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## **Investigating Marine Recreational Fishing Stakeholders' Perspectives Across Three South Carolina Coastal Regions: The First Step Towards Collaboration**

### **Abstract**

Collaborative endeavors are increasingly utilized to assure active involvement of local stakeholders in natural resource planning and management. In order to enhance collaborative capacity and involve marine recreational anglers in resource management, the South Carolina Sea Grant Extension Program conducted semi-structured interviews in three coastal regions of South Carolina in order to determine: 1) the main problems associated with marine recreation fishing and 2) key non-regulatory solutions to those problems. Top themes for problems and non-regulatory solutions across each region as well as implications for Extension and outreach opportunities are included.

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## **Introduction**

Collaborative endeavors are increasingly utilized to assure active involvement of local stakeholders in natural resource planning and management. Expected outcomes include greater trust in scientists and managers, better management decisions, stronger belief in legitimacy and equity of management actions, and ultimately long-term compliance (Degnbol, 2003; Jentoft, 2000; Pinkerton, 2003; Weeks & Packard, 1997). However, building bridges between agencies, organizations, and individuals for resource management is not an end in itself, but rather a way to build understanding, support, and capacity (Wondolleck & Yaffee, 2000).

Such capacity includes collaboration across various policy arenas and levels of government by engaging citizens, communities, and nongovernmental organizations in problem-solving and implementation processes (Weber, Lovrich, & Gaffney, 2005). These issues are relevant to fisheries management, where there is an identified need to better understand recreational anglers as stakeholders (Recksiek & Hinchcliff, 2002). The study reported here uses conceptual analysis of recreational angler input regarding regional level marine recreation resource needs to explore collaborative potential on the South Carolina coast.

## **Problem Statement and Purpose of Study**

In South Carolina (SC), the Department of Natural Resources (SCDNR) has management and enforcement responsibilities for marine resources, and the state legislature has primary regulatory authority. As a result, regional stakeholder input may be undervalued. Also, given increasing coastal development and tourism pressures, the South Carolina Sea Grant Extension Program (SCSGEP) has recognized a growing need for Extension and outreach programs that can complement state regulatory and

enforcement efforts. Specifically, SCSGEP is interested in obtaining expert stakeholder input regarding the education and outreach needs that could facilitate non-regulatory problem-solving.

The purpose of the study reported here was to assess SC marine recreational fishing stakeholders' perceptions and understanding of problems, solutions, and priorities for recreational fishing resources. The process also served as a beginning step toward assessing collaborative capacity between recreational fishing stakeholders and management agencies. Although facilitated public comment sessions are common in resource management, few have involved in-depth analysis of recreational angler input specific to perceived needs, communications and stakeholder involvement issues (e.g., Conway & Opsommer, 2007; Connelly, Brown, & Knuth, 2000).

## **Methods**

### **Study Setting**

The study focused on three main SC coastal regions (Beaufort/Hilton Head, Charleston, and Myrtle Beach) as defined by tourism marketing literature. Beaufort/Hilton Head on the southern portion of the coast is a well-known recreational fishing area. Five rivers flow through Beaufort and into the Atlantic Ocean, making it a productive and accessible coastal fishery. North of Beaufort, the Charleston area has both adequate public access points and attractive angling locations, but is a larger metropolitan area that highlights cultural and heritage tourism. Myrtle Beach, which is located on the northern coastline, has few public access points, a considerably crowded waterway, and a focus on beaches, golf, and boating.

During the summer of 2005, 20 interviews were conducted with recreational angler stakeholders throughout the three coastal regions. Representatives from SCSGEP and SCDNR provided a list of potential interviewees with extensive recreational fishing experience and knowledge of the region. Participants were purposefully sampled (Babbie, 2006) to ensure diverse perspectives based on involvement in recreational fishing and regional representation.

Interviewees represented more than one interest in recreational fishing--15 identified themselves as anglers, seven as charter boat captains or fishing guides, six as fish "taggers" (i.e., assist SCDNR with tagging fish for population analysis), three as fishing pier employees, three as fish club members, and one as a marina owner. All were experienced anglers averaging over 30 years of fishing experience. All were Caucasian, and two were female. Data reached a saturation level (Creswell, 2006) with the twentieth interview, after which no other participants were contacted from the master list.

Data were collected using semi-structured, tape-recorded interviews (lasting between 20 and 120 minutes) with scripted questions and additional probing questions as topics emerged (Merriam, 2001). Examples of scripted questions include the following.

- How long have you been saltwater fishing? How did you first get involved in fishing?
- What is great about fishing along the SC coast?
- What are some problems with marine recreational fishing along the SC coast?
- What are some non-regulatory solutions that you can think of to fix these problems?

