College	2002	
Mass bleaching event	2002	Little data on recovery or mortality
Beginning of the NOAA CRED monitoring program	2002	
Aua became the next MPA village for the CFMP	2002	2-Feb
Masausi became the next MPA village for the CFMP	2002	28-Mar
Scuba spearfishing banned	2002	
NOAA, in cooperation with USCRTF, published A National Coral Reef Action Strategy	2002	
USCRTF adopts the Puerto Rico Resolution calling for LASs	2002	
PR USCRTF Resolution	2002	Leads to LAS process and reviews

Event	Date	Notes
AS develops LASs for Fisheries Management, Land Based Sources of Pollution, Local Responses to Climate Change, and Population Pressure	2002-2003	
Amaua and Auto became the next MPA villages for the CFMP	2003	6-Feb
Fagamalo became the next MPA village for the CFMP	2003	September
Seven CFMP MPA village representatives went to Guam for the Community Fisheries Workshop	2003	October
Governor EO bans shark finning in Territorial waters	2003	
American Samoa Territorial Marine Laboratory Facility Plan developed	2003	
Devastating floods	2003	Numerous structures were damaged, and four people were killed, primarily as a result of poor construction locations and non- compliance of stream regulations (setbacks, channelization, etc.).
Mass bleaching event	2003	Recovery of corals, but coral disease 'white syndrome' becomes common
Ocean Resource Management Plan implemented	2003	Streamlines several previous management plans and lays groundwork for LAS process
ASEPA begins coral reef monitoring program	2003	To carry out long-term studies to detect change over time resultant from land-based, human disturbance
AS Ocean Resource Management Plan created	2003	
Economic Valuation of American Samoa Coral Reefs	2003	
Sea Turtle/Marine Mammal Sanctuary	2003	All territorial waters (0-3 miles offshore)
Leone High School Aquaculture begins	2003	
Vetiver Grass projects	2004	Started at CRAG and SWCD, NRCS
Community Based Fisheries Management Plan for Vatia developed	2004	
Tropical Cyclone Heta	2004	
PLA Training Workshops by the LMMA Network from Fiji	2005	
CORL (NGO) community coral farming started	2005	In Nu'uuli, Alofau, and Amouli, funded by CTSA grant and NOAA CRCF in 2008; land-based in Amouli
Public Knowledge and Perception of Coral Reefs: A Study of Tutuila, American Samoa	2005	
American Samoa Coral Reef Monitoring Program begins	2005	Led by DMWR
Tropical Cyclone Olaf	2005	
The export of canned tuna valued at $431 million (accounts for essentially 100% of exports from the territory at the time)	2006	
Jurisdictional No-Take program development at DMWR	2006	

Event	Date	Notes
CORL discovers issue of high phosphate detergents (legally sold in the territory) from algae blooms at Ala'falou	2006	
Piggery compliance program kickoff	2006	
ICA between CRAG agencies drafted	2006	signed?
PLA Community Workshop for the CFMP villages of 'Aoa and Matu'u/Faganeanea	2006	
Executive Order No.: 010A-2008/ An Order Recognizing the Importance of American Samoa Government's Commitment to Ameliorate Global Climate Change and its Negative Effects on the Territory	2007	
Initial assessment of the potential for applying economic values to enhance coastal environmental policy in American Samoa	2007	DOC
Traditional Knowledge of Marine Resources Use and Management in Am. Samoa project started	2007	
The Two Samoas Initiative is proclaimed by the Governor of American Samoa and PM of Samoa	2007	
Fagatele Bay National Marine Sanctuary management plan review process begins with release of condition report	2007	Proposed option to expand sanctuary into new sites around AS
Manu'a High School Aquaponics	2007	
American Samoa hosted the United States Coral Reef Task Force Jurisdictional meeting	2007	
Meeting of US Coral Reef Task Force promised to protect large reef fish species	1997	Promise was not kept, no follow-up action
The American Samoa Marine Protected Area (MPA) Network Strategy was developed	2007	To link the Territory's MPA programs and agencies together to be more effective in protecting and managing the marine resources. The goal of the MPA Network Strategy is to effectively coordinate existing and future MPAs to ensure the long-term health and sustainable use of the Territory's coral reef resources.
Palolo DVD was produced	2008	
American Samoa Coral Reef Fishery Workshop	2008	Report produced several years later was forgotten
PLA Community Workshop for Tula village under the Wetland Community-based Management Program	2008	
Revision process started for the Fisheries LAS	2008	
American Samoa Territorial Marine Science Center Business Plan developed	2008	

