

**DEVELOPING THE SHRIMP-TOURISM RELATIONSHIP THROUGH A
COMBINATION OF CULINARY RESEARCH, CHEF TRAINING AND
TOURIST EDUCATION**

Final Report
for the
Gulf and South Atlantic Fisheries Foundation
October 31, 2005

Lead Author
Laura W. Jodice, Recreation, Travel and Tourism Institute (RTTI)

Additional Contributors
Dr. William C. Norman, Recreation, Travel and Tourism Institute
Dr. Marge Condrasky, Department of Food Science and Human Nutrition
David Howell, Department of Food Science and Human Nutrition
Sajna Shenoy, Department of Parks, Recreation and Tourism
Kerry E. McElroy, Department of Parks, Recreation and Tourism
Morgan Dayton, Department of Parks, Recreation and Tourism
Marian Wooten, Department of Parks, Recreation and Tourism

Contract Number: #85-05-41000/0

Amount of Contract: \$41,000

Grantee: Clemson University (Dr. William C. Norman, Recreation Travel and Tourism Institute, Department of Parks Recreation and Tourism Management, and Dr. Marge Condrasky, Department of Food Science and Human Nutrition)

Award Period: November 2003 to August 2005 (plus 45 day extension)

Report Period: November 1, 2003 to October 31, 2005

This report was prepared by Clemson University under award number NA03NMF4270393 to the Gulf & South Atlantic Fisheries Foundation, Inc. from the National Marine Fisheries Service, National Oceanic and Atmospheric Administration, United States Department of Commerce. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of the National Marine Fisheries Service, National Oceanic Atmospheric Administration, or United States Department of Commerce.

ABSTRACT

The shrimp fishery in the Southeast region of the United States has been facing significant challenges affecting both its short-term and long-term economic sustainability. Suppressed prices due to increased competition with foreign producers and changes in the world food distribution systems have forced shrimp fishermen to seek out new methods and strategies to increase their return on investment. One proposed solution has been the idea of marketing “wild-caught” shrimp as a premium product as a means to increase profit potential for the domestic shrimp industry. Tourists are a significant population of shrimp consumers who may be willing to pay premium prices for wild-caught shrimp while traveling on the coast. Success relies on 1) providing education about the shrimp fishery to both tourists and restaurant chefs and managers in coastal communities and 2) developing stronger linkages between restaurants and shrimp harvesters. The purpose of this Gulf and South Atlantic Fisheries Foundation (GSAFF) project was to 1) define the unique attributes of local wild-caught shrimp, and 2) develop and provide outreach to enhance consumer (i.e., tourists and restaurant managers/chefs) knowledge about the unique attributes of local wild-caught shrimp harvested in the South Atlantic region of the United States. This project focused on the shrimp fishery in South Carolina because although coastal tourism contributes significantly to the state’s economy, there has been little integration between the tourism industry and the shrimp industry. Project strategies included 1) culinary research (taste testing) to compare wild-caught and imported shrimp and identify preferred attributes, 2) case studies of South Carolina coastal restaurants that do and do not purchase local shrimp, 3) regional level case studies on how integration of shrimp and tourism related industries facilitates the promotion of wild caught shrimp to tourists, 4) training workshops about shrimp for chefs in the South Carolina and South Atlantic region, and 5) development and distribution of a chef booklet and a tourist brochure titled “*Sea*” *the Difference* as a means to provide outreach on South Carolina shrimp. The report outlines the project components which were inputs to design of outreach products and provides a preliminary evaluation of outreach efforts. Results should be informative to similar efforts within the South Atlantic region of the United States.

Table of Contents

ABSTRACT	iii
LIST OF TABLES	v
LIST OF TERMS & ACRONYMS	vi
EXECUTIVE SUMMARY	vii
1. PURPOSE	1
1.1 <i>Background on problem</i>	2
1.2 <i>GSAFF Project Goals and Objectives</i>	8
2. APPROACH.....	9
2.1 <i>Culinary Research</i>	9
2.2 <i>Analyze current shrimp distribution system—Restaurant Case Studies</i>	10
2.3 <i>Shrimp & Tourism Regional Case Studies</i>	12
2.4 <i>Training Workshop for Chefs</i>	13
2.5 <i>Develop & Distribute a Chef Brochure & Develop & Distribute a Tourist Brochures</i>	15
2.6 <i>Project management</i>	16
3. FINDINGS	18
3.1 <i>Culinary Research</i>	18
3.2 <i>Restaurant Case Studies—local shrimp distribution system regarding restaurants</i>	19
3.3 <i>Shrimp & Tourism Regional Case Studies</i>	21
3.4 <i>Training Workshop for Chefs</i>	30
3.5 <i>“Sea” the Difference Brochure</i>	34
4. EVALUATION	37
4.1 <i>Goal Performance</i>	37
4.2 <i>Dissemination of Project Results</i>	40
4.3 <i>Recommendations</i>	40
Acknowledgements	42
References	43
APPENDIX A—SC Coastal Tourism Survey progress report (March ’05)	45
APPENDIX B—Recipe used in shrimp taste testing	53
APPENDIX C—Questions for restaurant case study	54
APPENDIX D—Chef workshop agendas	56
APPENDIX E—Restaurant cases summary	59

LIST OF TABLES

Table 1. Percentage of SC Coastal Tourists in each food preference (culinary tourism) subgroup and their food preferences.....	5
Table 2. Recommendations for targeting for South Carolina coastal tourists interested in shrimp related experiences.....	7
Table 3. Cases selected for tourism and shrimping industry integration.....	13
Table 4. Results of chef and consumer taste panels for fresh and frozen wild-caught South Carolina shrimp vs. imported pond-raised shrimp.	18
Table 5. What matters when purchasing shrimp from a distributor/purveyor?	19
Table 6. Integration of Commercial Fishing in Waterfront Planning.....	23
Table 7. Marketing and distribution of locally harvested seafood.....	23
Table 8. Providing unique experiential education opportunities	26
Table 9. Using shrimp to develop or enhance regional qualities.....	28
Table 10. Self-evaluation summary of “ <i>Sea</i> ” the <i>Difference</i> workshops	31
Table 11. Selected post-workshop evaluation results (Charleston, SC, April 14, 2005)..	32
Table 12. Initial distribution of “South Carolina Shrimp ‘Sea’ the Difference” brochures as of October 31, 2005.....	34

LIST OF TERMS & ACRONYMS

ACF = American Culinary Federation

Agritourism = Tourism focused on agricultural facilities, producers and products.

BRD = Bycatch Reduction Device

CVB = Convention and Visitors Bureau

DHEC = Department of Health and Environmental Control (South Carolina)

DMO = destination marketing organization

DMR = Department of Marine Resources (Mississippi)

DNR = Department of Natural Resources (South Carolina)

Ecotourism = Tourism focused on the ecology of the natural environment

GRA = Graduate Research Assistant

GSAFF = Gulf and South Atlantic Fisheries Foundation

IQF = Individually Quick Frozen

Low Country = coast and associated low elevation region in the eastern portion of South Carolina

NOAA = National Oceanic and Atmospheric Administration

NOAA Fisheries = National Marine Fisheries Service

PRTM = Department of Parks, Recreation and Tourism Management, Clemson University

RTTI = Recreation, Travel and Tourism Institute, Clemson University

SC = South Carolina

SCPRT = South Carolina Department of Parks, Recreation and Tourism

South Atlantic = Southeastern region of the United States bordering the Atlantic Ocean

US = United States

TED =Turtle Excluder Device

TIA =Travel Industry Association of America

WASI =Wild American Shrimp, Inc. which is a non-profit corporation established to facilitate development of a quality brand of shrimp in the southeastern region of the United States. WASI is also the brand associated with this corporation (see: www.wildamericanshrimp.com)

EXECUTIVE SUMMARY

Introduction

The shrimp fishery in the Southeast region of the United States (US) has been facing significant challenges affecting both its short-term and long-term economic sustainability. Suppressed prices due to increased competition with foreign producers and changes in the world food distribution systems have forced shrimp fishermen to seek out new methods and strategies to increase their return on investment. However, only 11% of fresh/frozen shrimp available on the US market is domestic, and US South Atlantic region (excluding Gulf of Mexico) landings contribute only 8% to the total domestic harvest (or less than 1% of fresh/frozen shrimp available in the US market). This makes competition with imports difficult. As a means to obtain a better price for wild-caught domestic product, the South Atlantic shrimp industry has been exploring marketing niches based on premium quality, domestic branding, source identification, safety, and fishery sustainability. A prominent solution has been the idea of marketing “wild-caught” shrimp as a specialty or quality product as a means to increase profit potential to the domestic shrimp industry. Tourists are an important shrimp consumer group that may be willing to pay premium prices for wild-caught shrimp while traveling on the coast. However, successful marketing to tourists depends on integration of the tourism and shrimp industries and relies on providing education and outreach about the shrimp fishery to tourists and restaurant chefs and managers in coastal communities.

In South Carolina coastal tourism contributes significantly to the state’s economy, but there has been little integration between the tourism industry and the shrimp industry. Therefore, the specific purpose of this Gulf and South Atlantic Fisheries Foundation (GSAFF) project was provision of outreach to enhance consumer (i.e., South Carolina coastal tourists and restaurant managers/chefs) knowledge about the unique attributes of local wild-caught shrimp available in the South Carolina and ultimately the South Atlantic region of the United States. The goal was to assist in developing US South Atlantic wild-caught shrimp species as attractive and accessible to tourists visiting South Carolina. Objectives focused on enhancing partnership between South Carolina’s commercial shrimp and coastal seafood restaurants. The project activities involved providing culinary research and educational programming to South Carolina chefs in the Myrtle Beach, Charleston and Beaufort-Hilton Head Island areas. Activities also involved facilitating the incorporation of information about the South Carolina shrimp industry and heritage through outreach efforts (e.g., tourist brochures, chef training) targeting South Carolina tourists and the culinary industry and through partnership with local and regional destination marketing organizations (DMOs), restaurants, and the South Carolina commercial shrimp industry.

Project Objectives and Results

The following project objectives were accomplished:

- Perform culinary research to test how characteristics of South Atlantic shrimp can improve their marketability in the South Atlantic retail/foodservice markets.

Activities focused on comparing fresh and frozen block versions of South Carolina wild-caught brown shrimp (*Penaeus aztecus*) with individually quick frozen (IQF) imported white shrimp (*Penaeus vannamei*). The shrimp (steamed and served in a “Low-country” recipe) were tested by consumer and chef panels tasked with answering questions about preferred shrimp attributes. Findings suggest that chefs/restaurant managers should work to highlight the preferred attributes (particularly flavor) in recipes and on menu descriptions as a means to enhance marketing of South Carolina wild-caught shrimp. Findings also suggest the need to explore whether familiarity with the taste of frozen imported shrimp readily available in local grocery stores may affect taste preferences, particularly if these consumers are not inclined to explore new or unique tasting foods.

- Analyze the current shrimp distribution system—Case studies of South Carolina coastal restaurants that do and do not purchase local shrimp.

Activities focused on interviewing chefs/restaurant managers on the South Carolina coast to develop a case study comparison of restaurants which do and do not prefer to serve locally harvested shrimp. Results indicated that those who purchase locally—1) believe local shrimp have better quality, freshness and flavor; 2) prefer to serve local shrimp in their Low Country recipes; 3) are willing to pay more for local product, particularly if the shrimp is of higher quality; 4) may have developed long term relationships with local fishermen, shrimp dock owners, and shrimp wholesalers; 5) may be supplied by family involved in the shrimp industry; 6) may work with a local supplier that has freezer space for storing local product; 7) may prefer local suppliers because they like to visit the supplier; and 8) tend to like supporting their local economy. Barriers to purchasing locally caught shrimp were also identified and include—1) price, 2) concerns about customer willingness to pay, 3) product availability, 4) extra costs of labor involved in peeling and deveining, 5) inconsistent quality, 6) difficulties with finding a local supplier, and 7) the limited shelf life of fresh product. Also, restaurant preferences vary with regard to size consistency and type of shrimp (e.g., white or brown). Findings suggest shrimp fishermen need to develop relationships with local restaurants which are able to make their own menu and purchasing decisions. Developing these partnerships takes time. These relationships might be facilitated by organized workshops or events designed to connect fishermen and restaurant chefs/managers.

- Develop regional level case studies on how integration of shrimp and tourism related industries facilitates the promotion of wild caught shrimp to tourists.

Cases were selected from known (primarily word-of-mouth) success stories on the coast of South Carolina and the gulf coast of Florida, Alabama, and Mississippi. Types of businesses and formal and informal partnerships included in the search for cases were seafood markets, fishermen with valued added products or innovative business approaches, restaurants with a direct fishery connection, shrimp related tours, maritime museums, chambers of commerce, shrimp festivals, and cities or

planned developments that were successful at promoting the shrimp fishery as part of tourism marketing. The data revealed four domains related to the type of effort—1) integration of commercial fishing culture in waterfront planning as a means to create a unique tourist experience, 2) innovative marketing and distribution of locally harvested seafood, 3) providing unique experiential education opportunities, and 4) using shrimp to develop or enhance regional qualities. Notable findings include a prevalent focus on fishing heritage, strong ties between fishing families and seafood markets, provision of a variety of shrimp purchasing and shipping options, and the important role of the area chamber of commerce in promoting the local seafood industry.

- Develop and deliver training workshops for chefs in the South Carolina and US South Atlantic region

Chef workshops involved integration of results from culinary research and case studies as well as the *South Carolina Coastal Tourism Survey*—see Appendix A (conducted in 2004 under the Clemson University, South Carolina Shrimp Fishery Assistance Project separately funded by NOAA Fisheries). Workshops were delivered in March and April of 2005 to chefs at the Southeast Regional American Culinary Federation Meeting and culinary students at Horry Georgetown Technical College in Myrtle Beach, SC and Trident Technical College in Charleston, SC. The workshop agenda (see Appendix D) included presentations on shrimp fishery economic challenges and heritage (including a brief speech by a shrimp industry member), results of taste testing, results of the *SC Coastal Tourism Survey*, an opportunity to taste local caught and imported shrimp, information on *Wild American Shrimp, Inc.* (WASI) and branding efforts, and advice on purchasing from local harvesters. Evaluation results suggested a moderately favorable response to workshops and that chefs are more likely to be knowledgeable about cooking and nutritional issues than they are about fishery management issues regarding shrimp. Evaluation also suggests future workshops should include a cooking demonstration and/or hands-on activity, place less emphasis on providing formal academic presentations, and include opportunities to meet industry members.

- Develop and distribute a chef booklet and a tourist brochure titled “*Sea*” the *Difference* as a means to provide outreach on South Carolina shrimp.

