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Synthesis

Examining Enabling Conditions for Community-Based Fisheries Comanagement: Comparing Efforts in Hawai'i and American Samoa

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ABSTRACT. Much attention in global fisheries management has been directed toward increasing the involvement of local communities in managing marine resources. Although community-based fisheries comanagement has the potential to address resource conservation and societal needs, the success of these programs is by no means guaranteed, and many comanagement regimes have struggled. Although promising in theory, comanagement programs meet a variety of political, social, economic, ecological, and logistical challenges upon implementation. We have provided an analysis of two community-based fisheries comanagement initiatives: Hawai'i's Community-Based Subsistence Fishing Area (CBSFA) legislation and American Samoa's Community-Based Fisheries Management Program (CFMP). Although Hawai'i's initiative has struggled with only two CBSFAs designated, neither of which has an approved management plan, American Samoa's program has successfully established a functioning network of 12 villages. We have explored the factors contributing to the divergent outcomes of these initiatives, including cultural and ethnic diversity, the intactness of traditional tenure systems and community organizing structures, local leadership, and government support. Differences in program design, including processes for program implementation and community involvement, supportive government institutions, adequate enforcement, and adaptive capacity, have also played important roles in the implementation of comanagement regimes on the two island groups. The different outcomes manifested in these case studies provide insight regarding the conditions necessary to enable successful community-based comanagement, particularly within U.S.-affiliated jurisdictions.

Key Words: *American Samoa; community-based management; fisheries comanagement; Hawai'i; marine resource management; traditional conservation methods*

INTRODUCTION

Over the past few decades, comanagement regimes to involve local communities as partners with government have received increasing attention as a tool in fisheries management (Gutierrez et al. 2011, Cinner et al. 2012, Johnson et al. 2013). Comanagement has been defined as "the sharing of power and responsibility between the government and local resource users" (Berkes 2009:1692), and it involves the establishment of a legal framework that institutionalizes both autonomous and shared decision making (McCay and Jentoft 1996). Research reveals that under the right conditions, comanagement arrangements for marine resources can provide a number of environmental and social benefits. Comanagement can provide governments, which may lack technical and financial resources, with a local partner to assist in management activities (Techera 2010). Incorporating local and traditional knowledge into resource management decisions can facilitate approaches that are more culturally and ecologically relevant, in many cases contributing to increased compliance by resource users (King and Faasili 1999, Crawford et al. 2004). Involving local communities in marine resource management has been associated with the revitalization of marine resource populations in several cases (Pollnac et al. 2001, Thompson et al. 2003, Cinner et al. 2005). A recent meta-analysis of more than 130 community-based marine comanagement arrangements worldwide found that, with strong leadership and support, comanagement can contribute to the successful management and sustainability of aquatic resources. The authors went so far as to state that comanagement is "the only realistic solution for the majority of the world's fisheries" (Gutierrez et al. 2011:386).

Although community-based comanagement, referred to hereafter as "comanagement," has the potential to address resource conservation and societal needs in complex social-ecological settings, its success is by no means guaranteed, and many programs have struggled (Pomeroy et al. 2001, Christie et al. 2002, Thompson et al. 2003). Although promising in theory, comanagement programs often meet a variety of political, social, economic, ecological, and logistical challenges upon implementation. Comanagement involves novel institutional arrangements where certain kinds of power are devolved to community entities, and these arrangements can be politically and legally challenging to develop (Cinner and Aswani 2007, Techera 2010). Communities may lack the capacity to effectively manage resources, or community ideas and interests may run counter to the sustainable harvest of marine resources (McCay 2001, Gutierrez et al. 2011). Conflict can arise when community ideas about management differ from government agency concepts and frameworks (Singleton 2001, Higuchi 2008), and comanagement regimes can contribute to social inequities (Cinner et al. 2012). Comanagement is highly dependent on institutional and social contexts and may succeed or fail for reasons that have nothing to do with the comanagement model itself (Jentoft 2000). Given the potential for comanagement intuitions to encounter significant challenges, it is important to assess these programs in a variety of contexts to explore what factors enable effective implementation, outcomes, and endurance over time.

Fisheries comanagement arrangements are often analyzed under the lens of common-pool resource theory, and much literature has been devoted to trying to understand what factors lead to stronger, more robust common-pool resource management

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regimes (Agrawal 2002, Ostrom 2009). Ostrom's (1990) design principles provide a fundamental starting point, and scholars have documented additional design principles and other factors that influence the success of common-pool resource management, including but not limited to small size and well-defined boundaries (Wade 1994); homogeneous groups, shared norms, and appropriate leadership (Baland and Platteau 1996); dependence on the resource (Gibson 2001); historical government policy and market integration (Tucker et al. 2007); and cross-scale linkages (Berkes 2002). Agrawal (2003) reviews the literature to assemble a list of as many as 35 factors that may be critical to the organization, adaptability, and sustainability of common-pool resource management. Scholars also note the importance of studying institutional design principles together with the contextual variables that frame these institutions, including an examination of biophysical, social, economic, and cultural contexts, as well as property rights, traditional resource use systems, historical livelihood strategies, and complex notions of community (Brosius et al. 1998, McCay and Jentoft 1998, Agrawal 2003, Armitage 2005). Armitage (2005) also emphasizes the importance of adaptive capacity in community-based institutions for natural resource management.