Event	Date	Notes
Marine Protected Area Program Master Plan completed	2008	DMWR - The Marine Protected Area (MPA) Program Master Plan is meant to be a simple and easy to follow step-by-step roadmap to assist the American Samoa Government (ASG), Department of Marine and Wildlife Resources' MPA Program in meeting the goal to ensure protection of unique, various and diverse coral reef habitat and spawning stocks. This will also assist efforts to meet the Governor's mandate of protecting 20% of American Samoa's coral reefs by declaring no-take MPAs.
Wyland Mural completed on the Governor's Executive Office Building	2008	In commemoration of the International Year of the Reef
Population Commission meets	2008	to talk about perceived increase and gain insight into issues and possible responses, like family planning
More implementation of Farm Bill by NRCS	2008	Inroads through ASEPA piggery, aligning EQUIP and dry litter design
AS hosts Population Summit	2008	
Center for Sustainable Integrated Agriculture and Aquaculture created at ASCC Land Grant	2008	This center was created to demonstrate and promote the practice of sustainable aquaculture methods. These include recirculating fish production, rainwater collection, and aquaponics. Sustainable aquaculture reduces agriculture runoff that can potentially harm reefs
SEM Pasifika Socioeconomic Training implemented	2009	
Climate Change Workshop: Bridging the Gap between Scientists and Educators implemented	2009	
PLA Training of Trainers	2009	
PLA Community Workshop for Aunu'u village for the No-Take MPA program	2009	
Governor sends letter to President Bush asking for Rose Atoll designation as a National Monument	2009	Letter drafted without consultation or notice to any other resource agency in the territory, nor any consultation with the chiefs or people of Manu'a, who will be excluded permanently from traditional fishing grounds, because of a mistaken idea that closing a large area (50 miles) of open water will increase protection for Rose. Anger in Manua generated, chiefs consider writing the president.
Fagatele Bay National Marine Sanctuary management plan review public scoping meetings	2009	
Rose Atoll declared a new Marine National Monument	2009	President Bush's Proclamation in January 2009 creating three new Marine National Monuments includes the Rose Atoll MNM (American Samoa) to be jointly managed by the USFWS and NOAA at the federal level. USFWS is taking the lead in developing a Comprehensive Conservation Plan for Rose Atoll MNM. The plan is in its initial stages.
First Model Dry Litter Piggery	2009	
Food Security Summit	2009	
Executive Order No.: 005-2009/ An Order Establishing the Territorial Population Commission, Providing for its Membership, Duties and Responsibilities	2009	

Event	Date	Notes
Harvest regulations established for giant clams	2009	
Earthquake and Tsunami	2009	Survey of environmental hazards on land by DOC and survey of coral reef damage by DMWR immediately after the tsunami. Survey of debris from land on coral reefs by NOAA with removal of a large amount of debris, 3 months after the tsunami. Quantitative survey of damage to reefs by monitoring programs in following years.
New/Revised LASs drafted for Fisheries Management, Land Based Sources of Pollution, Climate Change	2009 - 2011	
Document - Climate Change Summit Issues	2010	Developed climate change advisory group
PLA Outreach Program for Nu'uuli village focusing on watershed	2010	
Faga'alo No-Take MPA Established	2010	
First Piggery Summit	2010	CNR, NEPA, Landgrant, Soil and Water Conservation, U.H.
Coral Management Priority Setting Process completed	2010	
30% human population increase observed (mean population density of 1350 inhabitants per km2)	past 20 years	
PLA Community Watershed Workshop for Faga'alu village	2011	
PLA Community Resilience Workshop for Amouli village	2011	
DoC and CRAG hosted the Climate Change Summit: "Making Climate Change Local: Building Resilient Communities in the Pacific"	2011	Developed recommendations to guide American Samoa and other Pacific island nations towards climate change resilience
AS celebrates World Population Day, as the global population hits 7 billion people.	2011	The half-day event targeted local community members to increase awareness on population pressure issues in American Samoa, with hundreds in attendance.
Plastic Bag ban	2011	
Erosion and sediment control (ESC) contractor training and certification workshop	2011	Run by the AS-EPA and ASCMP
The Population Commission had its first official inaugural meeting	2011	The commission is designed to address territorial population pressure issues, and is composed of Education, Youth and Gender Issues, Reproductive Health, Immigration, Environment, and Integrated Planning sub committees.
Territorial Climate Change Adaptation Advisory Group formalized via Governor Executive Order	2011	Recommendations from the CC Summit became the action items for the Task Force
First Year of Quantitative Underwater Ecological Surveying Techniques (QUEST) course offered at ASCC	2011	Multi-agency partnership spearheaded by ASCC and University of Hawaii Sea Grant College Program to train ASCC students and agency staff to conduct underwater surveys. Will be offered annually. Based on the QUEST course offered by University of Hawaii-Hilo