Educational materials developed from the shrimp and tourism research, taste testing, case studies, and chef training material were summarized for use in outreach efforts in partnership with coastal destination management organizations (DMOs) and chef associations and training programs. These education pieces were designed to help consumers and chefs understand shrimp heritage and current harvesting methods, unique attributes of South Carolina wild-caught shrimp, and how to purchase locally harvested shrimp. The chef brochure focused on providing practical advice for chefs, and incorporated the chef workshop presentation topics as well as case examples of joint fisher-chef efforts to provide outreach to community members and tourists. The tourist brochure was a tri-fold that included information on how shrimp are caught,

bycatch reduction efforts, how to purchase local shrimp (including WASI branding) and shrimp related experiences available on the South Carolina coast. The number of copies printed (4000 chef brochures and 40,000 tourist brochures) was limited to a generous estimate of what we felt would be consumed in the next three years or before information might become dated. Thus far distribution of chef brochures has focused on culinary arts programs in the South Carolina coastal region. Distribution of the tourist brochure includes distribution at all nine South Carolina Welcome centers (1500 copies each) and through fall 2005 shrimp festivals and related events in Charleston and Beaufort areas. Initial questions from tourists, who reviewed the tri-fold brochure at the Beaufort festival, indicate that WASI branding may be particularly important to assisting consumers with identifying authentic local caught shrimp while traveling and eating at restaurants.

The project objectives presented in this summary represent some changes in the original objectives. These changes occurred in response to other marketing and public relations efforts as well as other research efforts occurring in the region during the project period.

Conclusions and Recommendations

Project results indicate there is strong potential for partnership between the shrimp and tourism industries at the community level. Partnership linkages could be facilitated by:

- Workshops/events which facilitate relationship building between fishers, seafood suppliers, and chefs or restaurant managers.
- Workshops/events which facilitate relationship building between the tourism industry, chambers of commerce, and all components of the shrimp industry (processors, wholesalers/retailers, and fishermen).
- Delivery of additional chef training workshops, possibly expanded to include wait staff.
- Development of a US South Atlantic region-wide public outreach effort utilizing an adapted version of the brochures produced from this project.

Future research should include:

- An empirical survey (using a representative random sample) of restaurant chefs'/managers' regarding preferences for and barriers to use of local seafood in recipes and menus.
- Taste testing which includes a set of questions regarding general food preferences similar to that used in the *South Carolina Coastal Tourism Survey* to identify market clusters (i.e., culinary, experiential, and familiar—see Appendix A) and utilizing a sample population representative of a broad range of tourists or consumers.

- Evaluation of how much tourists/restaurants will pay for a premium certified locally harvested shrimp and whether restaurants paying premium price paid provides economic benefits for the shrimp fishery.
- Evaluation of whether economic linkages between the shrimp and tourism industries in fishing communities undergoing transition are beneficial to sustainability and resilience of the fishing industry and the community as a whole.

1. PURPOSE

The commercial shrimp industry in the US South Atlantic region is facing significant challenges affecting both its short-term and long-term economic sustainability. Specifically, suppressed prices due to increased competition with foreign producers and changes in the world food distribution systems have forced shrimp fishermen to seek out new methods and strategies to increase their return on investment. The *NOAA Fisheries of the United States 2004* report indicates that US shrimp landings comprise only 11% of all fresh/frozen shrimp available on the US market and US South Atlantic region landings contribute only 8% to this domestic harvest (or less than 1% of fresh/frozen shrimp available in the US market). Due to the prevalence of imported shrimp, restaurants on the Southeast US coast are serving primarily imported shrimp despite co-location with the domestic shrimp industry. In response to these trends, the South Atlantic shrimp industry is exploring marketing niches based on premium quality, domestic branding, source identification, safety, and fishery sustainability. A prominent solution has been the idea of marketing “wild-caught” shrimp as a specialty or quality product as a means to increase profit potential to the domestic shrimp industry. Success of this marketing strategy depends primarily on developing a quality assurance and certification program for the US South Atlantic wild-caught shrimp product. Therefore, the Southern Shrimp Alliance, (a non-profit alliance of members of the shrimp industry in Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Texas) has facilitated creation of a non-profit company call called *Wild American Shrimp, Inc.* (WASI) to facilitate certification and branding of a premium domestic shrimp product (see: www.wildamericanshrimp.com).

In addition to quality assurance, it will also be important to educate consumers about the positive attributes of wild-caught shrimp and to make sure the product is available to consumers. One proposed strategy, focusing on coastal tourists as consumers, is the creation of business partnerships between commercial shrimp fishermen, the coastal tourism industry, and restaurants serving seafood on the coast. Several propositions underlie this strategy—1) coastal visitors seek local seafood as part of their travel experience; 2) coastal visitors may be willing to pay a premium price for local fresh shrimp, particularly when most shrimp available in coastal restaurants is imported; 3) restaurants/chefs are important consumers and distributors of local shrimp product and can provide a positive visitor experience regarding local food products; and 4) restaurant/chefs, by nature of their interaction with tourists, may be important to facilitating outreach on wild-caught shrimp and the industry.

This project focuses on South Carolina for two reasons. First, although coastal tourism contributes significantly to this state’s economy, there has been little integration between the tourism industry and the shrimp industry. Secondly, the above propositions were initially explored through the *South Carolina Coastal Tourism Survey* conducted by RTTI as part of the Clemson South Carolina Shrimp Fishery Assistance Project. Thus this GSAFF funded project focused on supplementing and applying the *Survey* results through two extension

components—1) educating South Carolina tourists about wild-caught shrimp through printed literature, and 2) educating chefs/restaurants (who have contact with coastal visitors) through a research-based culinary training program. This project was intended to be complementary to other wild-caught shrimp marketing efforts and research in the South Atlantic region and as a pilot for future expansion to other tourism oriented regions in the Southeastern United States.

1.1 Background on problem

1.1.1 South Carolina Coastal Tourism

According to the South Carolina Department of Parks, Recreation and Tourism (SCPRT), the travel and tourism industry in South Carolina is the number second largest employer in South Carolina, brings more money into the state than any other export industry and is number five in private capital investment. Specifically, in 2003 domestic and international travelers in South Carolina spent \$7.2 billion dollars, which provided for 122,000 jobs and generated nearly \$550 million in net tax revenues to state and local governments in 2003 (SCPRT 2003, TIA 2003). The National Restaurant Association (2003) reports that eating-place sales in South Carolina grew by 5.7% from 2002 to 2003, while sales for the South Atlantic region grew by 5.2%. In 2001, of the \$6.8 billion spent by domestic travelers in South Carolina, over 30% (\$2,074,900) was spent at restaurants, grocery stores and other eating and drinking establishments (TIA, 2002). This 2001 activity generated over 49,000 foodservice jobs with a payroll of \$5.78 million. Three of the top five counties are the coastal counties of Horry (i.e., Myrtle Beach and the Grand Strand), Charleston (i.e., Historic Charleston) and Beaufort (i.e., Hilton Head Island). Combined, travel expenditures in these three counties in 2003 were over \$4.17 billion, accounting for 57.8% of the state total (TIA, 2003). Figure 1 shows visitor expenditures for these counties from 2000 to 2003.

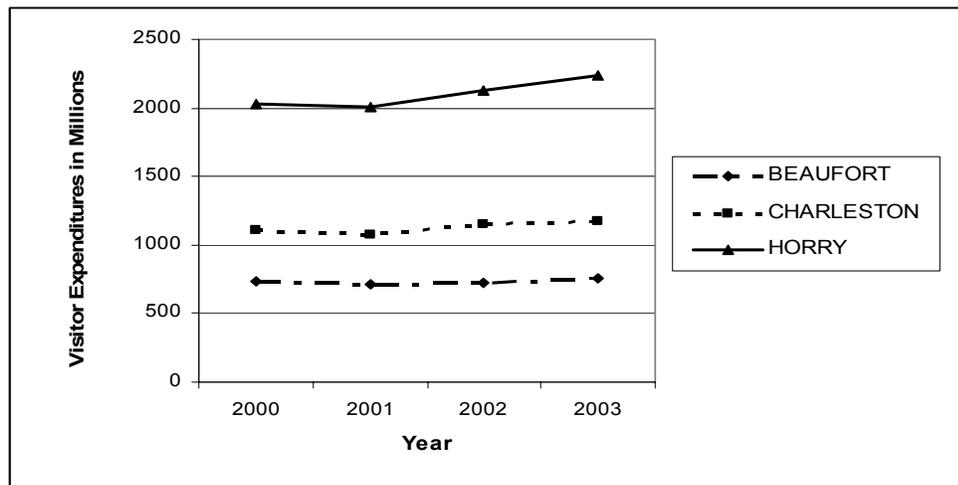


Figure 1. Visitor expenditures in millions for the top three counties in South Carolina (2000 – 2003). TIA 2003

1.1.2 *What is the potential role for restaurants to educate consumers about wild-caught shrimp?*

Wirth and Davis (2001) surveyed consumers in the Southeast regarding shrimp preferences. They indicated that these consumers are often doubtful about the safety of seafood in the market and tend to perceive aquacultured seafood, in general, as safer than wild-caught. Of the 532 consumers surveyed,

- 28% eat shrimp in restaurants once per month, and 25% once every three months.
- The most frequent response regarding the portion of restaurant meals including shrimp was two meals in ten (24%) and the mean was 3.34 meals in ten.
- 71% of consumers indicated they order breaded and fried shrimp.
- 18% of consumers indicated that shrimp purchases at restaurants vary by season, and among these consumers, restaurant purchases of shrimp appear to be lowest in winter and highest in summer.
- More than two-thirds (68%) of respondents felt that shrimp is not at all difficult to prepare at home—only 31% report purchasing whole, head-on shrimp.
- Shrimp for at-home use is most likely to be purchased in a supermarket (65%) or at a seafood market (43%)...less than 18% of respondents purchased shrimp sold at the dock or off a boat.
- 86% of consumers agreed that “it is important to know the date when the shrimp were harvested.”

According to the W.K. Kellogg Foundation (2002) report, *Food for Thought: Community-Based Food Systems Enterprises*, “alternative marketing arrangements can create the ability to stay in production by obtaining higher prices, provide opportunities to market special qualities,...the chance to communicate directly with consumers and also to capitalize on public willingness to support traditional family farmers.” This report indicates that consumers are open to local food systems and willing to support farmers. This report also cites a 2000 survey of Kansas City restaurateurs, in which 39% of restaurants indicated they were using local products and 93% of those not purchasing locally, were interested in doing so. In addition, the Kansas City restaurants seem to prefer a more direct and personalized relationship with growers in contrast to working with distributors or fax and web-based orders.

Based on the results reported by Wirth and Davis (2001) and W.K. Kellogg Foundation (2002), a focus on consumer education about the quality and safety of local wild-caught shrimp, facilitated through positive restaurant and purchasing experiences, seems to be a valid approach toward increasing willingness of consumers (tourists) to pay a premium price for quality shrimp. Also, by developing a relationship between commercial fishermen and restaurant managers/chefs, it may be possible to increase the willingness of

restaurants to pay a higher price for fresh catch shrimp and pass along these increases to the visitor.

1.1.3 *How can cooperation with the tourism industry help sell shrimp?*

Travel research has revealed that the tourism marketplace is increasingly segmented (Norman 2003). As a result, the tourism industry is required to better understand the travel segments and develop partnerships with local businesses and organizations that have not traditionally been a part of the tourism system. Four of the fastest growing tourism segments in South Carolina and the region and most relevant to shrimp marketing are—1) heritage tourism (i.e., tourism centered on what we have inherited, which can mean anything from historic buildings to art works, to beautiful scenery), 2) nature-based tourism (i.e., tourism based on the desire of visitors to learn about natural and cultural resources that results in their conservation), 3) agritourism (i.e., selling agricultural products to tourists who visit an area and developing agriculturally-related facilities and activities to attract visitors) and 4) culinary or food tourism (i.e., tourism in which the opportunity for culinary related experiences contributes to the reason for traveling to the destination). Figure 2 illustrates the potential relationship between the tourism and commercial shrimp industries. “Shrimp tourism” can include seeking out communities, venues, coastal settings, and restaurants that highlight the local shrimp industry and products.

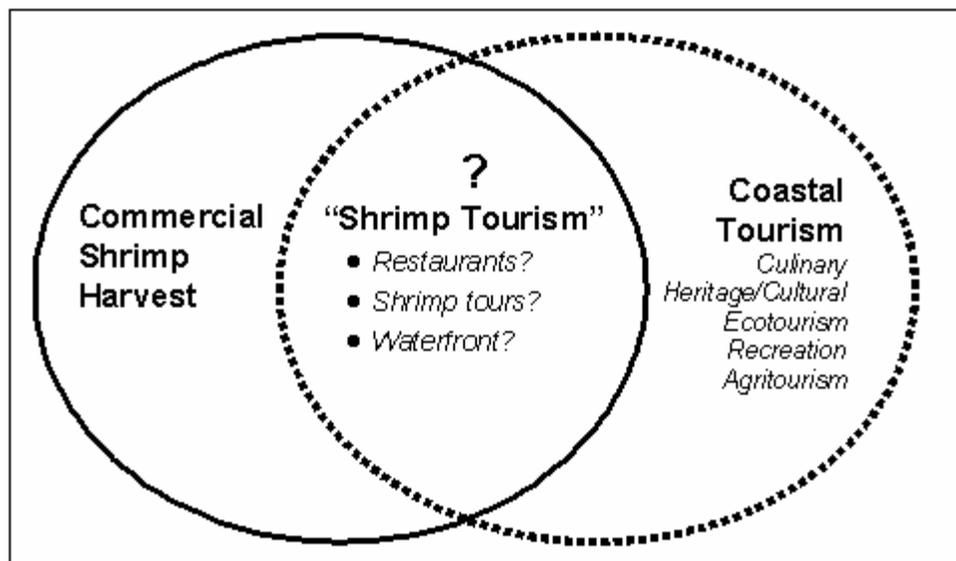


Figure 2. Illustration of potential relationship between coastal tourism and commercial shrimp industries.

The South Carolina commercial shrimp industry should be able to successfully market their products and experiences to segments of coastal travelers, and the availability of a unique food product and presence of shrimp boats and marinas should increase the appeal of the South Carolina coast as a

tourist destination. Cooperative education and marketing (i.e., public relations and advertising) with the coastal tourism industry should result in an increased interest in the heritage and mystique of the state’s wild-caught shrimp. The anticipated outcome of this partnership would be an increase in visitation of local restaurants by culinary tourists seeking wild-caught shrimp based recipes as well as increased direct purchases of wild-caught shrimp by general visitors.

