6. COMMUNITY AND SOCIAL DATA UPDATE

According to National Standard 8 (NS 8), conservation and management measures should attempt to both provide for the continued participation of a community and minimize the economic effects on the community. Complying with NS 8 is contingent upon the availability of community studies and profiles as well as regional economic analyses. The information presented here addresses new data concerning the social and economic well-being of participants in the fishery and considers the impact of significant regulatory measures enacted in the past year.

6.1 Overview of Current Information and Rationale

The Magnuson-Stevens Act requires all FMPs to include a fishery impact statement intended to assess, specify, and describe the likely effects of the measures on fishermen and fishing communities (§303(a)). When establishing any new regulations, the cultural and social framework relevant to the fishery and any affected fishing communities (§303(b)(6)) must be taken into account.

The National Environmental Policy Act (NEPA) also requires federal agencies to consider the interactions of natural and human environments by using a "systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences...in planning and decision-making" [NEPA section 102(2)(a)]. Moreover, agencies need to address the aesthetic, historic, cultural, economic, social, or health effects which may be direct, indirect, or cumulative. Consideration of social impacts is a growing concern as fisheries experience increased participation and/or declines in stocks. The consequences of management actions need to be examined to better ascertain and, if necessary, mitigate impacts of regulations on affected constituents.

Social impacts are generally the consequences to human populations that follow from some type of public or private action. Those consequences may include alterations to the ways in which people live, work or play, relate to one another, and organize to meet their needs. In addition, cultural impacts which may involve changes in values and beliefs which affect people's way of identifying themselves within their occupation, communities, and society in general are included under this interpretation. Social impact analyses help determine the consequences of policy action in advance by comparing the Status Quo with the projected impacts. Although public hearings and scoping meetings provide input from those concerned with a particular action, they do not constitute a full overview of the fishery.

While geographic location is an important component of a fishing community, the transient nature of HMS may necessitate permitted fishermen to shift location in an attempt to follow the fish. Because of this characteristic, management measures for HMS often have the most identifiable impacts on fishing fleets that use specific gear types. The geographic concentrations of HMS fisheries may also vary from year to year as the behavior of these

migratory fish is unpredictable. The relationship between these fleets, gear types, and geographic fishing communities is not always a direct one; however, they are important variables for understanding social and cultural impacts. As a result, the inclusion of typical community profiles in HMS management decisions is somewhat difficult as geographic factors and the use of a specific gear type have to be considered.

NOAA Fisheries (2001) guidelines for social impact assessments specify that the following elements are utilized in the development of FMPs and FMP amendments:

1) The size and demographic characteristics of the fishery-related work force residing in the area; these determine demographic, income, and employment effects in relation to the work force as a whole, by community and region.

2) The cultural issues of attitudes, beliefs, and values of fishermen, fishery-related workers, other stakeholders, and their communities.

3) The effects of proposed actions on social structure and organization; that is, on the ability to provide necessary social support and services to families and communities.

4) The non-economic social aspects of the proposed action or policy; these include life-style issues, health and safety issues, and the non-consumptive and recreational use of living marine resources and their habitats.

5) The historical dependence on and participation in the fishery by fishermen and communities, reflected in the structure of fishing practices, income distribution and rights.

To help develop this information for the HMS FMP and the Billfish Amendment, NOAA Fisheries contracted with Dr. Doug Wilson, from the Ecopolicy Center for Agriculture, Environmental and Resource Issues at Rutgers, the State University of New Jersey. Dr. Wilson and his colleagues completed their field work in July 1998. Their study considered four species groups (tunas, swordfish, sharks, and billfish) that have important commercial and recreational fisheries extending along the Atlantic and Gulf Coast from Maine to Texas and in the Caribbean. The study investigated the social and cultural characteristics of fishing communities in five states and one U.S. territory: Massachusetts, New Jersey, North Carolina, Florida, Louisiana, and Puerto Rico. These areas were selected because they each have important fishing communities that could be affected by measures included in the HMS FMP and the Billfish Amendment, and because they are fairly evenly spread along the Atlantic and Gulf Coast and the Caribbean. For each state or territory, a profile of basic sociologic information was compiled, with at least two

coastal communities visited for further analysis. Towns were selected based on HMS landings data, the relationship between the geographic communities and the fishing fleets, the existence of other community studies, and inputs from the Advisory Panels for HMS and Billfish. Complete descriptions of the study results can be found in Chapter 9 of the HMS FMP and Chapter 7 of the Billfish Amendment. In 2002, NOAA Fisheries contracted the Virginia Institute of Marine Science (VIMS) at the College of William and Mary to re-evaluate several of the baseline communities.