We analyze the establishment and outcomes of two fisheries comanagement initiatives in jurisdictions of the United States: Hawai'i's Community-Based Subsistence Fishing Area (CBSFA) legislation and American Samoa's Community-Based Fisheries Management Program (CFMP). Each of these programs was designed to improve marine resource management by enabling local communities, in collaboration with state or territorial partners, to restrict extractive activities in their nearshore areas. Each program is focused on coral reef–associated fisheries that are important for local subsistence, making use of spatially based management measures as a tool for promoting sustainable resource use. In Hawai'i, only 2 CBSFAs have been designated since the legislation was passed, and neither has an approved management plan. American Samoa's CFMP, on the other hand, actively involves 12 villages in the territory. We examine the factors that contribute to, or inhibit, the ability of each initiative to effectively establish institutions for marine comanagement in each location. The differences manifested in the Hawai'i and American Samoa case studies provide significant insight regarding the conditions necessary for successful implementation and endurance of comanagement regimes, particularly within U.S.-affiliated jurisdictions.

METHODS

The information presented was gathered primarily through a review of available literature regarding the two comanagement programs, supplemented with key informant interviews and additional secondary source documents. Sources included supporting legislative documents, government documents, peer-reviewed articles, media accounts, and gray literature. The authors also conducted detailed semistructured interviews with stakeholders involved in all aspects of the comanagement processes for each program. Interviews focused on each program's history and context, legislative and management structures, opportunities created by the legislation, challenges involved in program implementation, and overall perceptions of the program and its potential to support community-based comanagement. Interviewees included community members, government representatives, and nongovernmental organization (NGO) facilitators. Information from secondary documents and original interviews was synthesized to compare enabling conditions for comanagement in the two programs. We begin with a brief description of the context, history, and structure of each program, followed by an analysis of program outcomes. Analysis of the CBSFA legislation focuses on the challenges that have so far impeded its implementation, whereas analysis of the American Samoa CFMP explores the program's evolution and the framework for marine resource comanagement that has been established. We then discuss key contextual and program design variables that have led to the very different outcomes in Hawai'i versus American Samoa to provide insights for the development of successful fisheries comanagement in the U.S. Pacific.

HAWAI'I'S CBSFA LEGISLATION

When the state of Hawai'i passed legislation for the designation of CBSFAs in 1994, its potential to revitalize community-based management was heralded by the marine management community worldwide (Johannes 2002). Unfortunately, implementation of the CBSFA legislation has not lived up to expectations. Since its enactment, the legislation has encountered many challenges and has so far failed to be fully implemented in any community.

The CBSFA legislation was specifically directed toward native Hawaiian communities "for the purpose of reaffirming and protecting fishing practices customarily and traditionally exercised for purposes of native Hawaiian subsistence" (HRS 2005:Chapter 188-22.6). Although the legislation focused on native Hawaiian communities, it is important to note that native Hawaiians do not represent a majority of Hawai'i's ethnically diverse population. According to the 2010 Census, approximately 21% of Hawai'i's population identifies as native Hawaiian, alone or in combination with some other race. Hawai'i has the highest percentage of Asian Americans (38.6%) and multiracial Americans (23.6%), as well as the lowest percentage of white Americans (24.7%), of all the U.S. states. Tourists make up a substantial transient population in Hawai'i, and tourism provides the largest single source of private capital into the state (Hawai'i Tourism Authority 2012).

Subsistence fishing has been and continues to be a central part of Hawaiian culture, diet, and economy (Moloka'i Subsistence Task Force 1994, Kahā'ulelio 2006, Hospital et al. 2011). Much of traditional Hawaiian subsistence is focused on nearshore marine resources including fish, seaweed, crustaceans, and mollusk species. In a survey of 256 residents of the island of Moloka'i, 76% stated that subsistence food sources were either somewhat or very important to their family, and respondents of Hawaiian descent reported that, on average, 38% of their food was obtained from subsistence activities (Moloka'i Subsistence Task Force 1994).

Traditionally, Hawaiians adhered to a set of cultural practices that emphasized "conservative use of the islands' finite resources" (Carl 2009:203). Central to these practices was a form of land and marine tenure referred to as *ahupua'a*-based management (Chinen 1958). *Ahupua'a* were typically units of land that stretched from the top of the mountain to the sea, supporting agricultural production in the uplands and the harvest and cultivation of marine resources in the coastal areas (Carl 2009).

Table 1. Communities involved in the Community-Based Subsistence Fishing Area (CBSFA) process and their progress with CBSFA designation and management in their coastal areas.

Community (Island):	Progress on CBSFA Management:
Moʻomomi (Molokaʻi)	Pilot CBSFA established in 1994, sunset in 1997. Because of frustrations with the state process, the community dropped out of the CBSFA process and has no state-approved management plan. Community-based management practices are enforced locally through community norms. This rural coastal area has only one access road controlled by the community. This type of community-based management might not be an option in other communities that occupy coastal areas with high traffic from outsiders.
Miloliʻi (Hawaiʻi)	Designated a CBSFA in 2005 through the Hawaiʻi State Legislature. Developed a management plan in 2008 that was not approved; there are no state-approved rules or management plan for this CBSFA.
Haʻena (Kauaʻi)	Designated a CBSFA in 2006 through the Hawaiʻi State Legislature. The community submitted a CBSFA rule package to Hawaiʻi Division of Aquatic Resources (DAR) in early 2012, hoping to initiate the chapter 91 process. DAR has expressed reservations about many of their proposed rules. It is unclear whether the rules will go through the process or be approved.
Hoʻokena (Hawaiʻi)	Community has organized and developed a management plan and rule package. Sought designation through the legislature in 2010 but the act did not pass.
Additional Communities: Kauaʻi (2), Oʻahu (5), Molokaʻi (2), Maui (6), Hawaiʻi (2), Niʻihau (1)	There are reports that at least 18 additional communities have been involved in the CBSFA process in some way, many expressing interest in CBSFA designation and beginning preliminary organizing to seek designation and develop management plans. Higuchi (2008) lists the following additional communities by island: Kauaʻi: Waipa, Hanalei; Oʻahu: Pipukea-Waimea, Heʻeia fishpond, Maunalua, ʻEwa Beach, Waiʻanae; Molokaʻi: Kalokoʻeli fishpond; and subsequently, the whole island; Maui: Honolua Bay, Hana, Kipahulu, ʻAhihi, Kinaʻu, Kihei; Hawaiʻi: Kealakekua Bay, Honaunau. Niʻihau: whole island.

