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Carving a Niche or Cutting a Broad Swath: Subsistence Fishing in the Western Pacific¹

Stewart Allen²

Abstract: Fish stocks in many parts of the western Pacific are increasingly being subjected to a variety of environmental and human pressures. Resource managers are responding to the situation by limiting and allocating catch across the various fisheries. There is a corresponding need to appropriately classify fishers and fishing fleets to ensure that all sectors are fairly considered when catch allocation decisions are undertaken in the region. But discrete classification of small-scale fishing sectors is challenging because commercial, recreational, and food-gathering motives often overlap. Moreover, despite the known importance of small-scale fishing in the western Pacific, the manner and extent of such activities are not well understood or thoroughly documented. This paper seeks to elucidate the nature of subsistence or consumption-oriented fishing and its relationship to other forms of small-scale fishing activities in the region. A conceptual framework of potential utility for assessing the degree to which small-scale operations are moving toward or away from subsistence fishing is developed with the intent of optimizing the resource allocation decision-making process. The discussion is based on review of pertinent literature and on findings from research recently conducted in Hawai'i and the Commonwealth of the Northern Mariana Islands.

SUBSISTENCE OR consumption-oriented fishing is a topic of growing interest to fishery managers working in island settings across the western Pacific (here defined as including Hawai'i, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands [CNMI]). In Pacific island nations, subsistence fisheries constitute as much as 80% of inshore fisheries production (Dalzell et al.

1996). Subsistence fisheries have long provided an important food source and a means of social organization across the region (Sabater 2007). This is true of many regions around the globe, and in certain areas policy makers have worked to sustain subsistence and other small-scale fisheries to alleviate poverty, provide food security, enhance community and social development, and preserve fishing cultures and ways of life (Berkes et al. 2001, Schorr 2005).

However, it can be difficult for policy-making purposes to clearly define "subsistence." Past efforts have tended to define subsistence fisheries in terms of underlying motivations, the ultimate disposition of the catch, and/or the social and cultural attributes of the fishers involved. But it is often the case that motivations are highly dynamic, the catch is used for multiple purposes, and the fishers are simultaneously involved in both non-commercial and commercial fishing activities (cf. Food and Agriculture Organization of the United Nations 1998, Wolfe et al. 2000, World Trade Organization 2005, Schumann and Macinko 2007).

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Definitional challenges notwithstanding, a valid typology of small-scale fishing fleets is needed to ensure equitable distribution of the costs and benefits of any new fishery policies that could affect such fleets in the western Pacific. The definition of subsistence fishing is especially important in the western Pacific, where federal, state, commonwealth, and territorial agencies manage a variety of near-shore and open-ocean small-scale fisheries that often involve extensive consumption-oriented fishing activities.

New policy developments in the United States also make clear the need for a valid definition of subsistence fishing. The first development stems from the 2006 reauthorization of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), which requires that annual catch limits (ACLs) be established for all federally managed fish species. This was an especially notable change for fisheries managers in the western Pacific, where only a single small-scale commercial fishery has ever been managed using an annual quota or catch limit. In contrast, resource management agencies in other regions of the nation have limited commercial and, in some cases, recreational catch for many decades. The establishment of catch limits in the western Pacific raises the issue of allocation; that is, whether and how the allowable harvest should be apportioned among the various fisheries and fishing fleets, including small-scale fishing operations. Given the long involvement of Pacific island communities in consumption-oriented fishing (Glazier 2002), any rational allocation decision would necessarily define and address subsistence-oriented fisheries as these are undertaken in Hawai'i, Guam, the CNMI, and American Samoa.

The second recent policy development is the establishment of three marine national monuments: Rose Atoll, Marianas Trench, and the Pacific Remote Island Area. Rules associated with the new monuments prohibit commercial fishing in some areas, while allowing noncommercial fishing activities, such as subsistence fishing, to occur in others.

A clear characterization of subsistence fishing is needed to meet the requirements of the

current policies and to expand upon previous research that sought to define types of fishing activities in the western Pacific (Pooley 1993, Hamilton 1999, Cai et al. 2005). This paper begins by describing such research and its utility for development of marine policy in the region, and proceeds to discuss a prospective framework for more clearly defining consumption-oriented fishing, a perennially important aspect of life in island communities around the western Pacific.