1.1.4 Insight from the Clemson 2004 South Carolina Coastal Tourism Survey

The *South Carolina Coastal Tourism Survey* was conducted during the summer and fall of 2004, by RTTI as part of the Clemson University, South Carolina Shrimp Fishery Assistance Project (funded by NOAA Fisheries). The survey had 356 respondents. This Clemson survey used a food preferences scale designed to identify subgroups of culinary tourists related to their food and dining out preferences (Shenoy 2005). Culinary tourism is participation at the destination by tourists in food related activities such as dining at restaurants, visiting food producers, purchasing local food products, and visiting food festivals to experience the unique foods and cuisines of the region. Survey results are summarized in Appendix A. Those portions useful to informing the GSAFF project are highlighted here.

The survey research discovered three types of South Carolina coastal tourists—“Culinary,” “Experiential,” and “General,” relative to food preferences at their travel destination. Table 1 indicates how these groups differ.

Table 1. Percentage of SC Coastal Tourists in each food preference (culinary tourism) subgroup and their food preferences.

Tourist Type	%	Preference at tourist destination	
		dining and purchasing local foods, elite dining, local beverages	familiar foods, fast food outlets, chain restaurants
Culinary	30%	High	Low
Experiential	39%	Medium	High
General	31%	Low	High

The survey also asked coastal tourists about their shrimp preferences and results indicated that the South Carolina coastal “culinary” tourist is...

- **More likely to prefer shrimp related tourism experiences** than other tourists (examples—shrimp cooked in traditional Southern recipes, timing their visit when fresh locally harvested shrimp is available)
- **More likely to select shrimp which tastes good and is of premium quality**, and to consume shrimp based on the appearance, reputation of the vendor and reputation of the restaurant

- **More knowledgeable about shrimp** than other tourists (cooking and preparation, nutritional benefits, selecting quality shrimp for purchase, safety of shrimp, and seasonal differences in shrimp)

While culinary and experiential tourists are already more likely to be interested in eating locally harvested shrimp, in general, the survey research on SC coastal tourists suggests:

- Tourists are interested in premium quality, freshly caught local shrimp.
- Restaurants need to emphasize availability of local shrimp dishes cooked in traditional and regional recipes.
- Among tourists, overall knowledge about shrimp issues and cooking is low.
- At least 20% of South Carolina coastal tourists surveyed have heard advertising encouraging purchase of and dining on locally harvested shrimp.

The *South Carolina Coastal Tourism Survey* also examined potential product ideas for services and experiences related to activities on the South Carolina coast. More specifically, the survey examined—1) activities that South Carolina coastal visitors currently engage in when interacting with shrimp related products and services, 2) potential areas for new product and service development related to shrimp in the coastal visitor experience. Current shrimp related activities by South Carolina coastal visitors who eat shrimp (n=364) include:

- Ate shrimp at local restaurants (64.2%)
- Ate at dockside or at waterfront restaurant (36.8 %)
- Ate at high quality restaurants (34.6%)
- Purchase was locally harvested shrimp (18.7%)
- Viewed boats on which the shrimp were caught (19.0%)
- Purchased shrimp at a seafood store (13.1%)
- Purchased shrimp at a dockside vendor (8.7%)
- Purchased at a shrimp boat (7.2%)
- Purchased shrimp to take home (10%)
- Purchased local seasons and sauces to take back home (7.2%)
- Purchased a cookbook to try local recipes at home (5.6%)
- And purchased shrimp at a roadside stand (5%).

Activities that South Carolina coastal tourists (n=364) who eat shrimp would like to do were rated as follows (scale was 1=Strongly Disagree to 5=Strongly Agree; *= activity interests that are significant relative to most recent visit trip length):

- Eat shrimp cooked in traditional southern recipes (mean=3.86)
- See shrimp boats when I am visiting (mean=3.16)

- Bring home freshly caught shrimp (mean=3.15)
- Learn from a chef how to cook traditional southern recipes (mean=3.08)
- Have a travel guide with info on where to purchase local shrimp (mean=2.97)
- Learn more about local shrimp heritage (mean=2.92)*
- Use a travel guide with info on where to see local shrimp boats (mean=2.88)
- Tour a shrimp trawler that's docked (mean= 2.85)*
- Visit when locally harvested shrimp is available (mean=2.79)*
- Learn about shrimp fishing from a shrimp fisherman (mean=2.72)*
- Go out on a commercial trawler (mean=2.63)*
- Go on a charter boat to catch shrimp (mean=2.60)
- Order shrimp to be mailed to me (mean=2.21)*

Based on this information, the focus on new products could extend beyond the selling of shrimp to visitors toward providing experiences which highlight the history and traditions of the South Carolina shrimp industry.

Overall, the survey results indicate that the commercial shrimp industry could market their products to segments of coastal travelers, and that the tourism industry could market the availability of a unique seafood product and presence of shrimp boats and marinas to increase appeal of the South Carolina coast as a tourist destination. In particular, restaurants could take certain actions to attract visitors interested in local shrimp, depending on their target market, as summarized in Table 2.

Table 2. Recommendations for targeting for South Carolina coastal tourists interested in shrimp related experiences.

Tourist type	What matters?	Recommendations
Culinary	1. Reputation of the Restaurant	1. Serve shrimp cooked in traditional Southern recipes
	2. Availability of seasonal shrimp	2. Emphasize availability of seasonal fresh shrimp
	3. Origins of the Shrimp	3. Emphasize the quality of the local shrimp
Experiential	1. Availability of seasonal shrimp	1. Emphasize availability of seasonal fresh shrimp
	2. Regional Brand Name	2. Provide information about whether the shrimp is some brand of local caught shrimp
	3. Certification	3. Highlight availability of certified wild caught shrimp (e.g. WASI)
General	1. Tastes good	1. Serve popular shrimp dishes
	2. Health and safety issues regarding shrimp	2. Provide information on availability of quality, safe, wild-caught shrimp.
	3. A marine setting or atmosphere	3. Have a marine view for the restaurant (e.g., shrimp boats)

These survey results were integrated into and/or informed the educational workshops and materials produced in this GSAFF funded outreach projects.

1.2 GSAFF Project Goals and Objectives

The purpose of this project was to develop and provide education and outreach designed to enhance consumer (i.e., tourists, restaurant managers/chefs) willingness to pay a higher price for local wild-caught shrimp in South Carolina and ultimately the South Atlantic region. This was accomplished by identifying and facilitating educational and outreach strategies which help develop and utilize partnership between South Carolina's commercial shrimp, coastal restaurants, and coastal tourism industries. The overall goal was to support efforts to promote South Atlantic wild-caught shrimp as attractive and accessible to tourists visiting South Carolina.

The original project approach as proposed involved the following objectives:

1. Perform culinary research to test how characteristics of South Atlantic shrimp can improve their marketability in the South Atlantic retail/foodservice markets. This includes:
 - a) *Develop cooking methods and "Low-Country" recipes (reflecting the heritage and culture of the coastal region) which highlight the aroma, flavor, and texture of wild caught South Atlantic wild-caught shrimp*
 - b) *Comparison test recipes which include wild-caught, farm-raised, and import shrimp through focus groups*
 - c) Culinary research (taste testing) to identify preferred attributes of South Atlantic wild-caught shrimp relative to imported shrimp.
2. Analyze the current shrimp distribution system in South Carolina
 - a) *Interview South Carolina shrimp fishermen regarding current distribution*
 - b) Interview chefs/restaurant managers on the South Carolina coast to develop a case study comparison of restaurants which do and do not intentionally serve locally harvested shrimp.
3. Develop regional level case studies on how integration of shrimp and tourism related industries facilitates the promotion of wild caught shrimp to tourists.
4. Develop and deliver training workshops for chefs in the South Carolina and South Atlantic region—includes preparation of training materials with information on results from shrimp taste testing research, quality and heritage

of wild-caught shrimp on the South Atlantic coast, developing partnerships with local fishermen, and marketing strategies.

5. Develop and distribute a chef training brochure titled “*Sea*” the Difference that provides educational information on South Carolina/South Atlantic shrimp (similar to that provided in chef workshop).
6. Develop and distribute a tourist targeted brochure titled “*Sea*” the Difference that provides educational information on South Carolina/South Atlantic shrimp heritage and tourism opportunities.
7. *Develop public relations pieces about South Atlantic shrimp, from sea to table/restaurant, distributed to regional tourist magazines and websites—includes press releases and magazine articles*

Activities in *italics* were altered or did not occur during the project period. Explanation is provided in the evaluation section below.

2. APPROACH

2.1 Culinary Research

Culinary research was developed to determine which characteristics of South Carolina shrimp should be highlighted to improve their marketability in the South Atlantic retail/foodservice markets.

During the summer of 2004, researchers with the Food Science and Human Nutrition department of Clemson University performed a taste testing study comparing South Carolina wild-caught shrimp (fresh and frozen block) with individually quick frozen (IQF) imported shrimp (see Howell 2005 for full report). The South Carolina shrimp used in the study were brown shrimp (*Penaeus aztecus*) and the imported shrimp were white shrimp (*Penaeus vannamei*) from Ecuador. The research focused on taste testing of shrimp and characterization of preferred attributes for shrimp.

The study involved four taste panels. Expert panelists were local area chefs. Consumer panelists consisted of members of the Clemson University population. The first two panels (one expert, one consumer) were conducted using plain, steamed shrimp. The choice of steamed shrimp was based on pre-testing of various moist and dry cooking methods (sauté, bake, grill, boil, broil, and steam). Steaming was selected because it did not impart any extra flavor and allowed for controlled preparation of large amounts of shrimp. Upon advice of chefs from South Carolina coastal restaurants, shrimp were cooked shell-on. The shrimp were steamed for four minutes, removed and immediately placed in an ice bath until completely cool (five

minutes) and then shells and veins were removed prior to taste testing. Shrimp were chilled to 38°F and served cold (38-42°F) to consumer and chef panels.

The other two panels (one expert, one consumer) used steamed shrimp served in a low-country shrimp and grits recipe (Appendix B). Recipe development involved selection of a recipe in which the most desirable attributes of South Carolina shrimp were highlighted and the least desirable attributes were masked. Recipes tested included: shrimp scampi, shrimp and grits, sauté shrimp, and grilled shrimp on skewers. A stock-based shrimp and smoked sausage recipe was chosen because it highlighted attributes of shrimp and represented the culture and heritage of the South Carolina region.

In all cases, panelists were asked to sample and complete a questionnaire where they rated specific attributes about all three shrimp used in the study (South Carolina fresh, South Carolina frozen, and IQF imported). The questionnaire was developed from an initial focus group held with chefs at the Southeast Regional American Culinary Federation meeting in Atlanta on April 30, 2004. The focus group activities included taste testing comparison of cooked wild-caught South Carolina and imported shrimp with subsequent generation of a list of descriptive characteristics (smell, appearance, texture, taste). The resulting list was used to develop a lexicon to aid in the generation of anchor terms. Selected anchor terms were then placed in the rating scales that were used in the sensory panels. Each scale listed a positive term and a negative term that related to a shrimp attribute. Scale values ranged from zero (least desirable) to nine (most desirable).

Specific attributes that the consumer panel was asked to rate for the steamed shrimp were: aroma (strength and pleasantness), texture (firmness), flavor (degree of flavor), appearance (color and shape), overall acceptability, and preference. The chefs' steamed shrimp panel was asked to rate the same attributes as the consumers, with the addition of aroma (what the specific aroma was), flavor (sweetness of the shrimp), and appearance (marking consistency) factors. Consumers and experts (chefs) were both given the same questionnaires for the recipe shrimp panel. Specific attributes both panels were asked to rate included: texture (degree of firmness), flavor (degree of flavor and how well the flavor of the shrimp accompanied the dish), appearance (color of shrimp and appearance of dish), overall acceptability, and preference. Aroma was eliminated from this questionnaire due to lack of significance in the previous testing data.

2.2 Analyze current shrimp distribution system—Interviews with Chefs (Restaurant Case Studies regarding local shrimp distribution system involving restaurants)

Interviews with South Carolina restaurants focused on characterizing existing shrimp purchasing behavior and defining barriers and keys to success with regard to developing and utilizing connections between local harvesters and restaurants as a means to facilitate local purchasing linkages for domestic shrimp. We planned a

contrasting case study design to structure the restaurant chef interviews and allow for qualitative analysis. Interviewees were originally selected as fitting one of the following groups:

- Group A*—restaurants that do intentionally serve locally harvested shrimp
- Group B*— restaurants that do not make a point of serving locally harvested shrimp, but otherwise share some similar characteristics with Group A.

For *Group A*, a sample of 37 South Carolina coastal restaurants probably serving “local” shrimp was identified with the aid of phone interviews with four of the major South Carolina located shrimp suppliers as well as review of online and printed advertising. We mailed an introduction letter requesting an interview to all restaurants in this sample. Of these, 16 willing candidates were selected for phone interviews and further case study development. Selection was also based on relatively equal representation of the three major coastal tourism regions: 1) Myrtle Beach/Grand Strand (5 restaurants), 2) Charleston (6 restaurants), and 3) Hilton Head/ Beaufort Area (5 restaurants). These three regions are the same as those defined for our *South Carolina Coastal Tourism Survey*.

Potential candidates for *Group B* were identified using Internet yellow pages and other online restaurant listings. Selection was based on notable absence of advertising (including menu listings if available) regarding “local” shrimp. The restaurants were called to determine appropriateness and willingness to be interviewed by phone. In general, restaurants sensitive about the “local” shrimp issue given the intensified media attention to the plight of the shrimp industry and suggestions that consumers purchase local shrimp. Therefore, it was difficult to find willing participants. In the end, 11 restaurants agreed to be interviewed— Myrtle Beach/Grand Strand (3), Charleston (7), Hilton Head/ Beaufort Area (1).

Restaurants represented a range of ownership (e.g., local, regional, or national/corporate) and size types. Interview questions (Appendix C) focused primarily on whether the restaurant had control over purchasing decisions, shrimp purchasing preferences and use, and philosophy regarding purchase of locally harvested shrimp. Interview results indicated the existence of four major groups of restaurants based on purchasing habits for locally harvested shrimp, and thus, restaurants were re-categorized in the following manner:

- *Group A1*—restaurants that make a point of serving locally caught shrimp and advertise as such (8)
- *Group A2*—restaurants that purchase locally caught shrimp seasonally (5)
- *Group A3*—restaurants that serve locally caught shrimp if it just happens to be available from their supplier (10)
- *Group B*—restaurants that do not typically serve locally caught shrimp (4)

This portion of the project was also integrated with work being conducted by Mark Henry and David Barkley (Clemson University Department of Agricultural

and Applied Economics), who were modeling feasibility of developing a shrimp industry cooperative on the SC coast (as part of the *SC Shrimp Industry Assistance* project). These researchers needed information on restaurant purchasing preferences and amounts purchased per year for their model. Thus, specific questions regarding percentage of imports, total pounds of shrimp purchased per year, percentage purchased in specific seasons, and form of shrimp purchased (frozen, non-frozen, heads on, heads off, etc.) were added to the interviews, but results are not included in this GSAFF report (see: Henry et al. 2005).