Event	Date	Notes
American Samoa Biogeographic Assessment Report	2011	This report examines the marine biogeography of the Samoan Archipelago (~14o S latitude along the international date-line) with a focus on regional ocean climate, connectivity among islands due to larval transport, distributions of reef fish and coral communities, and the extent of existing marine protected areas. Management decisions and prior assessments in the archipelago have typically been split along the international political boundary between the islands of Samoa and those of American Sa- moa despite their close proximity and shared resources. A key goal in this assessment was to compile data from both jurisdictions and to conduct the characterization across the entire archipelago.
The Two Samoas Environmental Collaboration is formalized through the adoption of a Governance Structure and Strategic Plan	2011	Thus far, little results have been seen from actions taken in either jurisdiction to affect coral reef health
Fagatele Bay National Marine Sanctuary draft management plan and environmental impact statement	2011	
Faga'alu Watershed Management and Conservation Action Plan Drafted	2011	
First QUEST class at ASCC	2011	
Ta'iala Academy Aquaponics	2011	
ASEPA Land-based Management Plan	2011	
Island-wide scrap metal cleanup day	2011	
First Fautasi Ocean Challenge as part of CZM Coast Weeks (in October)	2011	4 steps required for youth to participate in race: 1. clean up; 2. participate in training on coastal resource management and become ocean ambassadors to pass along training; 3. participating youth develop resource management project ideas; 4. RACE - based on the results of the race, the youth receive different amounts of money for their projects.
Faga'alu mayor participates in TNC learning exchange with Guam	2011	
Amouli Resiliency Actions and Responses Plan Drafted	2011-2012	
Second QUEST course at ASCC	2012	Underwater surveying training
Samoa Baptist Academy Aquaponics	2012	
CORK wins Energy Globe Award	2012	Executive order for a sustainable project - coral farming program
Interagency Cooperative Agreement to process grants	2012	Each of 4 agencies has a point of contact
Faga'alu Watershed is selected as the 'Plus one' site in the Pacific for the USCRTF Watershed Partnership Initiative	2012	
First Manva Village in CFMP - Ta'U	2012	
Partnerships with MIT on proposal on a resilient design of a model of a residential house	2012	Based on Sri Lanka model of CZM - tsunami resilience, training workshop, guidebook.
PNRS retreat across 8 agencies	2012	August - to result in a PNRS enforcement doc

Appendix D: Generations of Management

(1993–1998) 1st Generation of Contemporary Coral Reef Management for American Samoa:

This generation was marked by activities pursued primarily within the US Federal government, and featured general issue identification for coral reef management at regional scales (i.e. within the Caribbean and the Pacific islands). These efforts were spearheaded within the Office of Insular Affairs, coordinated through the Department of the Interior,[3] following on recommendations developed by the United States Coral Reef Initiative, convened in 1993 in Barbados. A formal plan for the management of coral reefs at the insular areas was prepared in 1994 and was signed by the Governors of the insular area in 1995. The lack of a clear governance structure at American Samoa inhibited implementation at the local scale, but the Coral Reef Task Force was adopted on the national scale and other activities, such as coral reef monitoring to define spatial extent of reefs was conducted. In September 1997, representatives from U.S. Islands met in Maui, Hawaii to coordinate an island strategy for the Coral Reef Initiative. The results of this workshop, which featured a reflection on past accomplishments was published in the US Islands Coral Reef Initiative Summary Report, known as the "Blue Book" and outlined strategies for coral reef management in each island jurisdiction.[4]