DEFINING SUBSISTENCE FISHERIES

Schumann and Macinko (2007) asserted that subsistence fisheries tend to be either ignored or acknowledged but then forgotten. This is an outcome of the fact that resource managers are focused primarily on commercial and recreational fishing and related ecological and economic processes. Moreover, subsistence fisheries are not likely to have a "total value" that is sufficient to support dedicated data collection and management programs, unless the targeted stocks also support large commercial fisheries (Berkes et al. 2001). Nonetheless, many agencies have found it necessary to define subsistence fishing to address various policy and management needs (Schorr 2005).

The most highly developed system for managing subsistence fishing and hunting activities in the United States occurs in Alaska, where the lifestyles of many rural residents involve extensive pursuit and consumption of wild foods. State and federal government agencies in Alaska have developed policies and data-collection programs designed to ensure that living marine and terrestrial food resources are well managed and readily available to meet the dietary and cultural needs of the state's residents.

One of the earliest national policies to acknowledge the importance of subsistence activities was the Alaska National Interest Lands Conservation Act of 1980 (ANILCA; 16 U.S.C. 3111–3126). ANILCA (§ 803) defines subsistence as "customary and traditional uses by rural Alaska residents of wild renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the

making and selling of handicraft articles out of nonedible by-products of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade.”

ANILCA defines customary trade as “the exchange of cash for fish and wildlife resources regulated herein, not otherwise prohibited by Federal law or regulation, to support personal and family needs; and does not include trade which constitutes a significant commercial enterprise.” This definition distinguishes subsistence from commercial fishing while also affirming that, in modern society, cash transactions legally compose an important dimension of consumption-oriented use of wild fish and game.

As provided in the MSA, commercial fishing occurs when “the fish harvested, either in whole or in part, are intended to enter commerce . . . through sale, barter, or trade” (16 USC 1801 Sec. 3 104–297). It should be noted, however, that the presence of cash in a transaction involving wild-capture fish or game does not automatically mean that the transaction constitutes “commerce.” This is exemplified by the federally managed subsistence halibut fishery in Alaska. Here, subsistence halibut is defined as halibut caught by a rural resident or member of an Alaska Native tribe for direct personal or family consumption as food, sharing for personal or family consumption as food, or customary trade. Cash sales of subsistence halibut are allowed but only to reimburse fishers for trip expenses directly related to the harvest, where such costs are limited to the actual costs of ice, bait, food, or fuel (73 FR 54932, published 24 September 2008). As an additional safeguard against subsistence halibut entering into commerce, the National Marine Fisheries Service (NMFS) regulates who can transact cash with the harvesters: such persons must be residents of the same rural community as the fisherman and/or members of an Alaska Native tribal group. The decision to allow limited sale of subsistence halibut reflects the reality of the mixed-market economy that is characteristic of life in rural Alaska (cf. Wolfe and Walker 1987, Langdon 1991).

Subsistence fishing is also typically distinguished from recreational fishing; although indigenous people in Alaska often derive great pleasure from subsistence activities, they also take them seriously and typically do not catch and release fish for sport.

Fishing enabled the early navigators to reach island groups in the western Pacific and continued as a critically important activity over the millennia. Today, traditional knowledge of the ocean and its resources is being applied to contemporary fishery management processes (e.g., see Poepoe et al. 2003). This is appropriate for a variety of reasons. In a manual addressing community management of subsistence fisheries in the Pacific, King and Lambeth (2000) noted that fishing has always played a critical role in Pacific island communities, for cultural, nutritional, and, more recently, economic reasons. The authors conceptually divided Pacific island fisheries into noncommercial and commercial sectors, wherein the noncommercial sector involves the catching of fish to eat rather than to sell. They further defined commercial fisheries as including an artisanal sector, which supplies local markets with seafood through low-cost, labor-intensive fishing, and an industrial sector, which involves large-scale production of seafood for transaction in regional and international markets. The authors then defined a subsistence fishery as one in which indigenous peoples harvest fish for their own consumption.