Marine resources were conserved through the institution of *kapu*, which dictated when resources could be gathered and established closures of particular fisheries during spawning periods or times of overharvest (Poepoe et al. 2003). *Kapu* were strictly enforced by local overseers, i.e., *konohiki*, and punishment for breaking them was severe, including execution (Poepoe et al. 2003, Carl 2009). *Ahupuaʻa*-based management was also rooted in practices of exclusion; families that lived in one *ahupuaʻa* could not harvest resources from another *ahupuaʻa* without first receiving permission (Cordy 2000, Carl 2009).

This Hawaiian system of land and marine management persisted for more than 1500 years, supporting populations estimated at 400,000 to 800,000 people without the need for imported food (Kittinger et al. 2011). Western colonization, beginning in 1778, contributed to the decline of this traditional system of land and marine tenure and resource management. Imported diseases decimated the Hawaiian population, land tenure was privatized, and an increased global presence facilitated the conversion of the economy from largely subsistence based to a market economy based on international trade (Carl 2009).

Although the Hawaiʻi constitution specifically calls for the protection of Hawaiian traditional subsistence rights, the Moloka ʻi Subsistence Task Force (1994) found that the practice of these activities faced threats including resource decline and loss of cultural continuity in traditional Hawaiian practices. This led to the passage of a groundbreaking bill that would enable increased Hawaiian participation in the management and protection of subsistence resources through the designation of CBSFAs (HRS 2005). Once designated, communities could work with state agency officials to manage the areas according to traditional Hawaiian practices. The legislature established the community of Moʻomomi on Molokaʻi as a pilot project area for this type of comanagement.

Since the passage of the act, there has been widespread interest amongst Hawaiian fishing communities seeking CBSFA designation. Many communities observed troubling declines in marine resources and were looking for ways to restrict external pressures including aquarium collecting, recreational use, and overexploitation (government representative, 2010, *personal communication*; NGO representative, 2010, *personal communication*; Hawaiian community representative, 2011, *personal communication*). However, upon implementation, the act has met a number of challenges. Despite interest from more than 19 communities (see Table 1), in the nearly 20 years since the act was passed only 2 communities have successfully designated CBSFAs, and none have an approved management plan (Higuchi 2008). This means that there are no rules for the designated CBSFAs that make them any different from other sections of Hawaiʻi's coast.

A central difficulty of the CBSFA initiative is that the legislation requires communities to work through a highly bureaucratic

system to formalize rules and regulations. As it is written, communities can seek designation of a CBSFA, develop a management plan, and propose CBSFA rules. However, before the rules become legally binding, they must be "adopted pursuant to chapter 91" (HRS 2005:Chapter 188-22.6), which codifies a convoluted and slow process for how state agencies develop rules. Through the chapter 91 process, the Department of Land and Natural Resources (DLNR) has enormous input into rule development and must consider broad public input from any interested stakeholder regarding these rules, extending the dialogue beyond the CBSFA community and state agency.

The difficulty in adopting formal rules and regulations has been compounded by the fact that participants in the CBSFA process have encountered challenges in defining "communities." Prior to Western contact, Hawaiian society was organized in strict hierarchies that clearly delineated rules and responsibilities for natural resource management (Carl 2009). Contemporary Hawaiian communities, however, lack clearly defined community institutions for natural resource management and formal community leadership structures, and the CBSFA legislation provided little guidance for developing community-level institutions or governance structures, determining who should be included from any given location, how community representatives might be chosen, or how community conflicts may be resolved. This has contributed to significant procedural difficulties (agency representative, 2010, *personal communication*; NGO organizer, 2010, *personal communication*; community representative, 2011, *personal communication*), which became apparent during a 2008 public meeting to solicit comments on a proposed management plan for the Miloli'i CBSFA (four meeting participants, 2011, *personal communication*). A Miloli'i community member claimed to have broad local support for a management plan that would ban several kinds of fishing in the CBSFA; however, during the meeting, local residents, fishermen, recreational operators, and others expressed outrage and surprise over the contents of the plan, and the proceedings quickly deteriorated (Command 2008). The *West Hawaii Today* newspaper reported that, "following an emotional vetting, a consensus was reached: do nothing" (Command 2008). In the five years since this meeting, the Miloli 'i CBSFA remains without an approved management plan.

The designation of CBSFAs and the development of rules for those areas require support, assistance, and permission from the state's DLNR. However, communities proposing CBSFAs have not received strong or consistent support from the government agency (agency representative, 2010, *personal communication*; community organizer, 2010, *personal communication*; NGO organizer, 2010, *personal communication*; agency representative, 2011, *personal communication*; community representative, 2011, *personal communication*). The CBSFA legislation also did not provide additional resources to the DLNR to fund the implementation of the program or develop the agency's capacity to work with communities.