The interview process was designed to allow free-flowing dialog. Interviews occurred in locations selected by participants (Spradley, 1979), for example, home, work place, boat, local restaurant.

Data were transcribed and analyzed using an eight-step conceptual analysis (Table 1) procedure (Busch, DeMaret, & Flynn, 2005). The initial five steps involved making decisions regarding the level of coding and the last three steps involved data analysis.

<b>Table 1.</b> Conceptual Analysis Procedures	
<b>Procedural Step</b>	<b>Explanation</b>
1	Deciding to code data phrase-by-phrase to separate phrases into single ideas
2	Deciding to code data only for "problem" and "non-regulatory solutions"
3	Deciding to code for frequency
4	Deciding to code data exactly as they appear in text (i.e., not summarizing or paraphrasing actual text)
5	Deciding to disregard irrelevant information
6	Coding the text into single ideas
7	Formulating themes based on related codes
8	Evaluating and assuring reliability of themes

Two researchers, who were knowledgeable about recreation, fisheries, and related resource management issues, coded the data. The inter-rater reliability test (Holsti, 1969) demonstrated a 79% agreement of themes. Data were then recoded according to revised themes, yielding near perfect inter-rater agreement.

## Results

### Problems

Stakeholder interviews resulted in 500 coded problems associated with marine angling along the SC coast, and these fit eleven major themes (Table 2). The most frequently identified problem was declining fish resources due to illegal fishing activity and lack of conservation ethic among anglers. Numerous boats and people and environmental degradation associated with increasing coastal development and resource use were the second- and third-most mentioned problems.

<b>Table 2.</b> Problem Themes Identified by Marine Recreational Fishing Stakeholders along the South Carolina Coast				
Recreational fishing problem	# of codes (% of overall problem codes)	% of problem codes (n = # of codes)		
		Beaufort(n = 158)	Myrtle Beach(n = 239)	Charleston (n = 103)
Declining fish resource	83 (16.6)	<b>17.1</b>	<b>20.1</b>	8.7
Coastal capacity (i.e., number of boats, people, and development)	70 (14.0)	6.9	<b>14.6</b>	<b>23.3</b>
Environmental degradation	64 (12.8)	<b>22.8</b>	7.5	9.7
Access	61 (12.2)	<b>14.6</b>	11.7	9.7
Boater etiquette and seamanship	52 (10.4)	11.4	8.0	<b>14.6</b>
Recreational user conflict	50 (10.0)	1.9	<b>12.1</b>	<b>17.5</b>
Lack of SCDNR enforcement and presence	47 (9.4)	6.9	10.5	10.7
Management and regulations	43 (8.6)	8.2	9.6	4.9

Financial/economic/marketing	11 (2.2)	1.9	3.8	0.0
Boat ramp infrastructure	11 (2.2)	5.7	0.8	0.0
Some people don't know how to fish, rules, and regulations	8 (1.6)	2.5	1.3	1.0

## Problems Across Regions

Some overlap existed between regions for the top-mentioned problems (Table 2). Differences are likely due to differences in recreational opportunities and environments, and the degree of development in each area. The three most commonly mentioned problems by Beaufort stakeholders were: 1) environmental degradation of resources (e.g., pollution from boats, industry, and parking lots; littering; and abandoned crab traps), 2) declining fish resource (e.g., gear-related fish kills and illegal "fillet-and-release" activity), and 3) access (e.g., long waits at ramps, poor lighting at ramps, and limited dock space).

Other than declining fish resources, Myrtle Beach participants mentioned coastal capacity and user conflict. Participants claimed that fish numbers are decreasing because people are keeping fish outside size limits and/or fishing without licenses. According to participants, fish populations are also declining due to an increase in both coastal development and the number of boats. Conflict with recreational shrimpers and gill-netters and commercial fisherman also exists.

Charleston stakeholders shared two problem themes with Myrtle Beach--coastal capacity and user conflict. Participants mentioned that many new residents build a large dock on their property and buy a boat, thus increasing crowding on the water. Charleston stakeholders also indicated that "jet skiers," boaters traveling at high speeds and consuming alcohol, and recreational shrimping and crabbing conflicted with recreational angling.

## Non-Regulatory Solutions

After stakeholders communicated the problems, they were asked to identify non-regulatory solutions to these problems. Nine themes (totaling 162 codes) emerged (Table 3). The most identified solutions included angler education, improving fishing access, and establishing collaborative partnerships.