2.3 Shrimp & Tourism Regional Case Studies

A series of case studies in selected South Atlantic and Gulf Coast communities were performed to gain a more in depth understanding of how the local seafood industry is successfully partnering with the tourism industry or has been integrated into the tourism experience. More specifically, we examined integration between the shrimp industry (i.e, fishermen, seafood retailers, seafood processors) and the tourism industry (e.g., chambers of commerce, coastal restaurants). Cases were selected from known (primarily word-of-mouth) success stories on the coast of South Carolina and the Gulf coast of Florida, Alabama, and Mississippi. The types of businesses and formal and informal partnerships included in the search for cases were seafood markets and fishermen with valued added products or innovative business approaches, restaurants with a direct fishery connection, shrimp related tours, maritime museums, chambers of commerce, shrimp festivals, and cities or waterfront developments that were successful at promoting the shrimp fishery as part of tourism marketing. Cases selected for analysis are listed in Table 3.

Information was collected through site visits, phone interviews, email correspondence, and review of written materials from March to May 2005. The case study interviews and field data collection were based on Spradley's (1979) ethnographic interview methods and (1980) participant observation techniques. Componential analysis was used to identify categories and patterns of meaning found in the data.

Table 3. Cases selected for tourism and shrimping industry integration analysis

COMMUNITIES (field visits)	CATAGORIES			
	Integration of Commercial Fishing in Waterfront Planning	Marketing and distribution of locally harvested seafood	Providing unique experiential education opportunities	Using shrimp to develop or enhance regional qualities
South Carolina Low Country			Shrimping Tour, Hilton Head Island	Regional promotion literature; Shrimp Festival
Destin, Florida	Harbor Plan	Dewey Destin's Seafood Market,		
Pensacola Florida		Joe Patti's Seafood		
Coden, Alabama		Zirlott Seafood		
Gulf Shores, Alabama				Shrimp Festival
Biloxi, Mississippi	Chamber of Commerce	Kuljis Point Cadet Seafood Market	Shrimping Tour Maritime Museum	Regional promotion literature

2.4 Training Workshop for Chefs

Culinary research and case studies (restaurants and regional) were integrated with results of the RTTI South Carolina Coastal Tourism Survey (Appendix A) to develop an outreach curriculum for a chef training workshop entitled, "*Sea*" the *Difference*.

2.4.1 Pilot Workshops

- Southeast Regional American Culinary Federation meeting, Atlanta, GA, April 30, 2004. This pilot workshop was designed to pilot different components of this project, including taste testing, workshop materials, and evaluation methods. Forty chefs participated in this workshop. Activity focused on taste testing comparison of cooked wild-caught South Carolina and imported shrimp with subsequent generation of a preliminary list of descriptive characteristics (smell, appearance, texture, taste)

In addition, the chefs were asked to rate four purchase styles of shrimp for use in restaurant/customer service. A five point hedonic scale measuring flavor quality of shrimp from 1 (not acceptable) to 5 (acceptable) for fresh never frozen, frozen, wild caught/domestic and imported shrimp was conducted with the chefs. Information from this focus group session was integrated into surveys used in later shrimp taste testing research. Researchers also administered an additional one page pilot evaluation survey regarding purchasing preferences. Responses were used in

development of restaurant case interviews and evaluation forms for chef workshops.

- Chapter Meeting, American Culinary Federation (ACF) Upstate South Carolina Chapter, Greenville, South Carolina, November 8, 2004. David Howell (Graduate Student, Food Science) and Laura Jodice (Research Associate, RTTI) provided a 30 minute presentation to this group. Approximately 15 chefs attended. Participants included some who participated in the chef panels for the shrimp testing at Clemson. The presentation included initial results of the shrimp testing as well as a brief overview on domestic U.S. and South Carolina shrimp issues—competition with imports, price decline, tariffs, heritage, and the buy local and WASI marketing efforts. Chefs were very engaged in the discussion following the presentation. The fact that these chefs were involved in the shrimp testing likely influenced their high level of engagement in the topic and demonstrates the value of the interdisciplinary partnership (food science and tourism) in this project.

2.4.2 *Chef Workshop Delivery*

Three “*Sea*” *the Difference* workshops were delivered to chefs and culinary students in the Southeast/South Carolina region.

- Southeast Regional American Culinary Federation Meeting, Roanoke, Virginia, (March 11, 2005, 1:30 – 3 pm)
- Horry Georgetown Technical College, Myrtle Beach, South Carolina (March 14, 2005, 9-10:15 am)
- Trident Technical College, Charleston, South Carolina (April 14, 2005, 9-11am)

The South Carolina host sites were arranged through existing relationships between Clemson Food Science and culinary school instructors. In these cases, the host required attendance by their culinary students and used their local network to attract area chefs. In general, workshop time period was constrained by other food preparation and cooking responsibilities of the participants.

For each workshop we provided participants with the following handouts.

- Agenda (see: Appendix D)
- Resource information sheet (contacts, information sources)
- South Carolina shrimp heritage timeline
- Information sheet on *Wild American Shrimp, Inc.* and branding
- Information sheet on *South Carolina Originals Heritage Harvest* brand
- SC Seafood Alliance/Holling’s Office information sheet on *Contaminated Seafood Risks*

- Clemson “Culinology, Defining the future of food” Handout
- Note copies of all PowerPoint presentations.
- March 2005 progress report on *SC Coastal Tourism survey*
- March 2005 progress report on shrimp sensory analysis.
- Sample shrimp taste test evaluation sheet

Presentations of taste testing data and a summary of information on the South Carolina shrimp industry were also made at the International Culinary Tourism Association Conference in May 2005 (audience included chefs, food writers, and food tourism researchers) and the Institute for Food Technologists Conference in New Orleans in July 2005 (audience included food researchers).

2.5 Develop and Distribute a Chef Brochure and a Tourist Brochure, both titled “Sea” the Difference

Educational materials developed from the shrimp and tourism research, taste testing, case studies, and chef training were summarized for use in outreach efforts in partnership with coastal destination management organizations (DMOs) and chef organizations. These educational pieces were designed to help consumers and chefs understand shrimp heritage and current harvesting methods, unique attributes of South Carolina wild-caught shrimp, and how to purchase locally harvested shrimp. The number of copies printed was limited to a generous estimate of what we felt would be consumed in the next three years or before information might become dated. These education materials are described separately in the following sections.

2.5.1 South Carolina Shrimp “Sea” the Difference chef brochure

This is a booklet that is designed to provide education and advice for restaurant chefs and culinary students in South Carolina. The information in the booklet is a primarily compilation of the materials used for the chef workshops. This brochure was sent for peer review by SC Seafood Alliance (LouAnn Love), SC Shrimp Industry Taskforce (Debbie Hattaway), SC Sea Grant (Amber Von Harten, Clemson Extension (Jason Goins – quality associate), SC DNR (David Whittaker), Southern Shrimp Alliance (Eddie Gordon), SC Aquarium/Sustainable Seafood Initiative (Megan Westmeyer), and GSAFF (David Medici). David Medici of GSAFF also provided some TED (turtle excluder device) and BRD (bycatch reduction device) photos, and LouAnn Love provided some culinary workshop photos for use in this chef booklet. Also, Louann Love and Megan Westmeyer provided some case study information on two special seafood events to demonstrate collaboration between local chefs, the SC Seafood Alliance, and the Sustainable Seafood Initiative (housed at the SC Aquarium in Charleston) for providing public outreach. We printed 4000 copies of this chef booklet.

2.5.2 *South Carolina Shrimp – “Sea” the Difference tourist brochure*

This is a tri-fold pamphlet intended for SC Welcome centers, coastal visitors' centers and convention and visitors bureaus (CVBs). The draft brochure was sent for peer review and editing by SC Seafood Alliance (LouAnn Love), SC Shrimp Industry Taskforce (Debbie Hattaway), SC Sea Grant (Amber Von Harten, Clemson Extension (Jason Goins – quality associate), SC Department of Natural Resources, Marine Division (David Whittaker), Southern Shrimp Alliance (Eddie Gordon), SC Aquarium/Sustainable Seafood Initiative (Megan Westmeyer), and GSAFF (David Medici). David Medici of GSAFF also provided some nice TED (turtle excluder device) and BRD (bycatch reduction device) photos, and Megan Westmeyer provided some seafood festival photos for use in this tourist brochure. We printed 40,000 copies of the brochure.

For both of these printed pieces we incorporated photos from Heather Moran's recent photographic documentary of South Carolina's shrimp industry, titled "Into Deep Water: The Low Country Shrimpers." Heather's photos have added considerable quality to these brochures while simultaneously characterizing the aesthetic and heritage aspects of shrimping on the South Carolina coast.

2.6 **Project management**

2.6.1 *Recreation, Travel and Tourism Institute (RTTI), Department of Parks, Recreation and Tourism Management (PRTM), Clemson University*

- Dr. William C. Norman—Associate Professor and Director, RTTI. Responsibilities: Supervision of Research Associate and RTTI graduate research assistants (GRAs); expert advising on all aspects of project; coordination with Food Science Department; coordination, selection, and supervision of regional/community level tourism case studies
- Laura W. Jodice— Research Associate, Recreation, Travel and Tourism Institute—Responsibilities: Project management (all aspects); chef interviews (coordination with GRA student conducting restaurant chef surveys, summary and analysis of interview results); coordination and development of chef training workshops (including curriculum/materials development; identifying, contacting and scheduling speakers and presentations; and evaluation); coordination and development of outreach components (including writer/editor for chef and tourist brochures, coordination of brochure review by experts); all project reporting.
- Morgan Dayton—GRA (MS), Department of Parks, Recreation and Tourism Management. Responsibilities: Restaurant chef interviews (includes development of original contact list, interview questions, contacting interviewees, conducting and recording phone interviews (*GSAFF provided travel funding only*))
- Kerry McElroy—GRA (PhD), Department of Parks, Recreation and Tourism Management. Responsibilities: conduct, analyze, and summarize

community/regional case studies of shrimp related tourism (*GSAFF provided travel funding only*)

- Sajna Shenoy—GRA (PhD), Department of Parks, Recreation and Tourism Management. Responsibilities: provide data on culinary tourism research (South Carolina Coastal Tourism Survey), presentation of data on culinary tourism research for chef training workshops. (*GSAFF provided travel funding only*)
- Marian Wooten—GRA (PhD student), Department of Parks, Recreation and Tourism Management. Responsibilities: conduct community/regional case studies of shrimp related tourism (*GSAFF provided travel funding only*)

2.6.2 *Food Science and Human Nutrition*

- Dr. Marge Condrasky— Assistant Professor, Department of Food Science and Human Nutrition, Clemson University. Responsibilities: Coordination of culinary research and GRA student; contact and establish relationships with South Carolina and Southeast Regional chefs and chef organizations (technical schools and regional association) to arrange for chef workshop delivery; assist with development of chef training workshops including materials development; expert advising on various aspects of project including outreach materials.
- David Howell—GRA (MS), Department of Food Science and Human Nutrition, Clemson University—Conducting culinary research (shrimp taste testing, includes developing relationship with local industry to acquire shrimp); recipe creation for shrimp taste testing; assist with chef training workshop (curriculum development and presentation on taste testing results including shrimp cooking demonstration)

2.6.3 *Clemson Public Service & Agriculture (PSA) Publications*

- Charlene Mayfield—Director of graphics. Responsibilities: graphic layout of brochures
- Ron Addis—Publications editor. Responsibilities: contracting/bids for printing of brochures.

3. FINDINGS

3.1 Culinary Research

The data from shrimp taste test panels were analyzed to determine statistical significance of the attributes ratings. The results provide some information on attributes that chefs, restaurants and retailers may want to highlight about South Carolina wild-caught shrimp. Table 4 summarizes the results.

Table 4. Results of chef and consumer taste panels for fresh and frozen wild-caught South Carolina shrimp vs. imported pond-raised shrimp.

Type	Tasting Panel	% preferring SC Shrimp*	Significant attributes affecting preferences for SC Shrimp over imported IQF	
			Fresh	Frozen
Steamed	#1 Chefs	16% (fresh) 51% (frozen)	Pleasant aroma, texture, flavor, sweetness, band markings	flavor
	#2 Consumers	32% (fresh) 20% (frozen)	Pleasant aroma, flavor	flavor
Shrimp and Grits Recipe	#3 Chefs	34% (fresh) 20% (frozen)	Overall flavor, how flavor accompanied the dish, color of the shrimp, appearance of the shrimp in the dish	Texture, overall flavor, how flavor accompanied the dish, color of the shrimp, appearance of the shrimp in the dish
	#4 Consumers	35% (fresh) 35% (frozen)	Overall flavor, how the flavor accompanied the dish	Overall flavor, how the flavor accompanied the dish

*The remainder of panelists preferred the imported product, for example, for #1, 16% preferred fresh SC, 51% preferred frozen SC, and 33% preferred imported IQF.

3.1.1 Discussion

Findings from shrimp taste testing suggest that chefs/restaurant managers should work to highlight the preferred attributes (particularly flavor) in recipes and on menu descriptions as a means to enhance marketing of South Carolina wild-caught shrimp. The lower preference for steamed shrimp among consumers relative to chefs is interesting. It may be that the consumers (residents of upstate South Carolina) used in the study were more familiar with the taste of frozen shrimp (usually imported) readily available in local grocery stores. If so, their familiarity with IQF imported shrimp may affect their taste preferences, particularly if they are not inclined to explore new or unique tasting foods.

3.1.2 Problems

The domestic and imported shrimp used in taste testing were not the same species—we compared brown shrimp (*Penaeus aztecus*) and Ecuadorian

white legged shrimp (*Penaeus vannamei*). Briggs et al. (2004) report that white shrimp, such as *P. vannamei* is one of two preferred species for consumption in the United States (U.S.), which is the world's largest shrimp market, and that U.S. consumers prefer the taste of *P. vannamei* over *P. monodon* or Giant Tiger Prawn. Therefore, it was valid to select *P. vannamei* for taste testing as it is likely common in supermarkets. At the time of testing, the only South Carolina shrimp available was *P. aztecus*.