In the state of Hawai‘i, subsistence use patterns in contemporary society have seldom been studied systematically or in great detail. An exception was the study conducted by the Governor’s Moloka‘i Subsistence Task Force (Matsuoka et al. 1994). This project documented the importance of wild foods to Moloka‘i families, identified barriers to the pursuit of such foods, and recommended programs and policies to mitigate such barriers. Consumptive use and sharing were viewed as especially critical because Moloka‘i lacks many of the employment and development opportunities present on other main islands in the Hawaiian chain.

Consistent with other definitions, the Task Force defined subsistence as “the customary

and traditional uses by Moloka'i residents of wild and cultivated renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, transportation, culture, religion, and medicine; for barter, or sharing, for personal or family consumption; and for customary trade." A survey of Moloka'i residents found that 28% of respondents' annual dietary intake was acquired through hunting, fishing, and gathering activities; this figure reached 38% for Native Hawaiian families. Subsistence activities were found to be more important among persons born on Moloka'i than among persons who had moved to the Islands from elsewhere.

The Moloka'i Subsistence Task Force found that harvest of wild foods serves many purposes in addition to dietary benefits. For instance, the activities are said to constitute a form of enjoyable and inexpensive recreation and a means of interacting with the natural world in a spiritually fulfilling manner. Moreover, the study determined that as people become increasingly familiar with the natural world and means for harvesting wild foods, the quality of the experience increases proportionately. It is also the case that conservation of natural resources is facilitated through such continual exposure. Subsistence activities were also found to generate social benefits on Moloka'i by providing a means for enhancing family and community cohesion, enabling elders to convey traditional ecological knowledge to young residents, and providing a basis for sharing and gift giving. Finally, the products of hunting, fishing, and gathering can be used by people who cannot obtain wild foods on their own; these foods are often the dietary focus of celebrations and other important family and community events. The Moloka'i study confirmed that customary exchange in the Pacific island region is similar to that of customary trade in Alaska, and that the benefits of subsistence activities are especially important to residents of geographically remote areas, which lack economic opportunities available in many other parts of the nation.

Various authors have sought to classify types of fishing in Hawai'i. But thus far, such attempts have not been undertaken to address

pending policies or to resolve resource-use conflicts. Pooley (1993) classified Hawai'i's fishing fleets as three overlapping or interconnected segments: (1) large-scale commercial fishing; (2) small-scale commercial fishing; and (3) small-scale recreational, part-time commercial, and subsistence fishing. With respect to segment (3), the author acknowledged some notable overlap. Subsequent work to create a typology of fishing in Hawai'i has not clearly distinguished subsistence fisheries. Cai et al. (2005) identified six fishery subsectors in the state: tuna longline, swordfish longline, small-scale commercial, charter, recreational, and expense (where "expense" involves sale of fish to cover trip costs). Hamilton (1999) classified fishers rather than types of fishing. Participants were classified as recreational, expense, part-time commercial, or full-time commercial fishers. Miller (1996) identified "styles" of fishing in Hawai'i. These include the following:

1. "*Holoholo*," or recreational fishing, which includes various experiences, such as "just getting away," "being on the water," "spending time with friends or family," and "catching fish to eat"
2. "*Kaukau*" fishing, or fishing for food, either for one's self and family or for sharing with others but not selling the fish
3. Expense fishing, also called recreational expense fishing, which involves selling enough of the catch to cover trip costs
4. Profit-oriented or commercial fishing, which is undertaken on a part- or full-time basis to provide or supplement one's income

Miller's work was unique in that it described styles of fishing rather than types of fishers, and notably, many fishers involved in the study reported engaging in all four styles of fishing over the preceding year. Moreover, it was often the case that what started out to be one type of trip turned into another, depending on fishing conditions and other factors, such as market access and the underlying motivations for fishing.

A cost-earnings study of the recreational fishing fleet in Hawai'i used a trip-based ap-

proach to better understand noncommercial fishing in the Islands (Duffield et al. 2012). The research approach involved the assumption that a given trip can have more than one motive and that types of trips undertaken by individual fishers can differ over the course of a given year. Nearly 66% of interviewees stated that all or most of their trips could be characterized as subsistence-oriented, and fewer than 10% said that none of their trips was a subsistence trip.