6.2 Social Impacts of Selected 2002 Regulatory Actions

Emergency Rule to Implement Management Measures in the Atlantic Shark Fisheries Based on the Results of the Independent Peer Review and a Court-Approved Settlement Agreement (66 FR 67118, December 28, 2001)

This action re-established 1997 commercial LCS and SCS quota levels and catch accounting/monitoring procedures, pending independent review. Because 1997 commercial quotas and catch accounting/monitoring procedures were the status quo due to the court injunction, no changes in social impacts were expected due to this action. In the long-term, however, negative social impacts may be experienced if reductions in commercial quota or restrictions on fishery operation procedures are necessary to rebuild LCS and prevent overfishing of SCS. The following towns were identified during the HMS FMP development and are analyzed for social impacts in this action due to the importance of large and small coastal shark fishing to the community: Wanchese, NC; Madeira Beach, FL; Panama City, FL; and Dulac, LA. The impacts of this action are expected to be minor in all of these communities in the short-term.

Final Rule to Reduce Sea Turtle Bycatch and Bycatch Mortality in Highly Migratory Species Fisheries (67 FR 45393, July 9, 2002)

This final rule implemented measures required by the June 14, 2001, Biological Opinion (BiOp) on Atlantic highly migratory species (HMS) fisheries. In the HMS pelagic longline fishery, NOAA Fisheries closed the northeast distant statistical reporting (NED) area, required the length of any gangions to be 10 percent longer than the length of any floatline if the total length of any gangions plus the total length of any floatline is less than 100 meters, and prohibited vessels from having hooks on board other than corrodible, non-stainless steel hooks. In the HMS shark gillnet fishery, both the observer and vessel operator must look for whales, the vessel operator must contact NOAA Fisheries if a listed whale is taken, and shark gillnet fishermen must conduct net checks every 0.5 to 2 hours to look for and remove any sea turtles or marine mammals from their gear. This final rule also required all HMS bottom and pelagic longline vessels to post sea turtle handling and release guidelines in the wheelhouse. The intent of these actions is to reduce the incidental catch and post-release mortality of sea turtles and other protected species in HMS fisheries.

The 2001 BiOp stipulates that the NED area is to be closed and that an experimental fishery should be conducted for no more than three years to examine the possibility of developing modified fishing practices to avoid the incidental take of sea turtles. NOAA Fisheries feels that the NED area experimental fishery offers the affected vessels an opportunity to avoid significant social and economic impacts from the closed area, if they participate. After the NED area was closed by emergency rule on July 13, 2001 (66 FR 36711), there were eight vessels that participated in the 2001 pelagic longline experimental fishery in the NED closed area. These vessels were allowed to retain and sell their catch in addition to being compensated $4,150 per set for their participation. Because of the availability of the experimental fishery, NOAA Fisheries does not expect any significant social or community impacts to result from the closure in the short-term. If vessels do not participate or are not eligible to participate in the experimental fishery, they may experience economic and social impacts. However, there are other areas, perhaps not as lucrative, available to fishing activities.

The HMS pelagic longline fishery gear modifications required by NOAA Fisheries in this regulation include requiring the length of any gangions to be 110 percent of the length of any floatline in sets where the total length of any gangions and any floatline is less than 100 meters and requiring the use of corrodible hooks. This regulation also requires that the captain of a vessel using pelagic longline gear to target HMS report a lethal sea turtle take within 48 hours of returning to port. The gangions length requirement was made effective in the 2001 BiOp emergency rule (66 FR 64378, July13, 2001) so the affected fishermen should have already altered their usual fishing behavior/gear to comply with the regulation. To comply with this regulation, fishermen could lengthen their gangions. This option will require fishermen to buy additional monofilament and replace existing gangions. Alternatively, fishermen could shorten their floatlines. Both options will require additional labor in the short-term to adjust the length of the existing gear. The corrodible hook requirement will have a delayed effective date which should allow the impacted fishermen to spread the cost of purchasing hooks over a few months. As many fishermen already use these hooks, NOAA Fisheries does not expect this regulation to have large social impacts. Reporting lethal sea turtle takes within 48 hours of returning to port is not expected to have an impact as this occurrence is rare.