3.1.3 Ideas for future work

Future shrimp taste testing questionnaires should probably include—1) items/questions regarding shrimp purchasing behavior and eating preferences and 2) the food preference scale used to identify culinary tourism subgroups for the *SC Coastal Tourism Survey*. Inclusion of these items may improve understanding regarding consumer marketing segments relative to preference for the flavor/taste of wild-caught shrimp. Also, it would be informative to test all species caught in South Carolina and/or the South Atlantic region.

3.2 Restaurant Case Studies—local shrimp distribution system regarding restaurants

The table in Appendix E summarizes results of selected restaurant interview questions. The most notable differences between restaurant chefs/managers who do or do not purchase locally caught shrimp are—1) purchasing control (local or corporate) and 2) purchasing philosophy. In general, interviews performed with managers and chefs of coastal seafood restaurants in South Carolina demonstrate that locally and regionally managed restaurants are more able to use local food products in their menus. In contrast, for corporate owned restaurants, purchasing decisions are made by the corporation or according to corporate guidelines. However, there are cases where these restaurants purchase local if there is no shrimp available from their regular supplier.

Restaurant chefs and managers generally place high importance on price and quality when purchasing shrimp (see Table 5).

Table 5. What matters when purchasing shrimp from a distributor/purveyor?

Do you purchase local shrimp?	Reputation	Price	Quality	Loyalty	Convenience	Reliability	Professionalism
Always (8)	0	6	4	2	1	3	0
Seasonal (5)	0	5	5	0	1	2	1
Purveyor Dependent (10)	0	8	8	1	2	3	1
Never (4)	0	1	1	0	0	0	0
TOTAL	0	20	18	3	4	8	2

However, those who purchase locally tend to believe local shrimp have better quality, freshness and flavor and prefer to serve local shrimp in their Low Country recipes. In general, those who are already purchasing local product are willing to pay more, particularly if it is of higher quality. However, there is some concern about how much increase customers will accept in menu prices. Some of the local and regionally owned restaurants using local wild-caught shrimp have developed long term relationships with local fishermen, shrimp dock owners and shrimp wholesalers and some are supplied by family involved in the shrimp industry. They may also work with a local supplier that has freezer space necessary for storing sufficient amounts of local product or prefer local suppliers because they like to visit the supplier. Those purchasing local also express a specific desire to support their local economy.

Barriers to purchasing locally caught shrimp include 1) price, which often becomes more important than quality, particularly in “budget tourist areas,” 2) product availability, because local product is limited in volume and less consistent in supply, 3) the extra cost of labor involved in peeling and deveining (there is little processing available in the state), 4) inconsistent quality, 5) difficulties with finding a local supplier, and 6) the limited shelf life of fresh product. Size consistency was not mentioned as a barrier. Although size was mentioned as one of the preferred attributes, in general we found that restaurant preferences vary widely and can also depend on the type of shrimp (e.g., white or brown) and menu item.

3.2.1 Discussion

Shrimp fishermen may need to focus on developing relationships with local restaurants which are able to make their own menu and purchasing decisions. Developing these partnerships takes time. Some type of workshop or database, such as the Fisher-Chef Connection used in the Pacific Northwest (see: <http://www.farmerchefconnection.org/>) may be a more efficient means to facilitate partnership development. The shrimp industry also needs to market their product to corporate owned restaurants in their region, so they can take advantage of times when these restaurants are unable to get shrimp from their regular supplier. Because quality is highly important, the development of the WASI (*Wild American Shrimp, Inc.*) brand certification seems particularly significant to improving potential for premium price and consistency in quality. *Wild American Shrimp, Inc.* is a non-profit group engaged in the first national initiative to ensure premium wild-caught shrimp reaches consumers through training, certification, and education from boat to plate (see: <http://www.wildamericanshrimp.com/>). The organization also uses WASI as the brand name for shrimp certified under this program and provides logos for labeling shrimp and for display in restaurants. Finally, information from this restaurant case study could be useful toward to designing a more empirical survey of restaurants in the U.S. South Atlantic region. For conducting interviews, we found that in general, it was helpful to have an interviewer who

had worked as a chef and had some familiarity with chef schedules and terminology.

3.2.2 *Problems*

Selection of restaurants serving local shrimp was not random. This was appropriate given selection of restaurants purchasing locally was based on interviews with the few shrimp distributors in the state. Selection of restaurants not serving local shrimp was also not random but based on review of internet information and subjective selection. Ideally, if we were performing an empirical study to determine purchasing trends on the coast, we would have generated a complete list of seafood restaurants with the aid of chef associations and made a random selection from the resulting sample. However, this was not possible given time constraints and not necessary given our focus on generally identifying the range of purchasing practices and barriers.

Given increased media attention to the financial difficulties of the local shrimp industry and increased consumer awareness, we had some problems identifying South Carolina coastal restaurants that did not serve local shrimp and who were willing to be interviewed. Restaurants were highly sensitive to the increased media attention and did not want to publicize their use of imported shrimp. This made it difficult to have an equal distribution of restaurant types in our interview sample. Despite the limitations of the study, the case interviews provided good information on best practices and barriers regarding restaurant purchase of local shrimp.

3.2.3 *Future steps*

Results of restaurant case studies have already been used to inform development of the “*Sea*” *the Difference* chef brochure. In the future, results will be included in scientific papers resulting from the RTTI shrimp and tourism work and will be used to develop additional research proposals focused on agricultural and coastal tourism. In addition, results suggest the need to explore the following:

- Potential for fisher-chef networks, particularly regarding the most feasible regions for such a project (e.g., metropolitan areas)
- Potential for inclusion of seafood (shrimp) in a project similar to that described for the University of Florida *Farm to Fork* project (which also includes radio frequency identification for farm products—see impact.ifas.ufl.edu, Fall 2005 issue, p. 35)

3.3 **Shrimp & Tourism Regional Case Studies**

This section summarizes results of our analysis of community level case studies focused on integration of the commercial shrimp and tourism industries. The data revealed four domains regarding the types of areas that partnerships were addressing—1) integration of commercial fishing culture in waterfront planning

as a means to create a unique tourist experience, 2) innovative marketing and distribution of locally harvested seafood, 3) providing unique experiential education opportunities, and 4) using shrimp to develop or enhance regional qualities. Tables 6-9 summarize the key results for each of these types. Results are listed as findings and lessons relevant to the South Carolina shrimp industry and potential efforts to develop and market unique tourism opportunities on the coast.

3.3.1 Discussion

Partnership between commercial shrimp and industries and communities focused on tourism can offer mutual benefits. For the tourism industry or tourism based community, the research provides insights that can be used in the development of an ecotourism, agritourism, or culinary tourism market related to locally harvested shrimp products and experiences in South Carolina. For the shrimp industry, the promotion of shrimp consumption and local sales to coastal visitors and restaurants may help the industry achieve a higher price per pound based on quality and uniqueness and achieve a fair return on their investment in the fishery.

The four seafood markets (Table 7) studied have some commonalities. They are all successful businesses, but some, like Joe Patti's seem to be particularly successful and resilient (Joe Patti's recently rebuilt after devastating hurricane destruction prior to Katrina). All four focus on serving only local shrimp, have some personal history of long term occupation in seafood industry, have a close relationship with the local fleet, promote fishing heritage of the region, and offer a diversified set of products. Three of the companies indicated they offer a variety of options for consumer purchasing, including packing of shrimp for the tourist to take home and shipping of shrimp—accomplished via the internet or in store order while traveling in the region. These markets engage in a variety of other activities which support local shrimp harvesters, including paying premium price for quality local product, maintaining capacity for IQF/flash freeze processing and freezer storage, and education of consumers on reasons for purchasing local.

The case studies offer insight on a variety of successfully marketed tourist experiences (Tables 8 & 9), including marine ecotourism adventures, a maritime museum, and two shrimp festivals. In each of these cases, there is some focus on the regional fishing heritage. However, the level of integration between the local area tourism promotion organizations and these experiences varies. For example, the Beaufort shrimp festival in South Carolina works in partnership with the local chamber of commerce as well as the shrimping industry. In contrast, the Gulf Shores shrimp festival, which has a national reputation and provides millions to the local economy, is heavily promoted by the local chamber of commerce, it is not well connected with the local shrimp industry. The two marine ecotourism adventures which offer shrimping tours

Table 6. Integration of Commercial Fishing in Waterfront Planning

CASE	Findings	Lessons applicable to SC Shrimp Industry
Biloxi, Mississippi	Commercial concerns are integrated with tourism development—inclusion of commercial dock and direct shrimp sales in planning of Hard Rock Cafe development	Ability to partner with private development to maintain the character of the town and local authenticity
	Biloxi Bay Chamber of Commerce has strong knowledge of fishery and heritage; active integration of advertising and seafood	Chamber’s role in facilitating integration of the seafood industry with tourism marketing/development; Chamber recognizes the value of linking fishing heritage, seafood, and restaurants to marketing the area
Destin, Florida	City of Destin Harbor Plan	Role of locals and city planning department in creating destination image

Table 7. Marketing and distribution of locally harvested seafood

CASE	Findings	Lessons applicable to SC Shrimp Industry
Joe Patti’s Seafood, Pensacola, Florida www.joepattis.com	Pay premium price, expectation of quality with local shrimpers (60 boats); high integration between seafood retail business & shrimpers	Negotiations between shrimpers and dock; close relationship with and support of local fleet
	Low integration with Pensacola marketing agencies; not member of Chamber of Commerce	Need to evaluate whether partnership with regional tourism would be beneficial
	Relationship with local customers is strong—send flyers by mail about specials and recipes and provide cooking demonstrations; 80 % of shrimp sales are to locals and tourists (including charter buses from Atlanta); tourists spend more per sale	Resilience depends upon building reputation and customer relationships at local level and with tourists; website and flyers provide information to travelers during trip planning phase
	Market diversification through value-added products and other opportunities (e.g., local sushi takeout, wine sales, internet shipping)	Provide a variety of purchasing opportunities and specialty items

CASE	Findings	Lessons applicable to SC Shrimp Industry
	Diversified list of local seafood/wild food (alligator),	Product diversification
	Reputation initiated with “Fresh Florida” campaign	Integration with state agricultural marketing
	Sell primarily domestic and promote family fishing heritage	Education of customers on local & quality products
	IQF and Freezer storage for 2 months	Retailers interested in selling domestic need to have sufficient freezer storage
	National level recognition (e.g., Southern Living)	Reputation is important
	Post hurricane reconstruction (2 months)	Rapid recovery is important in hurricane zone
Dewey Destin’s Seafood Market, Destin, Florida	Restaurant and market: one owner who was a long time shrimp fisherman; authentic; preserves heritage and flavor of town	Authenticity—share the fishing family story and integrate fishing heritage with the tourist experience
	Buys and sells only local product: works with shrimpers directly	Local retailer has direct relationship with local shrimp fishermen
	Occupation substitution: was fisherman, use of docks that were the location of his family’s fishing boats (adaptation despite desire to remain in fishing)	Need ability to adapt in a changing industry/economy for fishing related business; entrepreneurialism is important to adaptive capacity
	Pressure from real estate developers to sell waterfront property	Rising value of waterfront property is threatening fishing industry— integration with waterfront planning is important
Zirlott Seafood, Coden, Alabama www.zirlottseafood.com	Small business diversification through value-added product development	Specialty value-added products
	Small-business diversification: shipping product from store; shipping/marketing via website	Ability to ship specialty products to the consumer; providing information (website) to traveler during the trip planning phase
	Family owned and operated (“We buy, sell, catch, & eat seafood”); they do not sell imported product	Promotion of product in connection with fishing family heritage

CASE	Findings	Lessons applicable to SC Shrimp Industry
	Promote their shrimp as a wild-caught, USA product that is clean, fresh, and handled in a professional manner; website provides consumers with education on shrimp industry and competition with imports	Promotion via quality assurance and education about the industry; linking marketing with other South Atlantic regional efforts re: buy USA (e.g., WASI)
Kulji Seafood, Biloxi, Mississippi	Kulji is a family name that is part of the fishing and seafood processing heritage in the region	Promote fishing family heritage
	Sales are primarily to tourists and casinos; good relationship with casinos; direct sales to casinos (no middleman); casinos want only local shrimp	Establish direct sales relationship with other successful tourist oriented businesses
	Pack and ship home for tourists; tourists also bring own boxes	Provide travel home and post trip experience
	Purchase from local shrimpers, who are primarily Vietnamese	Direct purchasing relationship between retailer and local shrimp fleet
	Flash freeze rather than IQF for better taste and longer storage; focus on taste of different shrimp	Use preservation methods that provide best taste and longer storage
	Occupation substitution: transition from being long time shrimp fisher to processing and seafood sales to casinos	Adaptation to changing economy of region

Table 8. Providing unique experiential education opportunities

CASE	Findings	Lessons applicable to SC Shrimp Industry
Shrimping Tour, Hilton Head Island	Marketing through area brochures and table tents at restaurants (people call to see if tour is available); sole owner/operator works out of seafood restaurant at dock	Marketing relationship with seafood restaurants
	Focus on environmental education, natural history of estuary, shrimp fishing history; tourists participate in sorting catch;	Provide experiential environmental education as part of tour; integrated educational message (shrimping heritage and buy local); no “down time”
	Value-added: participants are given share of shrimp catch	Provide meaningful products for tourist to take home
	Was charter operator, learned from local shrimper and now runs tours	Willingness to adapt skills; good relationship with local shrimp industry
	Owner/operator is licensed for commercial shrimping; uses passenger tour boat rather than adapted commercial vessel	Work within the legal framework (U.S. Coast Guard regulations regarding passengers and licensing)
	Tours are during school summer break only; tour time depends on tides	Marketing needs to indicate flexibility in scheduling (re: tides, season)
Shrimping Tour, Biloxi, Mississippi	Marketing through brochures and website; focus on family entertainment, heritage of Biloxi, marine adventure	Family, heritage, and ecotourism as focus of marketing
	Use US Coast Guard certified passenger tour boat (catamaran) rather than adapted commercial vessel; “Sailfish” has been a tour boat since 1955	Work within the legal framework (U.S. Coast Guard, MS Department of Marine Resources - DMR)
	Permit is for “six-pack”, DMR permit allows only catch and release or transfer to DMR or scientific/aquarium organizations; aquarium picks up catch at end of trip	Partnership with local aquarium for specimen use (as alternative to take home shrimp for direct participants)