**Table 3.**  
Non-regulatory Solution Themes as Proposed by Stakeholders along the South Carolina Coast

<b>Non-regulatory solutions to recreational fishing problems on South Carolina coast</b>	<b># of codes (% of overall non-regulatory solution codes)</b>	<b>% of solution codes (n = # of codes)</b>		
		<b>Beaufort (n = 71)</b>	<b>Myrtle Beach (n = 60)</b>	<b>Charleston (n = 31)</b>
Education	74 (45.7)	<b>36.6</b>	<b>43.3</b>	<b>71</b>
Accessibility improvement	20 (12.4)	8.5	<b>21.7</b>	3.3
Collaboration/partnership	15 (9.3)	5.6	6.7	<b>23.3</b>
Ramp infrastructure improvement	15 (9.3)	<b>19.7</b>	1.7	0
Attract new fishermen/promotion	12 (7.4)	2.8	16.7	0
Environmental protection; conservation	10 (6.2)	8.5	6.7	0
Research	7 (4.3)	8.5	1.7	0
Management	5 (3.1)	7	0	0
Unsure/impossible	4 (2.5)	2.8	1.7	3.3

## Non-Regulatory Solutions Across Regions

Education was the top non-regulatory solution mentioned. For Beaufort participants, this meant educating anglers about the benefits of catch-and-release fishing, hook sizes, and fragility of estuaries. For Myrtle Beach stakeholders, this meant educating the public about fishery regulations and safe watercraft navigation and using brochures, television ads, postings at boat landings, and other printed media to reach all age groups. Stakeholder education in recreational fishing is viewed as a viable means of addressing problems (e.g., Reiss, Reiss, & Reiss, 2007; Johnston, Holland, Maharaj, & Campson, 2007).

Charleston stakeholders focused on the need for stakeholder collaboration in development of education strategies as well as forging conservation partnerships between anglers, charter captains, marina operators, fish clubs, and SCDNR. They felt partnerships would be instrumental in educating users at key access points. Collaboration among key recreational fishing stakeholders has become popular throughout the last decade (e.g., Sandersen & Koester, 2000; Morin, 2001).

Improving access was also considered an important solution. Beaufort stakeholders focused on ramp infrastructure improvements such as better lighting, fish cleaning stations, and ramps repair. Myrtle Beach stakeholders focused on adding additional floating docks, building new boat landings, and creating more artificial reefs.

## **Discussion and Implications**

In the study reported here, it was difficult to find one dominant problem theme, which indicates the diversity of recreational fishing issues along the different SC coastal regions. However, the prevailing focus on education, collaboration, and partnership as solutions indicates stakeholders' willingness to partner on educational outreach endeavors facilitated by SCSGEP and SCDNR (e.g., marine retailers providing space for printed materials, marinas supporting sign placement, recreational angling associations assisting with development of education programs). Willingness to collaborate is an important precursor to the implementation of co-management and is as important as what happens later in the process (Chuenpagdee & Jentoft, 2007).

Input of recreational anglers is important to fisheries management, particularly as a fishery shifts from food production to recreation where aesthetic, non-consumptive activities take precedence (Smith, 1986). The interviewees involved in the study were all experienced marine recreational anglers with knowledge about the region where they fished and whose responses demonstrated their belief that resource protection is important.

Beaufort area stakeholders were particularly focused on conservation and resource protection, which is consistent with their comments regarding the aesthetic beauty of the area, the ecological sensitivity of the region as development intensifies (South Carolina Sea Grant Consortium, 2005), and the apparent inexperience of the average angler in an area in which commercial fishing has also been traditionally important. The concern of Myrtle Beach residents that anglers and boaters had poor knowledge of general rules and regulations may reflect intensifying recreational user group conflicts resulting from increasing area development.

Consistent with the noticeable prevalence of print advertising in Myrtle Beach, stakeholders suggested many types of educational print media for public communication with inexperienced users. Charleston stakeholders' focus on public education about fishing, boating, and natural resource protection seems consistent with their familiarity with areas undergoing rapid development (similar to the Myrtle Beach area) and undeveloped areas (similar to those in the Beaufort area) in Charleston.

In addition to educational solutions stressed by stakeholders, other non-regulatory solutions should be considered. For example, SCSGEP in partnership with SCDNR and other state agencies responsible for marine recreational activities on the coast (SC Department of Health and Environmental Control and the SC Department of Parks



Recreation and Tourism), local governments, the fishing industry, state Extension specialists, and other vested stakeholders should support assessment of boating and fishing access, capacity, and infrastructure needs relevant to each major coastal region.

From this research, SCSGEP was able to develop a list of priority problems and suggested solutions congruent with stakeholder perceptions. Stakeholders also identified the need to work together in problem-solving and suggested collaborative partnerships. Thus, through this preliminary dialog with marine recreational angling stakeholders, the project helped SCSGEP better understand the foundation for collaboration in the three main regions of the SC coast.