Glazier (2002) used ethnographic methods coupled with a survey of 150 fishers around the Islands to study elements of what he called “fishing Hawaiian-style.” The author asserted that although fishers in Hawai‘i often maintain an overall operational focus on commercial, recreational, or consumptive-oriented fishing, classification is challenged by fluid motivations and variable outcomes of a given fishing trip. For instance, if the market is accessible, the catch is good, and the price is right, fishers may decide to sell a portion of their catch. Alternately, if the catch is limited to a few pieces, it may be consumed by the fisherman’s family that night, shared with others, or frozen for a future celebration. Further, the author noted that people who never or rarely sell fish are sometimes called recreational fishers, but that deeper questioning often reveals that catching fish to eat and share is as important as any other motivation. The author described fishing Hawaiian-style as incorporating acquisition of food for families, ‘ohana (extended family), and community; participation in a network of other fishermen; testing one’s fishing skills; perpetuating traditions; and enjoying their time on the water.

Recent studies of small-boat pelagic and bottomfish fishing in Hawai‘i conducted by NOAA’s Pacific Islands Fisheries Science Center provide a contemporary perspective on subsistence fishing in the context of a full range of fishing styles. A study of 343 small-boat pelagic fishers interviewed between 2007 and 2008 concluded that the Hawai‘i small-boat pelagic fishery serves many vital non-market functions, such as building social and community networks, perpetuating fishing traditions, and ensuring food security during

challenging times, such as economic recessions (Hospital et al. 2011). Just over 60% of fishers involved in the study considered the fish they catch to be an important source of food for their families. Notably, the fishers reported sharing an average of 32% of their catch over the previous year, and even full-time commercial fishers reported sharing 11% of their catch with family, friends, and/or others. Commercial fishers reported sharing a relatively smaller percentage of their catch than others, but the commercial harvest is typically quite extensive, thereby facilitating a substantial flow of fish to the community in question. The majority of fishers interviewed reported selling some fish to help cover the costs of fishing.

Similar emphases on fish sharing and consumption were evident in a recently conducted survey of 519 Hawai‘i small-boat bottomfish fishers (Hospital and Beavers 2012). Results indicate that some 24% of all bottomfish catch reportedly was consumed at home; 33% was given away to relatives, friends, or crew members; and 40% was sold. Among the noncommercial anglers in the sample, 38% of the catch was consumed at home, and nearly all the rest was given to family (19%), friends (22%), or crew members (17%). A majority (67%) of bottomfish fishers consider the bottomfish they catch to be an important source of food for their families (Hospital and Beavers 2012).

Glazier (2011) identified some notable variability in rates of selling, sharing, and consuming pelagic fish between networks of fishermen operating from Hale‘iwa and from Wai‘anae on the island of O‘ahu. The author asserted that the local social and cultural significance of consumption-oriented fishing cannot be overstated in this context, and that economic and demographic factors underlie relatively higher rates of sharing and personal consumption of pelagic fish in Wai‘anae than in Hale‘iwa.

Rubenstein (2001) made clear that most small-vessel fishing operations occurring around Guam involve subsistence motivations, and similarly Miller (2001) asserted that communities in the CNMI are heavily reliant on seafood landed by noncommercial or part-

time commercial operators. These findings are similar to those generated through the recent work of Hospital (2012), who surveyed small-boat fishers on Guam and in the CNMI. Hospital noted that although two-thirds of participating fishers reported selling fish over the 12 months before the survey, a greater proportion of the catch was consumed at home (about 30%) or given away (26% to 35%) than was sold (23% to 32%). An additional 6% to 8% of the catch was provided for consumption at community events such as fiestas, and about 3% was traded for various goods or services. Over 80% of respondents said that the pelagic, bottomfish, and reef fish they caught constituted an important source of food for their families.