NOAA Fisheries also implemented several regulations impacting the shark drift gillnet fishery. On a shark gillnet vessel, both the vessel operator and the observer are responsible for sighting whales. The shark gillnet vessel operator is also responsible for contacting NOAA Fisheries in the event one is incidentally taken in this fishery. Both of these actions will allow NOAA Fisheries to gather more complete data concerning bycatch in these two fisheries. Because the fishing operators are not greatly affected, NOAA Fisheries expects few, if any, social impacts. NOAA Fisheries is also requiring shark gillnet fishermen to conduct net checks every 0.5 to 2 hours to look for and remove any entangled sea turtles or marine mammals from the gear. Most shark gillnet fishermen already check the net so this action will have few impacts. It is unlikely that this alternative will affect fishing communities especially given the small number of vessels in the shark gillnet fishery.

Final Rule to Amend the Highly Migratory Species Fishery Regulations Associated with Charter/Headboat Operations, and Require Permits for Vessels Fishing Recreationally for Highly Migratory Species (67 FR 77434, December 18, 2002)

NOAA Fisheries amended the regulations governing the Atlantic HMS fisheries to define operations and regulations for HMS charter/headboats (CHBs), require an Atlantic HMS recreational permit, adjust the time frame for permit category changes for Atlantic HMS and Atlantic tunas permits, clarify the regulations regarding the retention of Atlantic bluefin tuna in the Gulf of Mexico by recreational and HMS CHB vessels, and allow NOAA Fisheries to set differential bluefin tuna retention limits by vessel type. Vessels that possess the HMS CHB permit in combination with the limited access swordfish handgear and/or shark permit may experience positive social and economic impacts due to their ability to fish recreationally for sharks and swordfish when the commercial fisheries are closed, thus not impacting their ability to book charters. Vessels with these permit combinations would also maintain their ability to fish commercially which would have positive social and economic impacts when the commercial fisheries are open due to their ability to retain sharks and swordfish in excess of the recreational limits.

Requiring all recreational fishermen to participate in an annual permit process increases the regulatory burden. This could have a minor negative economic impacts for those vessels that need to obtain a $27.00 Atlantic HMS recreational permit. However, the regulatory burden for both anglers and NOAA Fisheries should be substantially reduced by incorporating the existing recreational permitting requirement (Angling category permit for Atlantic tunas) into the expanded Atlantic HMS permit requirement. Many saltwater fishermen target multiple HMS; for example, some who target billfish also catch other large pelagic species like tuna and sharks. Tuna anglers are already required to hold a recreational permit, so the new permitting burden will be borne by those anglers that participate in the recreational fisheries for sharks, swordfish, or billfish, but have not participated in the tuna fishery. Due to the internet-based permitting system, NOAA Fisheries allows the one permit category change to occur until the first day of the fishing year, June 1. In addition, NOAA Fisheries will allow the one permit category change to occur after June 1, so long as it occurs with the renewal for that year. This provides added flexibility to fishery participants to make knowledgeable choices on permit category selection, and prevents situations where persons that purchase new vessels are unknowingly limited to the permit category of the previous owner from past years. This regulation should result in both positive social and economic impacts to fishery participants.

This alternative would modify the current regulations to clarify them and ensure that they are consistent with ICCAT recommendations on BFT fishing in the Gulf of Mexico. Clarification of this regulatory language should decrease, if not eliminate, recreational harvest of BFT in the Gulf of Mexico and should have positive ecological impacts. Vessels that may have been misinterpreting the current regulations and targeting BFT recreationally, may experience both negative and positive social impacts. NOAA Fisheries set a differential BFT retention limit for

headboats (Coast Guard inspected vessels) in 2001, which provided headboat operators the chance to book trips and enhance recreational fishing opportunities in a sector of the fishery that they had not participated in over the last several years (66 FR 42805, August 15, 2001). The social and economic impacts of this regulation should be positive.