## **Future Research**

The study reported here is an example for Extension professionals interested in determining appropriate collaborative efforts for regional level problem-solving when recreational user groups are involved. While the study was exploratory in nature, it represents the value of engaging recreational stakeholders in dialog as a means to understand the collaborative potential for addressing regional marine fisheries management issues. The study also highlights the fact that a "catch-all" solution generated by a larger Extension initiative may not account for regional differences in perceptions of problems or best solutions.

Further research could be conducted using a larger sample representing a wide range of angling experience (e.g., "novice" to "expert") within regions to refine and test the 20 themes that emerged. By surveying a larger sample of stakeholders, SCSGEP and other interested agencies (e.g., SCDNR) can be more confident about the level at which problems and potential solutions are shared and differ across the SC coastal regions.

## **References**

Babbie, E. (2006). *The practice of social research* (11th Ed.). Belmont, CA: Wadsworth.

Busch, C., DeMaret, P., & Flynn, T. (2005). *Content analysis*. Writing at CSU. Colorado State University Department of English. Retrieved June 11, 2005 from:  
<http://writing.colostate.edu/guides/research/content/>

Chuenpagdee, R., & Jentoft, S. (2007). Step zero for fisheries co-management: What precedes implementation. *Marine Policy*, 31(6).

Connelly, N. A., Brown, T. L., & Knuth, B. A. (2000). Do anglers and fishery professionals think alike? *Fisheries*, 25(2), 21-25.

Conway, F., & Opsommer, L. (2007). Communicating and interacting with Oregon's coastal marine recreational fishing community. *Fisheries*, 32(4), 182-188.

- Creswell, J. (2006). *Qualitative inquiry and research design: Choosing among five traditions* (2nd Ed.). Thousand Oaks, CA: Sage.
- Degnbol, P. (2003). Science and the user perspective: The gap co-management must address. In D. C. Wilson, J. R. Nielsen, & P. Degnbol (Eds.), *The fisheries co-management experience: Accomplishments, challenges and prospects*, 31-49. Dordrecht, The Netherlands: Kluwer Academic Publishers.
- Holsti, O. (1969). *Content analysis for the social sciences and humanities*. New York: Random House.
- Jentoft, S. (2000). The community: A missing link of fisheries management. *Marine Policy*, 24(1), 53-59.
- Johnston, R., Holland, D., Maharaj, V., & Campson, T. (2007). Fish harvest tags: An alternative management approach for recreational fisheries in the US Gulf of Mexico. *Marine Policy*, 31(4), 505-516.
- Merriam, S.B. (2001). *Qualitative research and case study applications in education*. San Francisco, CA: Jossey-Bass.
- Morin, T. (2001). Sanctuary advisory councils: Involving the public in the National Marine Sanctuary Program. *Coastal Management*, 29, 327-339.
- Pinkerton, E. (2003). Toward specificity in complexity: Understanding co-management from a social science perspective. In D. C. Wilson, J. R. Nielsen & P. Degnbol (Eds.), *The fisheries co-management experience: Accomplishments, challenges and prospects*, 61-77. Dordrecht, The Netherlands: Kluwer Academic Publishers.
- Reiss, P., Reiss, M., & Reiss, J. (2007). *Catch and release fishing effectiveness and mortality*. Acute Angling. Retrieved June 6, 2007 from <http://www.acuteangling.com/Reference/C&RMortality.pdf>
- Recksiek, H., & Hinchcliff, G. (2002). *Marine protected areas needs assessment final report*. NOAA Coastal Services Center. Retrieved October 1, 2005 from: <http://www.csc.noaa.gov/mpa/MPANAFINAL.pdf>
- Sandersen, H., & Koester, S. (2000). Co-management of tropical coastal zones: The case of the Soufriere Marine Management Area, St. Lucia, WI. *Coastal Management*, 28, 87-97.
- Smith, C. L. (1986). The life cycle of fisheries. *Fisheries*, 11(4), 20-25.
- South Carolina Sea Grant Consortium (2005). *South Atlantic bight land use-coastal ecosystem study: Phase II* (Final Progress Report). Charleston, SC. Retrieved January

18, 2006 from: <http://www.lu-ces.org/documents/Reports/LU-CES.FinalProgressReport.11-04-05.pdf>

Spradley, J.P. (1979). *The ethnographic interview*. New York: Holt, Rinehart, and Winston.

Weber, E. P., Lovrich, N. P., & Gaffney, M. (2005). Collaboration, enforcement, and endangered species: A framework for assessing collaborative problem-solving capacity. *Society and Natural Resources*, 18, 677-698.

Weeks, P., & Packard, J. M. (1997). Acceptance of scientific management by natural resource dependent communities. *Conservation Biology*, 11(1), 236-245.

Wondolleck, J. M., & Yaffee, S. L. (2000). *Making collaboration work: Lessons from innovation in natural resource management*. Washington, D.C.: Island Press.

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