Hospital (2012) also addressed the small-scale fisheries classification issue. Based on the results of his survey, 36% of fishers on Guam and 44% of fishers in the CNMI indicated that their primary motivation was to catch fish to feed their families. Of note, nearly 33% were classified as cultural fishers, as determined through positive responses to the statement "I enjoy fishing, but am even more concerned about keeping traditional practices alive, such as using traditional fishing gear and sharing fish with the community." A substantial proportion of the overall sample described themselves as more than one type of fisherman, leading the author to conclude that a variety of cultural, social, and economic motivations are associated with fishing in the study areas.

One complicating factor in efforts to discretely classify fishers is that subsistence-oriented fishing is not simply a style of fishing. Rather, it is an important part of an overall lifestyle (National Research Council 1999) that involves cooperative labor and reciprocal and customary exchange (Severance 2010); the accumulation of prestige and influence by certain individuals such as successful fishers and experienced elders (Glazier 2002); and emphasis on providing food for celebrations and other community and family events.

The observable cultural significance of subsistence activities in island communities in the western Pacific raises important

questions for regional policy makers. Must consumption-oriented fishing be part of a broader subsistence lifestyle before it can be considered a subsistence activity? Are people who fish primarily for food necessarily subsistence fishers? Communities in the western Pacific have transitioned to cash economies in which wild foods are not as obviously essential, in dietary terms, as in years past. But the situation is quite complex, and as noted in the case of Moloka'i, wild foods are an important part of contemporary household economies that also involve cash, investment returns, subsidies, and so forth. Further, many small-boat fishers in Hawai'i and other island areas of the western Pacific consider themselves to be subsistence fishers, despite the fact that they may sell a portion of their catch and exhibit behaviors that suggest fishing is a viable means of recreation. The following section outlines a conceptual framework for rectifying such classificatory complexities and uncertainties.

A FRAMEWORK FOR FURTHERING IDENTIFICATION OF SUBSISTENCE FISHERIES

Much small-boat fishing in the western Pacific clearly involves a subsistence element. In policy situations where it is necessary to address distinctions between fisheries, it would be helpful to have a framework in hand that is flexible, yet sufficient for enabling resource managers to identify subsistence fish, fishing, or fishers at some reasonable level of specificity. The framework should also be capable of informing efforts to monitor the status of the subject fisheries over time, thereby allowing assessment of any changes that suggest that the participants are becoming more or less dependent on marine resources for direct consumption or other subsistence-related uses outlined earlier here. The work of Langdon and Worl (1981) is an instructive point of departure for developing such a framework. According to the authors, subsistence economies involve the following key attributes:

1. Production, whether from naturally occurring biological and other resources

- or from domesticated resources, is primarily for personal or household consumption.
- 2. Distribution is for the most part carried out through traditional, noncommercial channels.
- 3. Consumption of the overwhelming majority of items produced takes place within the household or the community.
- 4. Resources used are derived from local and regional areas in the vicinity of the community.
- 5. Production and distribution are not organized to obtain the greatest possible return given available labor and technology but are organized for security and continued existence.

Before deriving a more explicit framework from these criteria, a few important points should be noted. First, although the criteria cover many of the attributes others have used to characterize subsistence activities, certain criteria are omitted, most notably certain aspects of the activities themselves, such as targeted species, types of gear used, size of vessels and motors, and so forth. This omission is logical because subsistence activities always

occur in changing social and environmental contexts. It would therefore be inaccurate to suggest, for instance, that subsistence activities are occurring only if certain species are pursued in a traditional manner and without the use of modern technology (National Research Council 1999). Further, because consumption-oriented fishing, hunting, and gathering activities can be important in many social and cultural settings, there need not be strict requirements that the harvesters be indigenous persons, although this may obviously be an important consideration in certain policy decisions.

Second, the criteria imply that some quantitative scale could be used to measure the extent or level of importance of subsistence-related fishing activities along a possible spectrum, based on some subjective standard. As such, whether or not such activities meet the qualifying criteria for subsistence could be assessed in relation to scales or thresholds, with the final judgment determined by a topical expert, through group consensus, or through other decision-making processes.