In part because of this lack of state support, many communities interested in establishing CBSFAs have partnered with NGOs to assist them with administration, meeting facilitation, grant writing, and legal support. In 2008, a group of four communities proposed legislation to designate CBSFAs, but, in part attributable to apparent lack of support from the DLNR, this legislation did not pass (agency representative, 2010, *personal communication*; NGO organizer, 2010, *personal communication*; community representative, 2011, *personal communication*). A representative from an NGO that had been helping the community of Ho'okena organize and develop legislation stated that she had "never seen a community so defeated" as after the failure of this CBSFA legislation that they had worked for years to develop (NGO organizer, 2010, *personal communication*).

Though the legislation explicitly seeks to reaffirm and protect traditional native Hawaiian fishing practices, many communities working through the process have encountered difficulties converting Hawaiian concepts of management into the Western legal framework outlined in the CBSFA legislation. Traditional Hawaiian marine resource management was based on the exclusion of outsiders from particular areas, and many communities saw CBSFAs as a mechanism to limit the overharvesting of their resources by outsiders (NGO representative, 2010, *personal communication*; Hawaiian community representative, 2011, *personal communication*). However, under the state of Hawai'i's constitution, rules regulating marine resources must apply to all state residents equally; preferential access for communities to harvest marine resources in their CBSFA is not allowable under Hawai'i state law.

Traditional Hawaiian management was also highly adaptive in nature. Hawaiian *kapu*, or closures, were established locally and adaptively based on resource conditions, spawning cycles, or seasonal needs (Poepoe et al. 2003, Carl 2009). The chapter 91 rule-making process makes this kind of adaptive management challenging because the process to make or change marine resource regulations can take many years (government representative, 2011, *personal communication*). In addition, the DLNR has expected communities to develop rules that are similar in style to their other fishing regulations, such as bag limits, gear restrictions, or species restrictions. This static and uniform approach to regulation differs from the more adaptive and flexible traditions of Hawaiian management.

Different approaches to marine management between the comanagement entities has proved challenging for local communities seeking to base their proposed rules in traditional Hawaiian fishing practices. A community member from Ho 'okena said that this process led to a management plan that was "so watered down" from what the community actually desired (community representative, 2011, *personal communication*). The community of Ha'ena worked to develop a creative set of rules that could limit outsider use while still complying with state requirements for equal access to all citizens. This included gear restrictions that only permit fishing gear used traditionally in the community (NGO representative, 2011, *personal communication*). These rules were submitted to the DLNR in 2011. As of 2013, no progress had yet been made on approval of these rules, and it is unclear how they will hold up through the process.

In traditional Hawaiian societies, *konohiki* were responsible for strict enforcement of natural resource regulations. The CBSFA legislation, however, does not facilitate a clear legal mechanism through which communities can enforce rules in their own CBSFAs. Under the legislation, enforcement authority and responsibility would likely remain with the DLNR's Division of Conservation and Resource Enforcement, which is underfunded

and already has difficulties enforcing current fisheries regulations in Hawai'i (Tissot et al. 2009).

The two existing CBSFAs were designated directly by actions of the Hawai'i state legislature without collaboration with the DLNR. These CBSFAs still remain without formal rules because, as a result of a number of challenges, they have not yet successfully completed the DLNR's review process. When the CBSFA legislation passed in 1994, it was viewed as a promising mechanism to promote marine resource comanagement between the state agency and local communities. The slow progress on implementation over the almost two decades since the legislation was passed demonstrates that the initiative has so far failed to live up to its promise.

AMERICAN SAMOA'S CFMP

In 2000, the U.S. territory of American Samoa initiated a similar process to institutionalize comanagement of marine resources in partnership with local villages. Largely through the impetus of the American Samoa Department of Marine and Wildlife Resources (DMWR), the territory developed a CFMP. As of 2013, the program had 12 participating villages. Although the intent of the comanagement regime is similar to the CBSFA legislation in Hawai'i, the unique social and historical contexts of each program, as well as their design, framework, and implementation, have contributed to dramatically different outcomes in each location.

American Samoa, an unincorporated territory of the United States, is located 14° south of the equator in the Pacific Ocean and approximately 3700 km southwest of Hawai'i. Unlike Hawai 'i, American Samoa is ethnically and culturally homogeneous; Polynesians account for the majority (93%) of the territory's people, and the primary language spoken at home is Samoan (91%). Contemporary American Samoan culture is characterized by a combination of traditional Samoan values and systems of social organization, Western cultural influences, and strong influences from Christianity. The islands remain relatively isolated from many foreign influences, and tourism does not play a significant role in the islands' economy.

Although both are Polynesian islands in the U.S. Pacific, the socioeconomic contexts of Hawai'i and American Samoa are quite different. Residents in Hawai'i are relatively affluent when compared to American Samoans; according to the 2010 Census, the average per capita income in American Samoa was estimated at only US$6,311, well below the U.S. average of US$27,915, whereas the state of Hawai'i had an average per capita income of US$29,203 (U.S. Census Bureau 2010). Life expectancy in Hawai 'i is the highest in the nation, at 81.3 years (Lewis and Burd-Sharps 2013), whereas American Samoa's stands at just over 74 years (CIA 2013). Hawaiians also have better access to higher education, with almost 30% holding a 4-year college degree or higher, whereas only 9% of American Samoans have obtained college degrees (U.S. Census Bureau 2010).