CASE	Findings	Lessons applicable to SC Shrimp Industry
	Occupational substitution: captain was in commercial fishing/marine engineering; he has an outgoing personality and charisma and uses entertaining, well-rehearsed script with educational focus	Willingness to adapt skills to a fishing related business; good personality for interacting with customers
	Boat is very clean and freshly painted with covered first deck, partially covered upper deck, and small gift shop; stern has a scaled down version of a shrimp trawl net	Boat is designed to be appealing to tourist population in the region
	Participants are 90% retirees; increasing # of Canadian, Japanese, British and Australian	Awareness of potential customer population
	Three 70 minute tours per day (February to November); daily departure times change	Location on Gulf extends season for operation?; when flexibility in departure times is necessary then customers must call
Maritime Museum, Biloxi	Museum is a non-profit organization that partners with the Chamber of Commerce and the County Tourism Commission	Community level partnership with area promotion organizations
	Department of Marine Resources (DMR) publishes coloring books, posters, brochures, shrimp cookbooks/recipe cards and has exhibit at Museum	Partnership between non-profit education facility and state marine resources agency for joint promotion
	DMR works to get grant money to support museum; Sea Grant and NOAA provide funding	Funding partnerships with state and federal agencies interested in education and outreach
	Museum features shrimp industry and Biloxi as seafood capital; only education facility in the world with a shrimp peeling museum	Innovative/unique exhibit attracts tourists and provides platform for education about the fishing industry

Table 9. Using shrimp to develop or enhance regional qualities

CASE	Findings	Lessons applicable to SC Shrimp Industry
South Carolina Low Country (REGION)	Use of shrimp imagery (e.g, Shrimp City Band), but underlying disconnect between the local fisherman and use of images of shrimp and boats in promotion of the coastal region and businesses	Need for connecting the tourism sector with the seafood sector for an integrated approach
Shrimp Festival Beaufort, South Carolina (EVENT)	Community festival	Partnership among community stakeholders to provide an agritourism (shrimp tourism) experience
	Partnership between state shrimpers organization and local chamber of commerce	Platform for telling the shrimp industry story and sharing about local tourism businesses
Shrimp Festival, Gulf Shores, Alabama (EVENT)	Use of local products	Local food products as measure of quality
	Low current involvement with local shrimpers organization	Need to identify barriers to involvement of the local shrimp organization
	National festival	Platform to share the local shrimp heritage message
	Chamber of Commerce runs/promotes the festival (Southern Living, Food Network)	Partnership between shrimp industry and chamber is important
	Festival has contributed \$28 million to the local economy	Need to evaluate economic impact of the shrimp related events
	Quality control: food vendors receive mandatory training from health officials	Shrimp vendors follow health code and are licensed for shrimp sale
	Plans by City of Gulf Shores to renovate and improve the festival area	Partnership with the community/city planners
	Marketed as a family destination	Creation of image relevant to target group
Biloxi, Mississippi (COMMUNITY)	Shrimp images included in tourism promotions; highly connected industries; state level literature promotes shrimp	Promotion of identity using the seafood industry is an authentic representation of partnership between industry and community

seem to have developed marketing relationships with local business (restaurants, seafood markets) and take some advantage of area promotional materials.

The other lesson from these operations is that shrimping tours may be more successful if they use a tourist friendly vessel and include additional environmental education opportunities as part of the tour. Both use a scaled down version of a shrimp trawl and depend upon a flexible schedule to accommodate the tides. Each addresses regulatory issues somewhat differently. The Hilton Head tour operator has a commercial license that allows customers to take shrimp catch home; the Biloxi operator has a license which does not allow customers to take the catch home. Each provides a different tour length and season, which is likely due coastal location (i.e., Atlantic vs. Gulf). The Hilton Head operator provides a 4 hour tour only during the summer season, while the Biloxi operator provides 3 shorter trips in one day (perhaps better for accommodating retirees and families with small children who are attracted to the region) and offers tours throughout most of the year.

In general, the case results indicate the significance of partnership between the shrimp and area promoters. At the community level (Tables 6 & 9), Biloxi on the whole, provided the best example of integration between the shrimp and tourism industries. Biloxi illustrates one of the important lessons from this case research, that community level integration of shrimp and tourism may be facilitated by involvement of the local chamber of commerce or similar organizations. (Unfortunately, most of what has been described for Biloxi was destroyed by Hurricane Katrina in August 2005). Thus, ideally, the local chamber of commerce or other area promoters recognize the value of the shrimp industry to attracting tourists, and this partnership is genuine.

Dr. Norman's graduate students (i.e., for a class project) conducted follow-up interviews with community leaders in Myrtle Beach, Charleston and Beaufort, South Carolina, in fall 2005. These interview results indicated that shrimp fishermen and retailers may not be taking full advantage of their area's chamber of commerce. Specifically, the Charleston Metro Chamber of Commerce indicated they had no shrimp industry members but that Chamber membership would benefit this industry in many ways. For example, the Charleston Chamber suggested they could facilitate partnership between the shrimp industry and hotels/motels, restaurants, the technical college (culinary arts program), and the port. Charleston Chamber membership benefits also include access to lower cost health insurance, expanded marketing, lobbying of legislators, and business seminars. Currently the Charleston Chamber is doing nothing directly for the shrimpers due to the lack of membership. However, membership fees are currently \$375 which may be prohibitive to the financially stressed industry members. In Beaufort, South Carolina, there is a stronger relationship between the local Chamber and the industry—the

Chamber plays a role in promotion of the shrimp festival. While Chamber membership by the shrimp industry appears to provide untapped potential for integration tourism and shrimp industry marketing efforts, the costs and benefits to the shrimp industry need to be explored in depth. For example, in Charleston, it may be more suitable for the South Carolina WASI office to become a member of the Charleston Chamber given their location in the area.

3.3.2 *Problems*

In this part of the study, cases were selected because they were known to represent integration of shrimp and tourism industry. Most of this selection was by word of mouth or pre-selection due to prior visits to the region. The focus on successes is a limitation of the study. We did not examine multiple cases where the fishing industry, seafood retailers, and tourism co-exist but are not integrated. Focus on non-integration cases might have been useful toward identifying the full range of barriers to integration. We also do not have economic information from the cases examined, and thus can not make claims about the financial impact achieved from the strategies. However, the fact that cases were selected based on reputation suggests a level of success, and information discovered from the cases examined will be useful to developing some criteria for evaluating and planning future efforts. Another important problem is that much of what was found at the case study sites along the Gulf coast (particularly in Biloxi) was destroyed in Hurricane Katrina, making it difficult to revisit these cases in the near future.

3.3.3 *Suggested future steps*

The shrimp industry in South Carolina and throughout the southeast region should consider the practices revealed by the cases when exploring partnership with tourism industries and promotion organizations. Further research is needed to understand the economic linkages between the shrimp industry and the coastal visitor's experience, with the goal of determining whether these linkages are economically beneficial to industry and community sustainability and resilience. Reconstruction of Gulf Coast communities affected by hurricane Katrina offers opportunities for planned integration of remaining seafood industries with community and tourism re-development. Evaluation of Gulf Coast reconstruction efforts, particularly in the case study areas, should examine 1) whether remaining seafood industries and infrastructure are integrated into planning for redevelopment of waterfront and other coastal tourist venues, and 2) how this planning is integrated with coastal hazard mitigation efforts. This evaluation could be useful to understanding how to build seafood industry resilience in the Gulf and South Atlantic regions.

3.4 **Training Workshop for Chefs**

The results of the training workshops include the project team's self-evaluation of each workshop event and participant evaluation from one workshop.

3.4.1 *Self-evaluation*

Table 10 provides a summary of our self-evaluation for each workshop delivered to chefs.

Table 10. Self-evaluation summary of “*Sea*” the *Difference* workshops

Workshop	Self-evaluation
<p>March 11, 2005 Southeast Regional American Culinary Federation Meeting, Roanoke, VA, 1:30 – 3 PM.</p> <p><i>Participation:</i> Chefs and culinary students (~5)</p>	<p>While we attracted approximately 30 chefs at this venue in 2004, our 2005 session attracted very few participants. Other sessions occurring during this time suffered similar low attendance due to competing events (e.g. food judging/contest). One lesson learned is that chefs are experiential learners and thus, cooking demonstrations are important for attracting chefs to an outreach workshop. The standard lecture/presentation is not the best delivery method for this group. Chefs also like to receive free stuff while attending workshops. Although we had prepared pre- and post-evaluation forms, we did not distribute these due to the small size of the group.</p>
<p>March 14, 2005 Myrtle Beach, SC Horry Georgetown Technical College (9-10:15 am)</p> <p><i>Participation:</i> Culinary students and some local chefs (~30)</p>	<p>The workshop was somewhat abbreviated due to the time allotment. The presentation by a local shrimp dock owner (McClellanville, SC) provided an excellent perspective on how shrimp was delivered from local harvesters to restaurants over 30 years ago—he described driving the shrimp delivery truck into Myrtle Beach at age 16. The students had an opportunity to taste some local shrimp cooked with a sauce developed to highlight flavor; however, we concluded it would be better to provide an opportunity for participants to taste both local and imported shrimp as part of the workshop. The proximity of the presentation room to the kitchen was important to allowing the tasting, particularly given the time limitations. We gave away SC Seafood Alliance hats and “Fresh Local Seafood, Ask For It!” stickers—most of the participants took both.</p>
<p>April 14, 2005 Charleston, SC Trident Technical College (9-11am)</p> <p><i>Participation:</i> Culinary students, some local chefs, DHEC representative (~30)</p>	<p>We provided samples of imported and frozen SC local, steamed only and cooked in sauce, to simulate the taste testing conducted at Clemson. The culinary students participated in both the cooking and tasting. This part of the workshop went fairly well, and helped engage the students. The inclusion of a shrimp dock owner (Wadmalaw Island) in the presentation provided some excellent insight on local shrimping heritage and families. Some of the students asked very good questions, particularly about the environmental impact of shrimping and impacts of imported vs. local on the environment. The presenters included Jason Goins (WASI trainer) and Amber Von Harten (SC Sea Grant Fisheries Specialist). The Department of Health and Environmental Control (DHEC) seafood inspector also attended. This allowed participants to meet agency contacts. The presentation of the taste testing results did not clearly define the difference between the imported and SC shrimp. After the workshop, further statistical analysis was conducted to identify preferred shrimp attributes that are significantly different between shrimp types and results were included in the final chef brochure.</p>

3.4.2 Participant-evaluation

Eighteen participants completed a post-workshop questionnaire at the Charleston, SC workshop. The questionnaire asked participants about—1) qualities they look for when selecting shrimp, 2) whether their restaurant purchased US shrimp, 3) whether they had heard/seen any advertising about purchasing local shrimp, 4) whether they or their customers would be willing to pay more for locally harvested shrimp, 5) their shrimp knowledge (self-assessment), 6) their rating of the workshop, and 7) their goals for use of workshop information.

A majority of the respondents (83%) had heard or seen advertising about eating local shrimp. Of those who were already involved with serving shrimp in a restaurant (n=9), size, color and texture were the most important attributes in their selection of shrimp. The results for knowledge self-assessment and workshop rating are summarized below in Table 11.

Table 11. Selected post-workshop evaluation results (Charleston, SC, April 14, 2005)

KNOWLEDGE (n=17)	Mean
Commercial shrimp fishing methods	1.9
Shrimp farming (aquaculture)	1.8
Marine environmental sustainability issues related to shrimp	1.6
Shrimp regulations/management	1.8
Differences between imported and domestic shrimp	2.6
Cooking and preparation of shrimp	3.5
Safety of shrimp	3.0
Nutritional benefits of shrimp	2.8
Seasonal differences in shrimp	2.5
Selecting quality shrimp for purchase	3.1
History of shrimp fishing in South Carolina	2.2

Scale is 1-5 (1=not at all knowledgeable, 5 = extremely knowledgeable)

WORKSHOP EVALUATION	Mean
Materials	3.5
Presentations	3.9
Question and answer	3.6
Overall workshop	4.1

Scale is 1-5 (1=not valuable, 5 = extremely valuable)

Regarding the workshop format, one participant commented that the shrimp tasting should have occurred earlier in the presentation.

The following statements are responses to what the Charleston respondents said they would do with the workshop information:

- Be more selective when choosing shrimp
- Buy local shrimp

- Check on origin of my imported shrimp (not china)
- Support local shrimpers
- Look for quality
- Look for appearance
- Spread the word
- Educate others in the industry
- Tell people about local shrimp and how it tastes better (it did!)
- Monitor legislation about industry
- Buy fresh when cooking for myself
- Use info for personal shrimp buying
- Look for and purchase local shrimp in restaurants
- Ask for local shrimp when I dine out
- Eat more shrimp

3.4.3 *Discussion*

Based on the workshop delivery experience and outcomes, we have the following preliminary recommendations for seafood outreach with chefs:

- Develop a working relationship with chef leaders and culinary school instructors in the region—Utilizing the chef association network seems to be a more efficient and productive means of gaining participation in comparison to independently advertising a half day or longer workshop that requires advanced registration.
- Provide outreach to culinary students who are more easily influenced by new information as they are at an early stage of their career.
- Include demonstrations and tasting in presentations, and involve participants in cooking the shrimp—this means using a venue that allows for cooking demonstrations or has appropriate kitchen facilities.
- Consider including other experiential learning opportunities, such as a tour of a shrimp boat, if time permits.
- Include real industry members in outreach and education presentations.
- When arranging presentations, include agency members or experts who work with industry and seafood quality certification.
- Be flexible and adapt to the schedule and learning style of the chefs.
- Have free items and “door prizes” (aside from paper handouts) to give to participants, particularly when presenting at conferences or conventions.

3.4.4 *Problems*

Originally we planned to market the chef workshop to a variety of chefs and culinary students—in this situation we would have asked individuals to register for a 2 hour or longer workshop. We tried this first in conjunction with the Southeast Regional American Culinary Federation meeting in Virginia, but this event attracted very few chefs. It became apparent that the best method of delivering the chef workshop was to partner with culinary school instructors, who would then define a date and require their students to

attend. However, this method created even greater time constraints, which in turn restricted our willingness to consume time by administering the originally planned pre- and post-workshop evaluation forms. For this reason, we were only able to conduct a post-workshop evaluation of one workshop.

3.4.5 Next Steps

We do not have plans to offer additional workshops in the future. The workshops did help us select the best materials to include in the “*Sea*” the *Difference* chef brochure, which has been and will be continue to be distributed to chefs and culinary schools in the South Carolina.

3.5 Develop and Distribute a “*Sea*” the *Difference* Chef Brochure and a “*Sea*” the *Difference* Tourist Brochure

These two objectives are discussed jointly due to integrated distribution of brochures. Both brochures were distributed to a variety of venues by mail and in person delivery during the month of October 2005, as summarized in Table 12.

Table 12. Initial distribution of “South Carolina Shrimp ‘*Sea*’ the *Difference*” brochures as of October 31, 2005.