Third, measurement could be undertaken at a variety of scales, such as individual fishers, fleets of fishers, single or multiple communities, and so forth. With these considerations

TABLE 1
 Framework for Defining Subsistence Fishing in the Western Pacific

Characteristic of Fleet or Fishery	Degree/Frequency		
	Low Degree/ Seldom or Never	Moderate Degree/ Sometimes	High Degree/ Always or Nearly Always
1. Personal, household, and/or community consumption of local or regionally harvested marine resources	↘	↘	↓
2. Distribution is carried out through traditional, noncommercial channels	↘	↘	↓
3. Production and distribution organized for security and existence rather than obtaining greatest net economic return	↘	↘	↓
4. Cash transactions are limited and lead to return of prioritized trip expenses, rather than profit or income	↘	↘	Subsistence

Note: Arrows are used to represent the increasing presence of characteristics that define subsistence under the recommended framework.

in mind, Table 1 depicts a framework for assessing the degree to which a fisherman, fleet, fishery, or community exhibits attributes associated with subsistence-oriented fishing activities. In this case, the more often or more extensively a given individual or group exhibits the attributes noted in the first column of the table, the more confidently it may be considered discretely subsistence-oriented. Given the pervasive importance of seafood in community settings across the western Pacific, many individuals and all fleets will exhibit some of the attributes depicted in the framework. Following is a discussion of each of the recommended criteria that appear in Table 1 for classifying fisheries or fishery sectors in relation to contemporary subsistence activities.

1. Personal, Household, or Community Consumption of Local or Regionally Harvested Marine Resources

This criterion is consistent with Schumann and Macinko's (2007:708) description of subsistence fisheries as "local, non-commercial fisheries, oriented not primarily for recreation but for the procurement of fish for consumption of the fishers, their families, and community." Langdon and Worl's (1981) first and third definitional components are combined, because they both address localized consumption of natural resources. Those authors' first component adds the notion that the subsistence resources in question can be either wild or domesticated (where the latter could include, for example, products of aquaculture). This is not currently a critical distinction in most of the western Pacific. Those authors' fourth criterion is also incorporated into the framework. Many Pacific island nations transact seafood through commercial markets, and although seafood purchased from commercial venues may be used for cultural purposes, such uses would not typically be categorized in relation to subsistence. This does not, however, preclude nonlocal seafood from being considered part of a local subsistence food network. For example, Pacific islanders living in Alaska often ship salmon to relatives living in the western

Pacific, where it may be used as part of a localized subsistence lifestyle.

2. Distribution Is Carried Out through Traditional, Noncommercial Channels

Schumann and Macinko (2007:708) asserted that the term "subsistence" describes an economic system in which "distribution of goods (most notably food) occurs through social channels built on customary sharing and trading." Similarly, the Food and Agriculture Organization of the United Nations (FAO) (1998:112) defined a subsistence fishery in terms of the social context in which it is consumed: "A [subsistence fishery is one in which] fish are shared and consumed directly by the families and kin of the fishers rather than being bought by middle-(wo)men and sold at the next larger market." Subsistence systems are characterized by widespread sharing (Wolfe and Walker 1987). Sharing can be thought of as the allocation of economic goods and services without calculating returns (Price 1975). As mentioned earlier and in no. 4 following, the reference to "non-commercial channels" does not mean that cash cannot be exchanged for seafood, but that the nature of the exchange is the primary consideration.

3. Production and Distribution Organized for Security and Existence Rather than Obtaining Greatest Net Economic Return

Kronen (2004:130) found that Tongan fishers generally do not fish for profit, but rather primarily for dietary and sociocultural purposes; moreover, that author determined that the objectives of coastal fishing operations in Tonga are not to maximize catch, but to "satisfy subsistence, social obligations and the choice of fishing as a form of lifestyle and part of traditional livelihood and social institutions." This value system is directly comparable with those of indigenous societies in the western Pacific. Also inherent in this criterion is the importance given to food production roles undertaken in family and extended family settings. This element of traditional indigenous society is captured in several defini-

tions of subsistence (Schumann and Macinko 2007).

Production and distribution of seafood for subsistence uses often also involves cooperative effort. For instance, the Guam Fishermen's Cooperative Association, as described by Allen and Bartram (2008), provides benefits through and to an interconnected group of island residents. These include provision of a stable supply of seafood for routine and celebratory occasions, reduced prices for gas and ice, and the sponsoring of fishing events. Although cooperatives are typically associated with artisanal fisheries (King and Lambeth 2000), in this case the organization prioritizes social benefits above purely economic returns.