(1998–2001) 2nd Generation of Contemporary Coral Reef Management for American Samoa:

This generation was marked by a more local focus on specific projects in American Samoa. The American Samoan leadership team met with the new All Islands Committee[5] and described the lack of governance structure to respond to management challenge and specific action items for American Samoa (ex. removal of 9 long-liner fishing vessels grounded on a coral reef in Pago Pago harbor in 1991 as the result of Typhoon Val). At the national scale, in 1998, President Clinton met with Insular Governors in Guam, including the Governor and delegation from American Samoa. The American Samoa delegation also attended federal Ocean Blueprint meeting in Monterey. In 1999, the All islands Committee adopted the US All Islands Coral Reef Initiative Strategy or "Green Book" which included vision and mission statements a sustainability statement, and proposals for local action strategies. In 2000, there was another plan for ship removal when Governor Baker invited Dr. Michael Crosby (US CRTF chief biologist) to do an assessment of the situation in the harbor. Formal commitment of the plan was evidenced by approval of the local action for ship removal and funding by NOAA and alloca-

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3 US Department of the Interior has administrative responsibility for coordinating federal policy in the territories of American Samoa, Guam, the U.S. Virgin Islands, and the Commonwealth of the Northern Mariana Islands, and oversight of federal programs and funds in the freely associated states of the Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau. The Office of Insular Affairs (OIA) works to develop more efficient and effective government in the insular areas by recommending policies, providing financial and technical assistance, and strengthening Federal-insular relationships.

4 The United States Coral Reef Task Force (USCRTF) was established in 1998 by Presidential Executive Order 13089 to lead U.S. efforts to preserve and protect coral reef ecosystems. Co-chaired by the Department of the Interior and the Department of Commerce though the National Oceanic and Atmospheric Administration, the USCRTF includes leaders of 12 Federal agencies, seven U.S. states, territories, commonwealths, and three Freely Associated States. The USCRTF helps build partnerships, strategies, and support for on-the-ground action to conserve coral reefs.

5 The U.S. jurisdictions of American Samoa, Hawaii, Puerto Rico, Guam, U.S. Virgin Islands and Commonwealth of the Northern Mariana Islands established the U.S. All Islands Coral Reef Initiative Coordinating Committee (the Committee) in 1999. The Governors of each of these jurisdictions designated Points of Contact (POCs) to represent them.

tion of approximately $15 million for ship removal. The announcement of the plan to implement the derelict ship removal was made in conjunction with the first meeting of US Coral Reef Task Force in American Samoa in 2000.

By March 2000, all 9 wrecks were removed from the reef in the outer harbor and two were sunk them at a pre-designated offshore dumpsite. At the conclusion of the response, nearly 36,000 gallons of oil and approximately 600 pounds of anhydrous ammonia were removed from the wrecks at a cost of over $12 million. Restoration costs totaled approximately $3 million. The reflection on the process of ship removal was presented a meeting of international and domestic coral reef managers (including Lelei Peau from American Samoa) in Barbados. A monitoring transect was initiated and remains as the longest running monitoring transect developed due to that ship removal around 2001.

(2002–2008) 3rd Generation of Contemporary Coral Reef Management for American Samoa:

This generation was marked by a focus on even more local coral reef management, as evidenced by the creation of specific Local Action Strategies, and associated projects, for American Samoa, as suggested at the Coral Reef Task Force Meeting in Puerto Rico in 2002. In 2002, a team in American Samoa used 13 key threats identified in the national action strategy and narrowed them down to three key drivers that affect the health of coral reefs to be the subject of an LAS: climate change, land-based pollution and fishing. American Samoa also decided to develop an additional LAS, Population Pressure, which was derived from the threats identified in the national action strategy but was considered a severe threat to coral reefs. The US Coral Reef Task Force convened the POC's to review the LAS and went through process of identification, prioritization, elimination and consensus on the final set of Local Action Strategies, after this process formal approval was granted. Implementation of the four LAS's started in late 2003 early 2004. The implementation continued for 3 years for the climate change LAS, Fisheries LAS, Land Based Sources of Pollution LAS, and Population Pressure LAS. In 2007, an informal evaluation of the three LAS's was conducted recognizing that LAS implementation required an "adaptive management" approach as some of the planned strategies were implemented while other elements were dropped. Key barriers were identified such as the need to link actions with mapping of spatial extent and monitoring of reef health. This identified the issue of data acquisition and data quality for the subsequent generation. This informal evaluation at the scale of American Samoa occurred at the same time as an external panel was evaluating the national Coral Reef Conservation Program[6] that led to the National Goals and Objectives and priority setting document process. The US CRTF meeting was held in American Samoa in 2007.