Distribution Venue	Tourist Brochure (total = 40,000)	Chef Brochure (total = 4000)	Distribution notes
SC Parks, Recreation and Tourism (Lorraine Hayes)/SC Welcome Centers.	13,500		Each of nine SC Welcome Centers received a box of 1500 tourist brochures
South Carolina Sea Grant (Amber Von Harten).	810		Distribution via pamphlet racks at the SC Sea Grant Consortium Office in Charleston and the Clemson Extension Office in Beaufort, SC
Sustainable Seafood Initiative (Megan Westmeyer).	450	100	Some distribution during the Sustainable Seafood Festival on October 23; remaining brochures will be distributed via the new Sustainable Seafood exhibit currently under construction at the SC Aquarium; 59 chef brochures were mailed to chefs/restaurants who are members of the SSI
Atalaya Arts and Crafts Festival/Huntington Beach State Park in Myrtle Beach, SC.	270		Approximately 180 brochures were distributed during the festival—45 were given to a seafood vendor (local restaurant) to display on their counter at the festival and the remainder were available on the information table manned by the festival/state park staff; an additional 90 copies were given to the park staff for future distribution

Distribution Venue	Tourist Brochure (total = 40,000)	Chef Brochure (total = 4000)	Distribution notes
Wild American Shrimp, Inc. Charleston, South Carolina office.	90		For distribution re: new office in the Maritime Center in Charleston, SC.
Beaufort Chamber of Commerce (Liz Mitchell)	1,500	75	
Beaufort Shrimp Festival/SC Shrimpers Association.	1,170		Distribution occurred via the SC Shrimpers Association booth, ticket booths, and 3 seafood vendors; any remainders were picked up by Beaufort Chamber of Commerce
Shrimp Quality Extension Associate, Clemson Extension - Charleston County (Jason Goins)—1710 copies.	1,710	175	A pack of 90 are in the display rack at the Clemson Charleston County Extension office; copies were also distributed via the SC Shrimp Association booth during a coastal festival in Charleston.
GSAFF	180	75	
Technical college culinary programs (the first two were locations of two of the chef workshops):			
1. Culinary Arts Department, Trident Technical College		300	Distribution to culinary arts students
2. Culinary Arts, Horry-Georgetown Technical College		150	Distribution to culinary arts students
3. Hospitality Education, Greenville Technical College		200	Distribution to culinary arts students
Charleston Metro Chamber of Commerce (Philip Owens, VP Business Development)	180		
Charleston Convention and Visitors Bureau	180	25	
Carolina Food Pros	540	50	This group provides culinary (and heritage) tours and seminars in the Charleston area. They stop at restaurants that serve South Carolina foods and also make up gift boxes with South Carolina foods/items.
TOTAL DISTRIBUTED	20,580	1,150	
TOTAL REMAINING AT CLEMSON	19,420	2,850	

The remaining brochures are being stored in the Clemson University Extension Bulletin room on the Clemson campus in Clemson, SC and are available by contacting Mick Smith at mstmth@clemson.edu. A pdf version of the tourist brochure is available at:

http://www.hehd.clemson.edu/PRTM/special/Shrimp_B2.pdf. A pdf version of the chef booklet is available at:

<http://www.hehd.clemson.edu/PRTM/special/Shrimpbook.pdf>.

3.5.1 *Discussion/Problems*

The success of the brochures has not been evaluated. However, we received comments from a few shrimpers who were concerned about the emphasis on WASI in the tourist brochure. The specific wording that concerns these individuals is:

How do I know I am getting local South Carolina shrimp?

- Shrimp harvesters in the U.S. Southeast region have developed high standards for a new quality brand, Wild American™. The Wild American™ logo tells consumers they are getting the certified locally harvested product.

Following this are suggested methods for determining if a restaurant serves local product:

- Look for “Fresh, Local Seafood” stickers or displays in stores or restaurants.
- Local or regionally owned restaurants are more likely to support local producers, while corporate chains often purchase from national distributors.
- **When in doubt, ASK!** Do not be afraid to ask the restaurant server or chef where the shrimp was harvested.

Industry members were concerned that the brochure suggests that only WASI shrimp is local. Furthermore, tourists who read the brochure during the Beaufort Shrimp Festival and other recent festivals have been asking where and in what form (fresh, frozen, value added) they could purchase WASI shrimp in South Carolina. Thus, some members of the shrimp industry are concerned that the mention of WASI in the brochure is a problem because South Carolina WASI product is not yet widely available. We believe it is a good sign that tourists are focusing on the WASI branding as it validates this initiative as a way to assure discriminating consumers can easily and confidently identify quality shrimp. At the same time, the greater consumer awareness may encourage industry members to become WASI certified. The advantage of WASI certification and branding is consumers do not have to rely on simply trusting restaurants to be truthful about serving locally harvested shrimp. The branding removes doubt and assures quality. However, given the timing of the WASI initiative and shrimp industry concerns, we plan to restrict distribution of remaining tourist brochures until the next shrimp

season in 2006, when hopefully more of the industry will be certified by WASI.

3.5.2 *Next Steps*

In a few months we will informally interview SC Welcome Centers regarding their distribution and evaluation of the tourist brochure and encourage them to display the brochure during the coming 2006 spring and summer tourist seasons. Otherwise, the project team will continue to distribute the tourist brochures and chef booklets as opportunities arise during travel to tourist venues in the next few years. Distribution will be tracked and then re-evaluated in two years. Consideration will be given to reprinting the brochures if there is appropriate demand and funding is available.

4. EVALUATION

4.1 Goal Performance

This section summarizes the extent to which project goals were accomplished, altered or did not occur.

1. *Perform culinary research to test how characteristics of South Atlantic shrimp can improve their marketability in the South Atlantic retail/foodservice markets. This includes:*
 - a. *Develop cooking methods and “Low-Country” recipes (reflecting the heritage and culture of the coastal region) which highlight the aroma, flavor, and texture of wild caught South Atlantic wild-caught shrimp*
 - b. *Comparison test recipes which include wild-caught, farm-raised, and import shrimp through focus groups Culinary research (taste testing) to identify preferred attributes of South Atlantic wild-caught shrimp relative to imported shrimp*

Goal Performance: The original idea was to develop shrimp recipes that had been tested with consumers as a means to understand the best ways to highlight wild-caught shrimp in low-country dishes. However, several tourist/travel magazines began printing articles regarding the merits of South Atlantic shrimp, highlighting South Carolina restaurants serving local “wild-caught” shrimp, and providing regional shrimp recipes. As such the focus of this goal was shifted from taste testing of shrimp in different recipes to a taste test comparison of fresh and frozen wild-caught shrimp from South Carolina and imported Ecuadorian shrimp. However, this study included some recipe testing for use in the taste test comparison of shrimp. The shift in focus made it possible to identify some of the attributes that differentiate South Carolina wild-caught shrimp from imported shrimp.

2. *Analyze the current shrimp distribution system in South Carolina*

a. *Interview SC shrimp fishermen regarding current distribution*

b. *Interview chefs/restaurant managers on the South Carolina coast to develop a case study comparison of restaurants which do and do not intentionally serve locally harvested shrimp.*

Goal Performance: This project was closely integrated with the *South Carolina Coastal Tourism Survey* conducted by RTTI as part of the Clemson University, South Carolina Shrimp Fishery Assistance Project. Researchers from Clemson's Department of Applied Economics and Statistics were responsible for conducting an analysis of the current shrimp distribution system. As such we dropped this component from our original proposal and focused on purchasing behavior of selected South Carolina coastal seafood restaurants. Some economic information was collected from restaurants and provided to the Clemson economics researchers for their analysis. However, our case analysis of restaurants focused primarily on identifying best practices and barriers regarding purchase of local shrimp. We had some difficulty interviewing restaurants not serving local shrimp because publicity, encouraging purchase of local shrimp due to the plight of the shrimp fishermen, caused restaurants serving primarily imported shrimp unwilling to participate. We did learn there is a probable need to facilitate relationships between restaurants interested in supporting local producers and the shrimp industry. There was some budget savings with this portion of the project because the graduate student conducting the interviews did so by phone rather than personal visits to the restaurants on the coast.

3. *Develop regional level case studies on how integration of shrimp and tourism related industries facilitates the promotion of wild caught shrimp to tourists.*

Goal Performance: This goal was accomplished beyond expectations. Bill Norman, the project investigator was able to integrate this part of the project into a field trip with 4 graduate students who were also delivering papers on our shrimp and tourism work at a conference in Biloxi. This effort also resulted in some budget savings due to travel by van and efficiency afforded by having multiple people split up and simultaneously perform interviews with a variety of organizations in a short period of time.

4. *Develop and deliver training workshops for chefs in the South Carolina and South Atlantic region—including preparation of training materials with information on results from shrimp taste testing research, quality and heritage of wild-caught shrimp on the South Atlantic coast, developing partnerships with local fishermen, and marketing strategies.*

Goal Performance: Accomplishment of this goal was satisfactory, however changes were made in the development and promotion of the workshop to fit the timing and constraints involved in delivery. These constraints and what we learned are reviewed in section 3.4 above. Budget funds were originally allocated for development of slick workshop notebook packed with information. The pilot workshop in Greenville, South Carolina and interactions with chefs by the Sustainable Seafood Initiative at the South Carolina Aquarium indicated it was better to keep written materials very brief. Therefore, we did not produce elaborate workshop notebooks but instead provided folders with a few key materials. This resulted in some cost savings in the budget. In addition, we did not use the full amount of funding allocated for speaker travel for the workshops because guest speakers were willing to cover their own travel costs.

5. *Develop and distribute a chef training brochure, titled “Sea” the Difference, that provides educational information on South Carolina/South Atlantic shrimp (similar to that provided in chef workshop).*

Goal Performance: This goal was accomplished and additional brochures beyond the original number planned were printed. Unfortunately, development and layout took longer than expected, requiring a 45 day extension at the end of the project to complete printing. The tight timeline made it difficult to project the maximum number of copies possible prior to the bidding process. Our estimate of 4000 copies resulted in bids that were lower than the amount remaining in our project budget. However, given the timing we decided to limit the number of copies to 40,000 based on expected demand and concern that the brochure could be out of date in a few years.

6. *Develop and distribute a tourist targeted brochure, titled “Sea” the Difference, that provides educational information on South Carolina/South Atlantic shrimp heritage and tourism opportunities.*

Goal Performance: This goal was accomplished and additional brochures beyond the original number planned were printed. Unfortunately, development and layout took longer than expected, requiring a 45 day extension at the end of the project to complete printing. The tight timeline made it difficult to project the maximum number of copies possible prior to the bidding process. Our estimate of 40,000 copies resulted in bids that were lower than the amount remaining in our project budget. However, given the timing we decided to limit the number of copies to 40,000 based on expected demand and concern that the brochure could be out of date in a few years.

7. *Develop public relations pieces about South Atlantic shrimp, from sea to table/restaurant, distributed to regional tourist magazines and websites—includes press releases and magazine articles*

Goal Performance: The South Carolina Seafood Alliance, South Carolina Shrimpers Association, the Sustainable Seafood Initiative (SC Aquarium) and the South Atlantic Shrimpers Alliance increased marketing and education/outreach efforts for promotion of local shrimp throughout the project period. Consequently, several tourist/travel magazines were printing articles regarding the merits of South Atlantic shrimp, highlighting South Carolina restaurants serving local “wild-caught” shrimp, and providing regional shrimp recipes. As such we decided to focus our attention on the other project goals and therefore did use funding allocated to this goal.

4.2 Dissemination of Project Results

Project results were integrated into two end products—1) a “*Sea*” *the Difference* tourist brochure and 2) a “*Sea*” *the Difference* chef brochure. The tourist brochure will continue to be disseminated via SC Welcome Centers and other tourist venues for at least the next two years. The chef brochure will continue to be disseminated via culinary arts programs at technical colleges and other schools as well as through chef associations and conferences. Some results from this project have already been presented at the International Culinary Tourism Association conference in May 2005 and a food technology conference in July 2005. Some results will also be integrated into a presentation on RTTI shrimp and tourism research at the upcoming ISSRM (International Symposia on Society and Resource Management) meeting in July 2006. During the project, results were periodically reported at teleconference meetings with the South Carolina Shrimp Industry Taskforce as part of the Clemson South Carolina Shrimp Fishery Assistance project. Results will also be used to supplement recommendations generated from analysis of remaining data from the Clemson *South Carolina Coastal Tourism Survey*, particularly regarding the investigation of relationships between tourist preferences and behaviors. As such results from the GSAFF project will be incorporated as appropriate in publications resulting from this survey work. The original project budget also included funding for presentation to GSAFF, however the foundation decided not to hold a symposium. Thus, some of the funds allocated to presentation of results were not used.

4.3 Recommendations

The components of this project, including our work with fishermen, chefs and the tourism industry, and current trends within the state, indicate there is strong potential for partnership at the community level. In addition to current activities, partnership could be facilitated by:

- Workshops/events which facilitate relationship building between fishers, seafood suppliers, and chefs or restaurant managers.
- Workshops/events which facilitate relationship building between the tourism industry, chambers of commerce, and all components of the shrimp industry (processors, wholesalers/retailers, and fishermen).

- Delivery of additional chef training workshops, possibly expanded to include wait staff.
- Development of a US South Atlantic region-wide public outreach effort utilizing an adapted version of the brochures produced from this project.

Our recommendations for future research include:

- An empirical survey (using a representative random sample) of restaurant chefs'/managers' preferences for and constraints regarding use of local seafood in recipes and menus.
- Taste testing which 1) includes a set of questions regarding general food preferences while traveling, similar to that used in the *South Carolina Coastal Tourism Survey* to identify market clusters (see Appendix A) and 2) utilizes a sample population representative of a broad range of tourists or consumers. This would permit comparison of taste testing results among consumer segments based on preference for exploring a variety of foods, tastes, and food related experiences.
- An economic study that evaluates how much tourists and restaurants will actually pay for a premium certified locally harvested shrimp and whether premium price paid by restaurants translates into improved economic benefits for the shrimp fishery. Again, this could include the food preferences scale developed for the *South Carolina Coastal Tourism Survey* as a means to identify subgroups of tourists.
- An economic study that evaluates whether economic linkages between the shrimp and tourism industries in fishing communities undergoing transition are beneficial to sustainability and resilience of the fishing industry and the community as a whole.