American Samoa's constitution mirrors that of the United States while also incorporating elements of traditional Samoan social structure. Maintaining *fa'a Samoa*, or "the Samoan way," is recognized by the territorial constitution as a priority. Villages and families form the primary organizing unit in American Samoa's hierarchically structured society. *Matai* head each family and also make up the village council. Traditionally, all village work, including fishing, has been organized at the village and family level. The village council decides, according to season, what sort of community fishing should take place and controls usage rights and access to nearshore marine resources. Customarily, outsiders have to obtain permission to fish in village waters. An island-wide restriction, enforced in all areas adjacent to villages, is the prohibition of fishing on Sundays for religious reasons.

Nearshore fisheries, particularly along the territory's narrow fringing coral reef, are of fundamental socio-cultural and dietary importance to American Samoans. Traditionally, Samoans spent much of their time fishing on reef flats or near the reef edge (Armstrong et al. 2011), although beginning in the late 1930s there was a shift from a heavy reliance on fishing to an increasing reliance on canned fish and other foods (Coulter 1941, Holmes 1974). Still, in a recent study of American Samoan villages, 55% of residents stated that they engage in subsistence fishing, and the vast majority (95%) felt that subsistence fishing is an important use of marine resources (Kilarski et al. 2006). There is concern that nearshore marine resources are being overexploited in the narrow coastal zone (Craig et al. 2008), and interviews with island residents have indicated a perceived decrease in reef fish and other associated species over time (Tuilagi and Green 1995, Levine and Sauafea-Le'au 2013).

Because American Samoa retains a traditional social structure characterized by a tenure system where villages control the use of land and marine resources, village cooperation and involvement is critical to any successful management program (Levine and Allen 2009). The CFMP was developed to assist villages in managing and conserving their nearshore fishery resources through a voluntary scheme of comanagement with the government. Although traditional village-based management systems are still in place in American Samoa, the strength of many of these has weakened, limiting the ability of villages to engage in management and enforcement activities. The American Samoan government also has limited capacity for enforcement of fisheries regulations throughout the territory because of restricted boat and staff availability. The CFMP, based on a similar Fisheries Extension Programme established in independent Samoa in 1995 (King and Faasili 1999, Fa'asili and Sauafea 2001), allows the DMWR to expand its own enforcement and surveillance capability while strengthening the capacity of village communities to protect nearshore resources with government backing.

Villages may approach DMWR to take part in the CFMP program, or DMWR may approach villages to determine their interest and suitability. DMWR staff examine the degree of organization of the village council of *matai*, women's groups, and young men's group, *aumaga*. If the village has the local capacity for village-based management, a DMWR representative informally meets with village leaders to explain the CFMP. If the leaders express interest, program organizers later meet with the village's various social groups to assess the potential for participation in the program by determining the significance of the marine environment to the village, the extent of problems in the local fishery, and the level of concern and willingness of village leadership to take action to address existing problems. Finally, DMWR's extension staff and director review the assessment and decide on the village's potential for inclusion in the program (F. Sauafea-Le'au, 2008, *personal communication*).

Table 2. Villages involved in American Samoa's Community-Based Fisheries Management Program (CFMP).

Village	CFMP process initiated	Management status
Alofau	2001	Open 1 day/week (Saturday) to villagers only.
Amaua and Auto	2003	No-take for 3 years, open again for 1 month, closed again. Currently open to villagers only to fish.
Aoa	2005	No-take as of early 2008. Previously only open 1 day/week (Saturday).
Fagamalo	2003	No-take area designated in village, permanent no-take area designated adjacent to village waters.
Masausi	2002	No-take until early 2008, now open to villagers only.
Matu'u and Faganeanea	2005	Closed for 3 years, now open periodically (at chief's discretion) to villagers only.
Amanave	2008	Closed to everyone. In the process of finishing management plan. Village largely destroyed by 2009 tsunami.
Maloata	2009	Currently closed. In the process of finishing management plan.
Poloa	2001	Only villagers allowed to fish.
Sa'ilele	2005	No-take in village waters.
Tau	2011	Officially a CFMP village in 2012. A portion of their reef was designated as a no-take area for 3 years, but this is no longer in place. Is under reconsideration.
Vatia	2001	No-take. Reserve was opened for a period of 3 months, then closed again. Now open to villagers only.

Once the DMWR determines that a village is suitable for the program, department representatives work with the village to establish a fisheries management plan. Under an established cooperative agreement, the village is obliged to protect and manage its marine area, overseeing all actions agreed to in its fisheries management plan. The village also provides parallel support, voluntary participation in meetings, and voluntary commitment of labor for enforcement, monitoring, and review of activities (F. Sauafea-Le'au, 2008, *personal communication*). The DMWR in turn provides technical assistance and advice, community workshops and trainings, assistance with development of the village fisheries management plan and monitoring of marine resources, and aids in the general implementation of the program. The agreement is signed by leaders of the village and the DMWR director once the village officially accepts the program (S. Vaitautolu, 2010, *personal communication*).

Generally, villages manage their marine areas through establishment of village marine protected areas, referred to as VMPAs. VMPAs may close a portion of the reef area near the village or the entire village bay, and these areas may be closed on a long- or short-term basis. DMWR assists villages in assessing the designated protected area, providing recommendations on the size of the VMPA and the time frame for closure. VMPA rules and regulations are designed by the village fisheries management and advisory committee, together with the village management and enforcement committee (S. Vaitautolu, 2010, *personal communication*). These committees are composed of two individuals from each of the three primary village stakeholder groups, i.e., *matai*, women, and *aumaga*. After the management plan is created, the high chiefs and village council examine it to determine if any changes are needed, and further modifications are the responsibility of the village council. Most villages involved in the program have closed their reef areas to outsiders, one village has designated a permanent no-take VMPA, and some have agreed to close their VMPAs to fishing activities for up to five years, with exceptions for fishing conducted by elders or to provide fish for important village events (S. Vaitautolu, 2009, *personal communication*). These exceptions must be obtained through permission of the village council, under consideration of recommendations by the village monitoring and enforcement committee.