Final Rule to Implement Quota Recommendations from the 2000 Meeting of the International Convention for the Conservation of Atlantic Tunas (ICCAT) and to Re-Establish Prohibitions Regarding Possession of Fish in Violation of International Regulations (67 FR 70023, November 20, 2002)

In implementing the ICCAT recommendations from the 2000 meeting, NOAA Fisheries does not expect significant social impacts. The rule established a reserve quota category of North American swordfish; maintained the status quo for North Atlantic albacore, South Atlantic albacore, and South Atlantic swordfish; reinstated the prohibition regarding possession of fish in violation of international agreements; clarified fishing areas for Atlantic HMS; and implemented trade restrictions. Establishing a reserve quota category is not expected to negatively impact the incidental and recreational swordfish catches. The gross ex-vessel revenue from 300.8 mt dw would be $2.3 million ($3.51 per pound for 661,410 lbs [300.8 mt dw * 2204.6 lbs/mt dw]). However, NOAA Fisheries and the pelagic longline industry representatives agree that the current U.S. pelagic longline fleet operating in the Atlantic Ocean is not likely to be able to harvest the 400 mt ww (300.8 mt dw) that would be allocated to the reserve quota category, in addition to the under-harvest from the 2000 and 2001 fishing years. Therefore, the set-aside of 400 mt ww (300.8 mt dw) from the U.S. landings quota is not expected to have significant economic impacts on U.S. fishermen. Instead, using U.S. quota to support conservation efforts could result in a long-term economic gain, albeit one that is unquantifiable. Social benefits may increase over the long-term if the establishment of a reserve quota allows the North Atlantic Swordfish stock to rebuild over the next decade. In the long-term, the economic impacts of the quota transfer will not be significant, since the availability of future U.S. quota will not be affected.

Maintaining the status quo regulations in the North Atlantic albacore, South Atlantic albacore, and South Atlantic swordfish fisheries is not expected to have any economic or social effects as no changes in the fishery are expected. Additionally, reinstating the prohibition regarding possession of fish in violation of international regulations, clarifying authorized fishing areas for Atlantic HMS, and implementing trade restrictions are expected to have minimal economic and social impacts.

6.3 Summary of New Social and Economic Data Available

6.3.1 Social Science Publications

In an effort to improve the understanding of the social impacts upon HMS fishermen, their

families, and the related communities, NOAA Fisheries provides the following abstracts from recent publications examining social science topics.

Conway, F.D.L., J. Gilden, and A. Zvonkovic. 2002. *Changing communication and roles: Innovations in Oregon's fishing families, communities, and management*. Fisheries 27(10): 20-29.

Abstract. Fisheries throughout the United States are undergoing dramatic change. Oregon Sea Grant's Adapting to Change project documented how fishing families, communities, and the commercial fishing industry are adjusting to these changes. Using interviews, focus groups, surveys, and educational outreach programs with members of the trawl and troll fleets, we examined how changes in communication and roles among fishing families, communities, and fisheries management may combine to produce desirable innovations at these three levels. With women's increasing involvement in fisheries management and the emergence of industry-wide support networks, decisions are being made in different ways among fishing families and communities, as well as at the management level. Our research found that changing the lines of communication alone, however, does not guarantee that innovation will occur. The article concludes with highlights of positive changes brought on by flexible roles and increased communication, while noting issues still plaguing family, community, and management contexts.

Ditton, R.B., S.M. Holland, and D.K. Anderson. 2002. *Recreational fishing as tourism*. Fisheries 27(3):17-24.

Abstract. In addition to being an outdoor recreation activity for residents in each state, fishing can also be considered a form of tourism when anglers cross state lines to go fishing. Efforts are underway in each state to promote tourism, including recreational fishing, in the name of economic development. These efforts are usually independent from fishery management. Data from the "1995 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation" were analyzed to indicate the extent that various states attract anglers to their states as well as supply anglers to others. The top five destination states in terms of days of fishing by nonresidents were Minnesota, Florida, Wisconsin, North Carolina, and New York. The top five states in numbers of resident fishing days exported to other states were Illinois, Texas, Pennsylvania, California, and Virginia. A stakeholder perspective including managers and resident anglers is presented to illustrate the diversity of thought on the fishing as tourism issue. Ecotourism is defined, illustrated with examples, and offered as a future means for coping with the fishing days being exported to various states. Fishery managers need to acquire a greater awareness of fishing tourism in their states and develop effective partnerships with state and local tourism promotion organizations.

Fedler, A.J. and R.B. Ditton. 2001. *Dropping out and dropping in: A study of factors for changing recreational fishing participation*. North American Journal of Fisheries Management 21:283-292.