6 The Executive Summary of the External Panel Review in 2007 stated: The resources available to the Program were effectively used, but the Panel concluded that the current level of resourcing severely limits the capacity of the CRCP to help meet the challenge of conserving the coral reefs of the U.S. Hence, the CRCP is now at an inflection point, and needs to move from assessment of threats to coral reefs to effective, on-site action to respond to those threats. The issue of resourcing and capacity of CRCP is particularly important given the considerable value and geographic scope of the coral reefs for which the U.S. shares management responsibility, and the range and intensity of conservation problems that need to be addressed.

(2009-Present) 4th Generation of Contemporary Coral Reef Management for American Samoa:

The current generation stands as a 'quantum leap' into the future of coral reef management, strategic planning and capacity building in American Samoa. In recognition that threat based LAS's were too broad in scope and scale to feasibly implement or show effectiveness to the resource, NOAA CRCP initiated a priority setting which engaged a wide range of stakeholders from various agencies involved in coral reef management, and identified a range of issues and threats that required attention. This discussion led to a set of goals and objectives that were prioritized for American Samoa coral reef management over the next five years. The process also included the identification of priority geographic areas where focused efforts to implement the priority goals and objectives could more likely lead to measurable success. Based on the prioritization process, a site-based plan was developed for Faga'alu. The activities that were featured in the plans were sequenced and prioritized as part of the NOAA Coral Reef Conservation Programs Cooperative Agreement.

Through a set of resolutions approved by the US CRTF, the priority-setting process was adopted and intended that more stakeholders be involved and engaged, goals are more focused, geographic areas specified but also identified the issue of additional financial support from federal agencies other than NOAA that don't have specific coral mandates. Funding for the NOAA CRCP funds was now granted as long as it was clear that the projects fit under the priority actions. Implementation began in 2010 and continues to date with a wide range of ongoing activities, many of which are just getting under way. The capacity assessment is part of this process to help identify how to best direct capacity building efforts for this generation, capacity needed for future generations and capacity needed to examine governance structures.

Using generational loops builds capacity to communicate about the multiple generations of management. In American Samoa, the issues that defined the loops continue to expand, providing evidence that capacity is increasing in the system. Coral management is beginning to use an adaptive approach as adjustments are often made in each step, although formal evaluations of recent generations are needed to further build capacity for a learning-by-doing culture. This conceptual framework can be applied to smaller scales, such as Local Action Strategies, site based management plans and cycles of the cooperative agreement. In effect, they are smaller loops within a larger generational loop.

It is important to note that the steps do not follow an exact linear process and issue identification can occur at any step in the process. If this occurs, the challenge is to capture the issue with a group such as CRAG, respond adaptively and make sure there is some tracking of the issue so when the more formal issue analysis in the next generation arrives, the new issue can be introduced and addressed efficiently. This becomes a useful tool for explaining the history as well as preparing for actions in the next step in the management cycle. The beginning of a new generation of coral management is usually timed with new administrations so as to go through the steps with new leaders and re-gain formal commitment.

After reviewing and contributing to this timeline, Lelei Peau noted:

> **I really appreciate being able to see the process and the evolution laid out in the management cycle. I think this is valuable for all of may staff to see... I find it very useful to see a beginning, middle, and end – to see where are we going? I would like to see this framework used for our communities… so it can build a narrative of their actions and build local capacity, as they want to see the health of the coral reefs improve. Also it shows me that we have accomplished a great deal… and it will soon be time to see someone else be the chair of the American Samoa Coral Reef Initiative…the next generation.**

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