Table 2 lists the villages currently involved in American Samoa's CFMP, the year their involvement began, and the status of VMPAs. Fisheries regulations vary in each village according to the village's management plan. DMWR assists with outreach and education in the participating villages, conducts biological monitoring of key fish species, and has initiated socioeconomic monitoring.

Because VMPAs are managed by local communities that have a direct interest in their success, compliance with rules and regulations is high. Villages apply penalties for local violations within their VMPAs, including traditional fines of pigs or canned goods for infringements. Most villages actively enforce their VMPA rules, and social pressures are generally adequate to assure local compliance (S. Vaitautolu, 2010, *personal communication*).

Initially, village regulations were not formally recognized under territorial law, so communities had little authority to enforce VMPA rules if broken by outsiders, in some cases resulting in conflicts. For instance, in 2005, the *pulenu'u*, i.e., mayor, of Fagamalo was charged with attempted murder when he confiscated a fishing boat that was within the village's VMPA boundaries, abandoning the fishermen who were diving underwater approximately 6 km offshore (RNZI 2005). To address this enforcement issue, DMWR worked with a legal adviser to develop legislation that incorporates village rules and regulations under the department statute, allowing penalties to be legally applied to people from outside the village (S. Vaitautolu, 2009, *personal communication*). In 2008, DMWR's director was

granted legal authority to deputize the village *pulenu'u* and one designated village policeman to issue citations under the CFMP program, strengthening the official enforcement capacity of the village.

VMPA regulations under this statute must apply equally to villagers as well as nonvillagers, so exclusion of outsiders from village waters is not legal if villagers are allowed to fish. Although customary practices of outsider exclusion still take place in most CFMP villages, this practice could not be legally enforced if challenged at the territorial level. If violations occur, a village can choose to issue a local penalty, as generally happens with local villagers, or a territorial citation through DMWR, generally done with outsiders. Territorial sanctions are determined by territorial law according to Administrative Rule No. 01-2008, which lays out a system of sanctions that are graded according to severity and frequency of offense. These sanctions range from up to 30 hours of community service plus mandatory environmental education classes to US$500 and/or a prison term of 15 days to 6 months. Only a few citations have been issued through the territorial process, and to date, none of these has made it all the way through court (S. Vaitautolu, 2012, *personal communication*), meaning the territory still falls short of strict enforcement of local regulations.

DISCUSSION

The social and ecological goals of Hawai'i's CBSFA and American Samoa's CFMP are similar: to improve marine resource management through strengthening community involvement based on traditional management practices and community-based comanagement with the government. However, the outcome of each of these marine comanagement initiatives has been quite different. Both contextual and program design factors provide insight as to why the American Samoa CFMP has been successfully established and why Hawai'i's program has so far failed to be meaningfully implemented.

Cultural and ethnic diversity and community structures

The homogeneity of American Samoan communities and the high ethnic and cultural diversity in Hawai'i play key roles in the different outcomes of the comanagement initiatives. Group homogeneity has been found to be an important factor in the success of collective action for common-pool resource management (Baland and Platteau 1996, Jentoft 2000), although its effect is debated (Agrawal 2003). Baland and Platteau (1996) also discuss the importance of shared norms and appropriate leadership connected to a local traditional elite, and Ostrom (1990) and Wade (1994) iterate the importance of having well-defined boundaries for both resources and resource users. These factors are present in the American Samoan village context, which maintains strict hierarchical social systems and traditional marine tenure systems within clear village boundaries. Community leadership and marine tenure are less clear in the contemporary context of Hawai'i.

Both the CBSFA and CFMP seek to incorporate traditional practices into present-day fisheries management. In Hawai'i, traditional subsistence and marine management practices before Western contact made use of the principles of *ahupua'a*, *kapu*, and village-based enforcement. Although these traditional systems were critical to Hawai'i's history of sustainable resource management, they have been highly disrupted and are no longer easily implemented or enforceable in most Hawaiian communities today. Much of the impetus behind CBSFA designation is about protecting and revitalizing Hawaiian cultural practices and identity, but the path for how these systems of management will be revitalized and incorporated within the Western structure of fisheries management in the culturally and ethnically diverse state of Hawai'i remains unclear. Hawai'i's CBSFA legislation was specifically aimed at protecting "native Hawaiian subsistence" practices, yet Hawaiians and part Hawaiians make up a minority of the state's population, and defining exactly who represents the "community" has proved challenging. CBSFA rules ultimately apply to all individuals who utilize marine space, many of whom have limited orientation toward Hawaiian traditions of marine management.

American Samoa's traditional systems, on the other hand, are still largely intact in most villages. Village social hierarchies remain in place, and village councils retain authority within the communities participating in the program. The CFMP program can work directly through pre-existing community social structures for implementation, providing a straightforward and locally legitimate way for the DMWR to work with communities in comanagement. Key village social groups meet to discuss village needs, and representatives are drawn from each group to comprise the village fisheries management and advisory committee that designs management plans. Final decisions are confirmed by the village council, providing village-wide legitimacy to the rules and rule-making process.