4. Cash Transactions Are Limited and Lead to Prioritized Return of Trip Expenses, Rather than Profit or Income

This economic variable was added to address the role of cash transactions observed among subsistence-oriented fleets in the western Pacific. This criterion also takes into consideration the legal wording of regulations established to manage the subsistence halibut fishery in Alaska: "cash payments may be used to reimburse participating fishermen for trip expenses, where these expenses are limited to the actual costs of ice, bait, food, and fuel" (73 FR 54932, published 24 September 2008). Note that this definition excludes cash transactions that result in generalized income to the owner, captain, or crew. This criterion also meets the ANILCA definition of customary trade, which excludes "significant commercial enterprise."

CONCLUSIONS

The Western Pacific Regional Fishery Management Council regulates fishing activities in the U.S. Exclusive Economic Zones adjacent to the state or territorial waters of Hawai'i, Guam, American Samoa, and the CNMI. The Council currently does not classify fishers, marine resources, or fishing activities with discrete and direct reference to subsistence. However, the Council mission

clearly supports consumption-oriented pursuit and use of marine resources throughout its jurisdiction. The Council's mission also advocates the perpetuation of cultural practices that are traditionally associated with such uses. For instance, the entity has established a Community Development Program and a Community Demonstration Project Program, both of which call for increased representation of subsistence-oriented communities in the fishery management process, along with promotion of traditional fishing practices and customary use of marine resources. The Council has also established buffer zones around the Main Hawaiian Islands to preclude potential conflicts between domestic longline fishers and small-scale pelagic fishers. The buffers also function to maximize harvest opportunities for small-vessel captains based in the islands, including opportunities for subsistence-oriented fishing.

One can draw the net tightly around the term subsistence to capture a narrow and exclusive definition, or it can be drawn loosely, allowing for a broader, more inclusive definition. There is no right answer; the appropriate definition depends on the policy context in question (cf. Schorr 2005). For instance, if food security is a key policy goal for a hypothetical group of small-boat fishers in the western Pacific, and all such fishers require access to certain marine resources, it would not make sense to use exclusionary principles when defining subsistence. On the other hand, if such fishers are forced to compete with fleets that are disproportionately better equipped to harvest those resources, it may be sensible to define subsistence and develop policies in ways that ensure fair and equitable opportunities for all fishers to meet their food-gathering objectives.

The degree and frequency to which fishing and related sociocultural activities are appropriately defined as subsistence are important subjects for regional policy makers. Such decision-making processes may well be enhanced through consideration of the definitional framework developed in this article. The framework could be used in a number of ways. When there is a need to allocate

harvest, it could be used to identify fishers, fleets, and fisheries that are in some manner involved in subsistence uses and functions in the twenty-first century. It could also be used as an outline to guide qualitative description or quantitative assessment, with cutoff points or thresholds appropriate to the policy decision at hand. Finally, it could be used to assess and monitor the extent to which fishers, fleets, and fisheries are moving toward or away from subsistence-oriented objectives.

Given the extent and level of importance of subsistence-oriented fishing in island settings around the western Pacific, a useful research and monitoring agenda would involve examination not only of the disposition of fish harvested through small-scale and other fisheries but also the larger context within which harvesting and consumption occur. Such an agenda ideally would document the reciprocal, customary, and altruistic sharing of seafood and the way in which these continue to contribute to community life in the western Pacific (cf. Sahllins 1972). Research regarding local perceptions of the amount and type of seafood needed for culturally significant uses in relation to and outside the formal market economy would also be useful.

It may be tempting to conclude that the subsistence lifestyle is antiquated in the western Pacific. But for many individuals, families, and communities, locally captured seafood remains a critically important element of an informal economy that facilitates physical and cultural survival. Indeed, much small-boat and shoreline fishing activity in the western Pacific does readily fit most definitions of subsistence and thereby deserves deeper consideration among resource managers and policy makers as a type of fishing that is as essential as any other.

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