Abstract. We used a longitudinal study design to understand the factors that cause changes in recreational fishing participation over time for a sample of anglers who had purchased a fishing license in 1989 and responded to a 1990 Texas statewide angler survey. License records from 1991 were used to identify subsequent license purchasers. In 1994, we sent a follow-up mail survey to a random sample of 1,600 respondents to the 1990 statewide survey. One-half had purchased a Texas fishing license in 1989 but had not obtained a 1991 license; the remaining 800 purchased Texas fishing licenses during both license years (1989 and 1991). There were four combinations among the original sample of 1989 license buyers. Those who did not follow up and purchase licenses in 1991 and 1994 were termed "inactive anglers"

(17%). The second group participated again in 1991 but not in 1994; this group was termed "recent dropouts" (6%). A third group of 1989 license purchasers did not participate in 1991 but did so again in 1994; this group was labeled "drop ins" (27%). The fourth group of 1989 license purchasers also participated in 1991 and 1994; this group was labeled "active anglers" (50%). Whereas the four groups studied did not differ in race, household size and composition, and marital status, gender was found to play a role in the consistency of recreational fishing participation. Women comprised a larger percentage of recent dropouts and inactive anglers. Results showed that nearly 25% of the anglers in a particular year will become inactive within 1 or 2 years. Whereas anglers cited "a lack of time" as their most common constraint, it was also their most important reason for quitting fishing. Pending replication elsewhere, these results will yield a more realistic understanding of the angler base population.

Hall-Arber, M., C. Dyer, J. Poggie, J. McNally, and R. Gagne. 2001. *New England's Fishing Communities. MIT Sea Grant College Program*. Cambridge, MA.

This publication addresses the conceptual framework of fishing communities, measuring fishing dependency and externalities in New England, and vulnerability, infrastructure and gentrification among fishing dependent communities.

Excerpts from Introduction. Change between and within fishing depending communities is occurring at an ever-accelerating pace. Driven by externalities of development, changes transform the linkages between communities and regions and modify the contexts within which people live and work. In New England, the significant forces of gentrification are modifying the coastal areas. Gentrification is a nation-wide trend as more people of means are attracted to coastal areas as places to live, play, and own property. This trend often plays out as a direct threat to established enclaves and communities dedicated to commercial fishing.

...Such transformations strain the ability of fishing enclaves and communities to reproduce their particular forms of total capital. Thus, social networks, access to marine resources, and commitment to the occupation of fishing and devalued, while other aspects such as recreational fishing, tourism, and vacation residence construction begin to dominate. The argument can be made that maintaining a mixed economy, which allows for both fishing dependent populations and new wave populations to co-exist, is a viable option. Yet, evidence shows that when the momentum for transformation to non-traditional (gentrified) processes takes hold without protection for existing fishing operations, essential and irreplaceable fishing infrastructure (ice houses, marine railways, fish processors) is often lost.

Jacob, S., F.L. Farmer, M. Jepson, and C. Adams. 2001. *Landing a definition of fishing dependent communities: Potential social science contributions to meeting National Standard 8*. Fisheries 26(10):16-22.

Abstract. Under the Magnuson-Stevens Fishery Conservation and Management Act National Standard 8, federal policy now mandates that fishery management plans identify and consider the social and economic consequ4ences of fisheries management actions on fishing communities (MSFCMA Section 301[a][8]). This mandate is based on the recognition that conservation and management efforts have expansive social and economic impacts. The act's definition of a fishing-dependent community is "a community which is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such a community" (PL97-265). The definition of fishing

community in the act is workable only if the meaning of the phrase, "substantially dependent on or substantially engaged" is defined. Yet the law is not specific as to what constitutes fishing dependence. Consequently, section 301 (a) and 303 (b) of the Magnuson-Stevens Act as it relates to National Standard 8 (considering the social and economic impacts on fishing-dependent communities) has not been consistently implemented. This article explores the issues related to empirically defining such fishing-dependent communities and suggests a protocol for their identification.

Sharma, K.R. 2001. *Economic impacts of catch reallocation from the commercial fishery to the recreational fishery in Hawaii.* North American Journal of Fisheries Management 21:125-134

Abstract. The recent expansion of the longline commercial fishery has heightened the conflicts among various fisheries in Hawaii, especially between long-liners and other commercial fishing boats (troll and handline) and recreational boats. A recent court ruling against longline fishing in some waters around the Hawaiian Islands may provide an impetus for the expansion of non-longline commercial activities, which may in turn give rise to conflicts between that fishery and the recreational fishery. This study examines the economic impacts of reallocating the catch of one non-longline commercial fishing trip to the recreational fishery using the 1992 input-output model for Hawaii. The results show that by itself this shift raises value added per unit of fish landed but lowers overall income and employment. When trade and distribution services are included in the analysis, value added, income, and employment are all lower. When the effects of the decrease in personal consumption expenditures on other sectors as a result of the increase in expenditures on recreational fishing are also taken into account, the total losses in value added, income, and employment are even greater. However, the total indirect impacts of the shift from commercial to recreational fishing on value added, income, and employment are positive in all cases.