Leadership and resource management processes

Leadership and strong social cohesion were found to be critically important factors in a recent review of fisheries management programs worldwide (Gutierrez et al. 2011). American Samoa's CFMP was implemented on top of community institutions and village-level systems of governance that have a clear and formalized leadership structure. Decisions made by the village council can be accepted as representing the village community. To implement the CFMP, the DMWR was able to work directly with designated village leaders to develop village fisheries management plans.

In Hawai'i, no such formal community structures still exist. An important challenge to implementing the CBSFA legislation lies not only in defining "community," but also in developing community capacity for leadership and marine management. The outcomes of the Miloli'i CBSFA meeting came about because a community member that the DLNR perceived as a leader did not, in fact, have full support from the community. Miloli'i had no formally established community institutions or leadership structures with which the DLNR could collaborate with confidence. Although other communities interested in CBSFAs have worked hard to organize and develop capacity, establishing community institutions for fisheries comanagement is a difficult and time-consuming process (Pomeroy and Berkes 1997), and multiple delays and confusion may have hindered implementation of the legislation.

The small, isolated, predominantly Hawaiian community of Mo 'omomi on Moloka'i provides a unique counterexample to the issue of cultural heterogeneity, poorly defined leadership, and disrupted traditional systems within Hawai'i. Mo'omomi was the first community designated as a CBSFA within the state, and it

has managed to successfully revitalize some traditional practices, allowing for conservation of reef species and habitat in the area (Friedlander et al. 2002, Poepoe et al. 2003). However, despite having strong local leadership and community cohesion, the community never successfully formalized regulations through the chapter 91 process and chose to abandon working with the state. Thus, the systems established for marine resource management in Mo'omomi lack official state approval or support. Although this community has exhibited the leadership and social cohesion necessary to implement community-based marine resource management systems, government support from the DNLR was not adequate to formalize the local rules and regulations into a successful fisheries comanagement partnership.

Support from collaborating comanagement agencies

As illustrated in Mo'omomi, although community characteristics are important to the success of comanagement regimes, it is equally important that the collaborating government agency play a supportive role through provision of enabling legislation, enforcement, conflict resolution, and other forms of assistance (Pomeroy and Berkes 1997). Both Hawai'i and American Samoa have established enabling legislation to support community-based fisheries management through the CBSFA and the CFMP, but the government agencies charged with participating in fisheries comanagement differ tremendously in the degree to which they support community initiatives. Unlike American Samoa, where the DMWR has approached communities to gauge their interest in the program and works actively to support development of management plans and community regulations, Hawai'i's DLNR has done little to encourage or support community participation in the CBSFA program.

An important factor in the success of American Samoa's CFMP has been consistent, long-term support from the government comanagement partner, as well the willingness of that agency to adapt and respond to community needs as they arise. The DMWR drafted legislative changes to help formalize community rules in the territorial legislature, has sponsored workshops to assist villages in enforcing VMPA regulations, and has conducted monitoring of marine resource conditions in program villages. In Hawai'i, in contrast, the government comanagement partner objected to the initial passing of the CBSFA legislation and has not supported additional CBSFA designations proposed to the legislature. In part because of staff limitations, lack of funding, and frequent changes in agency leadership and priorities, DLNR has done little to help communities develop local capacity or management plans, and DLNR has not yet brought any CBSFA designation proposals or rule packages through the chapter 91 process. Because cooperation from the DLNR is integral to the framework established by the CBSFA legislation, lack of support from the agency has severely impeded program implementation.

Challenges in reconciling indigenous and Western management approaches

A challenge of developing comanagement regimes is that management entities with different worldviews and representing different constituencies must collaboratively develop management policies. Hawaiian and Samoan traditions of marine management are rooted in practices of exclusion where outsiders were prevented from harvesting marine resources without obtaining local permission. Indeed, a key component of traditional marine tenure throughout the Pacific is exclusive local fishing rights to a region (Johannes 1978). This provides several challenges for establishing comanagement programs based on traditional management principles in the current legal context in U.S. states and territories.

Neither American Samoan territorial law nor Hawai'i state law can recognize fisheries regulations that apply differently to outsiders than to community members. Equal protection under their constitutions means that community regulations must apply equally to all state and territorial residents. The right to exclude outsiders, one of the most important components of traditional marine tenure and a key design principle for common-pool resource management, cannot be legally recognized within the legal framework of the United States. In American Samoa, this has proved less of a challenge because customary village-based restrictions on outsiders are generally accepted by territorial residents, although a challenge to these restrictions would not hold up formally in court. However, in Hawai'i, customary systems have been too disrupted for this type of restriction to hold up informally in most locations, and Hawaiian communities have been unable to legally achieve a critical aspect of what they had hoped in the development of CBSFAs, i.e., exclusion of outsiders.

On the other hand, the inability to exclude any Hawai'i state resident from the ocean has also been critical to ensuring ongoing marine access rights for marginalized Hawaiian communities. Hawai'i's well-developed tourism market and demand for beachfront property make coastal property and access highly valued on the islands. Were it possible to exclude certain citizens from marine access in Hawai'i, Hawaiians might be able to reinstate traditional tenure regimes in some locations, but they would likely be excluded from many others.

Enforcement

Although the ability of the government to enforce marine resource regulations is considered to be weak in both American Samoa and Hawai'i, the degree to which community-based regulations can be enforced through comanagement arrangements in each location is quite different. In American Samoa, the DMWR has worked to formally recognize community-based rules as well as community-level enforcement authority. Initially, communities could create fishing regulations but could only enforce them amongst their own residents. In 2008, the American Samoan government passed legislation that allowed for the territorial recognition of community-designated rules and the deputization of the village mayor and one village policeman to issue citations for marine resource violations, strengthening both village and territorial enforcement capacity. The CBSFA legislation, on the other hand, does not explicitly outline a mechanism to authorize community-level enforcement of resource violations. The DLNR's under-resourced enforcement division already experiences challenges enforcing existing rules (Tissot et al. 2009), and it is unlikely to receive additional resources to support the enforcement of new community-based rules and regulations.

Appropriate institutional frameworks and adaptive capacity

American Samoa's establishment of a framework to legally recognize community-based rules and enforcement highlights another important element of the implementation of the CFMP: adaptive capacity. A critical component of fisheries comanagement is the development of institutional arrangements

and legal frameworks that can account for the new roles and responsibilities of each partner (Pomeroy 1995). The success of these arrangements depends greatly on the degree of overlap between the interests of the involved institutional actors and society (Bohnsack 1998, Agrawal 2003), and establishing successful arrangements requires creativity and flexibility, as well as the ability of social actors and institutions to adapt in the context of change and uncertainty (Armitage 2005).

Since 2000, American Samoa's program has evolved significantly, adapting to needs and challenges with new institutional arrangements for comanagement. The DMWR developed workshops and trainings for community members as gaps in community capacity were recognized. When the lack of territorial recognition of village laws became a problem, the DMWR worked with the legislature to develop a mechanism for formalizing village laws and enforcement authority. The ability of the DMWR and villages to adapt and make changes to the CFMP as necessary has been important to its success.

In Hawai'i, the DLNR has been less adaptive in the face of challenges when attempting to implement the CBSFA legislation. For the most part, challenges, such as the difficulty in determining community leadership and preferences seen in Miloli'i, have caused the DLNR to become increasingly hesitant to support CBSFA legislation (four meeting participants, 2011, *personal communication*). The agency has impeded its implementation rather than developing creative solutions that would improve the program's ability to function (NGO representative, 2010, *personal communication*; government representative, 2011, *personal communication*). A natural resource agency that is both committed to making the program work and flexible to changes as new issues arise is central to implementing successful fisheries comanagement. DLNR has not yet demonstrated this type of adaptability.

CONCLUSIONS

The story of these two initiatives highlights the important role of local contextual factors including cultural and ethnic diversity, the intactness of traditional tenure systems and community organizing structures, local leadership, and government support in establishing fisheries comanagement programs. Aspects of Hawai'i's social and political terrain including the erosion of traditional resource tenure systems, high cultural and ethnic diversity, a centralized approach to governance, and a highly politicized environment surrounding fishing regulations of any kind indicate that the development of successful fisheries comanagement would be inherently challenging. American Samoa, on the other hand, has high cultural and ethnic homogeneity, intact traditional village-based governance systems, and supportive government initiatives, making the implementation of comanagement initiatives much more promising.

Critical components of program design, including having a clear process for program implementation and community-government collaboration, supportive government institutions, the ability to effectively exclude outsiders, adequate enforcement, and adaptive capacity, also played important roles in the successful or unsuccessful implementation of comanagement legislation on the two island groups. Hawai'i's DLNR did not take the same initiative as American Samoa's DMWR to support and follow through with implementation of fisheries comanagement, which inhibited the success of the CBSFA. In addition, Hawai'i's initiative lacked resources or a clear protocol for defining communities, working with communities, and bringing community designations and rules through the state's legislative process. Even with Hawai'i's contextual challenges, the CBSFA likely could have been implemented in some communities if there had been better program design and increased support from the state comanagement agency.

It is important to note that the DLNR has logistical and constitutional reasons for resisting the development of CBSFAs. Although the legislation calls for the DLNR and communities to work together to develop rules and management plans, the DLNR's staff has little capacity to work with communities, and the legislature did not provide additional resources to hire community coordinators. Many of the rules that communities propose, such as the exclusion of outsiders, are not permissible under the state's constitution. The DLNR has recently advertised a position for a CBSFA coordinator, which may be an important step toward developing that agency's capacity to implement the legislation.

Although monitoring data is not available to confirm the ecological outcomes of American Samoa's CFMP, most village residents see it as having improved local resource conditions; in a recent survey of 300 villagers involved in the CFMP program, 98% stated that the VMPA in their village "is helping to improve the condition of fish and other marine resources" (A. S. Levine, *unpublished data*). The CFMP, although not without challenges, operates in a context that is much more conducive to community-based marine resource management, under a government agency that is supportive of community participation, facilitating the establishment and endurance of the comanagement program. However, some factors contributing to the program's success, such as dependence on supportive and cooperative village leaders and institutions, informal local acceptance of village rights to exclude others, and a highly homogenous culture, are fragile. Some of the more urbanized villages in American Samoa lack these characteristics and thus would not be successful participants in the CFMP program. Changes associated with globalization and modernization may also bring about future challenges to the sustainability of this comanagement arrangement. The CFMP program may continue to successfully adapt to new challenges as they emerge, or different systems of resource management may become necessary in the future in response to changes in the islands' social-ecological context.

In spite of the challenges illustrated in both case studies, active involvement of local communities in marine resource management remains a priority in both Hawai'i (Tissot et al. 2009) and American Samoa (American Samoa Coral Reef Fishery Management Local Action Strategy 2009). Community-based fisheries comanagement is seen as an important step toward improving fisheries sustainability worldwide (Gutierrez et al. 2011), and both contextual and program design factors can facilitate or hinder marine resource comanagement initiatives. Understanding these factors provides a critical starting point for developing more effective comanagement programs in the future for these two regions.

Responses to this article can be read online at:
http://www.ecologyandsociety.org/issues/responses.php/6191

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