Wilson, D.C., B.J. McCay, V. Rowan, and B. Grandin. 2002. *Institutional differences among marine fisheries scientists' views of their working conditions, discipline, and fisheries management.* Fisheries 27(8): 14-24.

Abstract. We surveyed 349 U.S. marine fisheries scientists to ask them about their working conditions, their options about the state of the discipline of fisheries science, and their views about fisheries management. Fisheries scientists were largely engaged in applied work, with only a fifth of them significantly engaged in pure research. Among scientists working in management agencies, state scientists were more directly and immediately involved in a wide range of management tasks than were scientists working for the National Marine Fisheries Service. Although their views of both disciplinary issues and fisheries management reflected the problems they confront in their day-today work, the degree of consensus found among fisheries scientists on many issues was quite high. For example, there was both strong and broad support for the precautionary approach to management Some areas of systematic disagreement were found, however. Scientists working in management agencies were somewhat more positive about working with the fishing industry and more negative about using predefined management standards than were scientists working in conservation groups and universities. State scientists were found to be at the edge of the spectrum of several variables related both to working conditions and fisheries management.

6.4 Evaluation of Current Level of Social Data

As was mentioned previously, there are not many current social science studies addressing

the HMS fisheries. From a management perspective, this makes it difficult to assess the impact of promulgated regulations on the individual fishermen, their families, and the community. While NOAA Fisheries can assume the economic effect of a specific regulation will create a negative impact in the social arena, the only venue available to receive constituent feedback is public hearings. Because these are only scheduled as a result of promulgated regulations, it is difficult to receive comments concerning the social environment of HMS fisheries.

To improve the assessments of the social impacts upon HMS communities, continued research needs to be conducted to update current knowledge. Ideally, the work will specifically target HMS fisheries and assess the impacts of the existing regulations, particularly determining the accuracy of the social impacts assessments. To increase the level of social knowledge, HMS needs to increase its demographic data. Also, to improve the understanding of fishing behavior, HMS should improve its knowledge of resource use patterns (for example who fishes, with what gear, how frequently, and where). This would assist the HMS staff in determining the overall social impacts of fishing regulations. Until these areas are addressed, NOAA Fisheries must utilize the current available information.

6.5 Conclusion

Social impact analyses should continue to be conducted and refined in terms of the techniques employed and how they can best be incorporated into management measures. Updating data and supplementing fishery information is vital to improving the knowledge of managers with regard to each specific fishery. For example, combining census and other public data with per-trip crew information, will allow fisheries managers to estimate regional differences in fishing effort and movement between fisheries. In addition, it will allow assessment of differing social service, employment, and retraining needs in different communities. Ethnographic data will further the understanding of regional and even extra-regional patterns of fishing and attitudes toward fishing and fisheries management, as well as the place of fishing within individual communities. These data will also provide the detailed information necessary to allow fishermens' knowledge of fishing and the environment to be usefully incorporated into fisheries management.

Section 6 References

Conway, F.D.L., J. Gilden, and A. Zvonkovic. 2002. *Changing communication and roles: Innovations in Oregon's fishing families, communities, and management*. Fisheries 27(10): 20-29.

Ditton, R.B., S.M. Holland, and D.K. Anderson. 2002. *Recreational fishing as tourism*. Fisheries 27(3):17-24.

Fedler, A.J. and R.B. Ditton. 2001. *Dropping out and dropping in: A study of factors for changing recreational fishing participation*. North American Journal of Fisheries Management 21:283-292.

Hall-Arber, M., C. Dyer, J. Poggie, J. McNally, and R. Gagne. 2001. *New England's Fishing Communities. MIT Sea Grant College Program*. Cambridge, MA.

Jacob, S., F.L. Farmer, M. Jepson, and C. Adams. 2001. *Landing a definition of fishing dependent communities: Potential social science contributions to meeting National Standard 8*. Fisheries 26(10):16-22.

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Sharma, K.R. 2001. *Economic impacts of catch reallocation from the commercial fishery to the recreational fishery in Hawaii.* North American Journal of Fisheries Management 21:125-134

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