ACKNOWLEDGEMENTS

We extend our gratitude to the Gulf and South Atlantic Fisheries Foundation for their support of this project. We would also like to thank the following for their assistance with various phases of this project: South Carolina Shrimp Industry Partnership, South Carolina Shrimp Fishery Assistance Project, South Carolina Seafood Alliance (Luann Love), South Carolina Shrimpers Association, Southern Shrimp Alliance, South Carolina Sea Grant (Amber Von Harten), Clemson Extension/Charleston (Jason Goins), South Carolina Department of Natural Resources (Marine Resources Division), Sustainable Seafood Initiative (Megan Westmeyer), American Culinary Federation (ACF) Upstate South Carolina Chapter (Greenville, South Carolina), Horry-Georgetown Technical College (Culinary Arts Program), and Trident Technical College (Culinary Institute, Charleston).

REFERENCES

- Briggs, M., S. Funge-Smith, R. Subasinghe and M. Phillips. 2004. Introductions and movement of *Penaeus vannamei* and *Penaeus stylirostris* in Asia and the Pacific. RAP publication 2004/10, Food and Agriculture Organization of The United Nations Regional Office for Asia and the Pacific, Bangkok.
<ftp.fao.org/docrep/fao/007/ad505e/ad505e00.pdf> [accessed January 15, 2006]
- Henry, M.S., D.L. Barkley, F. Vinuya, and B. Gantt. 2005. Options for Processing Shrimp Landed In South Carolina. Research Report #01-2005-02, Regional Economic Development Research Laboratory, Clemson University. [accessed February 8, 2006; http://cherokee.agecon.clemson.edu/redrl_rpt14.pdf]
- Hill, H. 2003. Executive Director, Charleston Area Convention and Visitors Bureau. Personal Communication.
- Howell, David. 2005. Determination of Attributes of Shrimp through sensory analysis. M.S. Thesis. Department of Food Science, Clemson University.
- Josupeit, H. 1999. Shrimp trade around the world. Seafood International, 19-23 November.
- National Oceanic and Atmospheric Administration (NOAA). 2004. Fisheries of the United States – 2004. <http://www.st.nmfs.gov/st1/fus/fus04/index.html> [accessed January 18, 2006]
- National Restaurant Association. 2003 Restaurant Industry Forecast: Executive Summary. www.restaurant.org/research/forecast_regional.cfm
- Norman, W.C. 2003. Understanding Agritourists: The keys to marketing success. Presentation at the Virginia Governor's Conference on Travel and Tourism.
- Travel Industry Association of America (TIA). 2002. The Economic Impact of Travel on South Carolina Counties 2001.
[\[www.discoverouthcarolina.com/documents/girsc2001.htm\]](http://www.discoverouthcarolina.com/documents/girsc2001.htm)
- Shenoy, S. 2005. Food tourism and the culinary tourist. Dissertation completed for PhD in Department of Parks, Recreation and Tourism Management, Clemson University
- Shrimp News International. 2004. USA shrimp imports in 2004: volume and value. <http://www.shrimpnews.com/USAImports2004.html> [accessed January 15, 2006]
- South Carolina Department of Parks, Recreation & Tourism (SCPRT). 2003a. The contribution of travel & tourism to South Carolina's Economy.
[\[http://www.discoverouthcarolina.com/documents/Travel,%20Tourism%20&%20SC%20Economy.pdf\]](http://www.discoverouthcarolina.com/documents/Travel,%20Tourism%20&%20SC%20Economy.pdf)
- Spradley, J.P. (1979). The Ethnographic Interview. Harcourt Brace Jovanovich College Publishers: Fort Worth
- Spradley, J.P. (1980). Participant Observation. Wadsworth Thomson Learning: South Melbourne
- Travel Industry Association of America (TIA) 2003. Domestic Visitor Expenditures by County, 2000 to 2003.
[\[www.discoverouthcarolina.com/documents/Vis%20Exp%202000%20-%202003_3.htm\]](http://www.discoverouthcarolina.com/documents/Vis%20Exp%202000%20-%202003_3.htm)
- Wirth, F.F. and Davis, K.J. 2001. Assessing Potential Direct Consumer Markets for Farm-Raised Shrimp. Staff Paper SP 01-13, September 2001, University of

Florida, Institute of Food and Agricultural Sciences. [<http://www.fl-seafood.com/industry/reports/shrimp/section9.html>]
W.K. Kellogg Foundation. 2002. Food for Thought: Community-Based Food Systems Enterprises: Issues for the 21st Century Food System. Third in a series. [www.wkkf.org/Pubs/FoodRur/FandS/Pub3778.pdf]

APPENDIX A

Progress Report

As of 3/1/05

SHRIMP AND TOURISM IN SOUTH CAROLINA

Recreation, Travel & Tourism Institute, Clemson University

Dr. William C. Norman, Laura W. Jodice & Sajna Shenoy

(1-864-656-2060; wnorman@clemson.edu; jodice@clemson.edu)

This project refers to section **2.4.b.** in the South Carolina Shrimp Fishery Assistance proposal prepared by Clemson University—Research to support the development of a marketing plan for the S.C. shrimp industry to promote a stable market with fair prices. This portion of the project is to assist the South Carolina Shrimp Industry through research that examines the potential of marketing locally harvested shrimp to coastal visitors in partnership with the state’s travel and tourism industry.

Interviews/case studies

- Bill Norman will be taking a group of graduate students to the Gulf Coast this March (Biloxi, Pensacola, Gulf Shores) to complete case study work. These locations have been selected as regions, communities, businesses, and festivals where the tourism and shrimp industry partnership is more mature than in South Carolina. Following this trip we will compile a report on case studies.

Shrimp & Tourism survey

Survey data collection reported here involved 3 versions of our coastal tourism survey designed to identify tourist preferences regarding locally harvested shrimp product.

- South Carolina Coastal Tourism (mail survey)—(July through October, 2004); intercepted South Carolina coastal visitors to four of the six counties of coastal South Carolina. Sampling proportion was based on visitor spending data for each of the counties. Addresses were collected at 21 sites.
- Beaufort Shrimp Festival (mail survey) —Tourists (non-residents) at the Beaufort Shrimp Festival; these received the same shrimp survey with some added questions specific to the festival.
- Daniel Island Park Festival (1 page onsite survey)—Any attendees (locals and non-locals) were eligible for the survey; the survey included a set of questions from mail survey regarding shrimp selection preferences. The focus here was to allow comparison between locals/residents and coastal visitors on some survey items.

Table 1. SC Coastal Tourism Survey data collection summary.

	# of addresses	# of surveys mailed	Bad add	Good add	Total response	Total usable surveys	Resp Rate %
SC Coastal Tourism Shrimp Mail Survey (visitors)							
Region 1	487					239	
Region 2	186					76	
Region 3	158					75	
TOTAL	831	831	28	802	414	390	48.63
Beaufort Festival Survey (visitors)	429	429	24	405	249	248	61.23
Daniel Island Festival Survey (locals)					246	239	

SOME HIGHLIGHTS FROM SURVEY FINDINGS

SC Coastal Tourists

- Less than 10% purchased fresh locally harvested shrimp to take home.
- 30% of survey respondents are “culinary tourists”, meaning they are more interested in local food and drink and quality dining, and less interested in “familiarity” of restaurants (TABLE 4)
- Coastal tourists in general are relatively uninformed about shrimp. However, the “culinary” subgroup was the most knowledgeable about shrimp. (TABLE 5)
- The “culinary” tourist subgroup has a greater desire to 1) eat shrimp in traditional southern recipes and 2) time their visit when fresh locally harvested shrimp is available. (TABLE 6)

Beaufort Shrimp Festival Tourists(TABLE 3 & 7)

- Almost half (41%) of Beaufort Festival survey respondents are likely or extremely likely to attend next year.
- 70% of Beaufort Festival survey respondents are likely or extremely to recommend the Festival to others.
- 83.8% of Beaufort Festival survey respondents were satisfied or extremely satisfied with the Festival.
- The average amount spent on shrimp at the Festival was \$27.88.
- During their coastal visit, almost half of Beaufort Festival tourists believed the shrimp they ate was locally harvested, while less than 1/5 of SC Coastal tourists believed the shrimp they ate was local.
- During their entire coastal visit, Beaufort Festival tourists spent on average \$13 more than SC Coastal tourists on purchasing shrimp to bring home.

Daniel Park Festival

- Most (86%) of Daniel Park Festival survey respondents were locals (from county area)
- The top three reasons for attending were: spend time with family (28.7%), children’s activities (24.3%), and participation in Komen Charleston Race for the Cure (13.8%); only 2% attended primarily to eat fresh shrimp.
- 29.1 % of survey respondents had already purchased shrimp at the SC Shrimpers’ association booth and 37.2 % planned to purchase shrimp at the booth.

“Eat local shrimp” Advertising

- Fewer than 5% of tourists picked up information about South Carolina shrimp at the welcome center.
- Almost a third of Beaufort Festival tourists had heard advertising about eating local seafood, while less than 1/5 of SC Coastal tourists heard this advertising.
- Nearly 9 out of 10 (86%) of Daniel Island Festival respondents (primarily locals) had heard recent advertising about eating local seafood

Comparison of groups on shrimp selection preferences (TABLE 8 and 9):

- Taste, quality, and safety was most important for all three survey groups. USA caught was more important than a regional brand of shrimp. Regional brand names should be tied to taste, quality and safety.
- The Daniel Island Festival goers (primarily locals) placed more importance on “Support Local Fishermen” than the other survey groups.

PRELIMINARY RESULTS

1) Some preliminary information about each survey group.

SC Coastal Tourists

- Less than 10% purchased fresh locally harvested shrimp to take home. This contradicts the shrimp heavy segment's intentions which suggests the producers could make transportation of shrimp less burdensome.
- Survey respondents who eat shrimp (n=314) fit into three segments based on frequency of shrimp consumption year round.

Table 2: SC coastal tourist segmentation by shrimp consumption pattern (n = 314).

Group	%	Travel planning and activities
“shrimp consistent” (once a month)	55.2%	Importance on memory of eating shrimp after return home
“shrimp heavy” (once every two weeks)	30.9%	Greater intention to return home with shrimp purchased while on vacation
“shrimp enthusiasts” (once a week)	14.1%	Roadside signs detailing where to purchase shrimp were important; higher demand for quality restaurants

Beaufort Shrimp Festival Tourists

Table 3 provides a summary of responses to satisfaction and expenditure questions specific to the festival. For festival goers, coastal setting is important to satisfaction and likelihood of returning to the festival the next year, however shrimp was important to the overall visitor experience.

Table 3: Beaufort Shrimp festival survey questions—satisfaction response summary

Satisfaction	N	Response		
How many times have you attended Beaufort Shrimp Festival?	241	73% attending for first time		
Did you know about the Beaufort Shrimp festival, prior to your visit?	242	No (40%)	Yes (60%)	
What days you attended the Beaufort Shrimp Festival?	238	Fri (15%)	Sat (61%)	Both (24%)
How likely are you to attend the Beaufort Shrimp Festival next year?	240	41 % are likely or extremely likely		
How likely are you to recommend the Beaufort Shrimp Festival to others?	240	70% were very likely or extremely likely		
Please rate your overall satisfaction with the Beaufort Shrimp Festival?	240	83.8% were satisfied or extremely satisfied		
Expenditures related to the shrimp festival		Min.	Max.	Average
How much did you spend in the Beaufort area?	206	0	\$3,000.00	\$317.33
How much did you spend at the Beaufort Shrimp Festival?	216	0	\$3,000.00	\$64.90
How much did you spend on shrimp at the Beaufort Shrimp Festival?	203	0	\$150.00	\$27.88

Daniel Island Park Festival

- The majority (86%) were from the local area.
- The top three reasons for attending the festival were: spend time with family (28.7%), children's activities (24.3%), and participation in Komen Charleston Race for the Cure (13.8%).

- Only 2% (5 respondents) attended primarily to eat fresh shrimp.
- Nearly 9 out of 10 (86%) of respondents had heard recent advertising about eating local seafood
- 29.1 % had already purchased shrimp at the SC Shrimpers’ association booth and 37.2 % planned to purchase shrimp at the booth.
- These results suggest that specific non-shrimp festival activities are attracting local residents, but likely providing a good opportunity for exposure by the shrimp industry to people who may not normally focus primarily on shrimp.

2) **Identification of food tourism subgroups among coastal tourists (Table 4).**

Tourists were segmented according to 5 major factors based on their food preferences while traveling. At least 30% of SC coastal tourists in the study population (Shrimp Tourism Survey) are “culinary tourists”.

Table 4: Results of analysis to segment SC coastal tourists based on food preference factors.

SEGMENTS	Number of respondents	FOOD PREFERENCE FACTORS (Average response)				
		Dine Local	Local Drinks	Purchase Local	Dine Elite	Familiarity
Culinary	107 (30.05%)	3.81	2.67	2.64	3.07	1.85
Experiential	140 (39.33%)	3.25	2.27	2.36	2.53	3.07
General	109 (30.62%)	2.81	1.42	1.86	1.84	2.56
Grand Mean		3.29	2.13	2.29	2.48	2.55

- Culinary tourists— more interested in local and elite dining, least interested in “Familiarity”
- General tourists—higher preference for familiarity (e.g. Red Lobster, KFC)
- Experiential tourist— medium scores except the “Familiarity” which was highest

3) **Knowledge about shrimp (Table 5).**

Shrimp tourism survey respondents were asked to rank their knowledge about shrimp. The “culinary” subgroup ranked as the most knowledgeable. The tourists as a whole are relatively uninformed about shrimp.

Table 5: Average responses for self assessed “Knowledge about Shrimp” by each subgroup.

Items	General	Experiential	Culinary	
Cooking and preparation of shrimp	2.49	2.57	3.13	*
Nutritional benefits of shrimp	2.06	2.22	2.66	*
Selecting quality shrimp for purchase	2.03	2.10	2.69	*
Safety of shrimp	1.70	1.83	2.22	*
Seasonal differences in shrimp	1.48	1.79	1.97	*
Commercial shrimp fishing	1.60	1.61	1.80	
Differences between imported and domestic shrimp	1.54	1.61	1.83	
Marine environmental sustainability issues related to shrimp	1.29	1.35	1.64	*
History of shrimp fishing in South Carolina	1.25	1.41	1.60	*
Shrimp farming	1.26	1.37	1.46	
Shrimp regulations/ management	1.23	1.24	1.44	

Responses ranged from 1 to 5 (1 = “Totally uninformed” to 5 = “Extremely knowledgeable”), *=significant diff. (0.05)

4) **Interest in shrimp related experiences while traveling (Table 6).**

The Culinary tourist subgroup showed significant difference from the General Tourist subgroup on 1) eating shrimp in traditional southern recipes and 2) timing my visit when fresh locally harvested shrimp is available.

Table 6: Average responses for the 14 items indicating “Interest in shrimp related experiences while traveling the coast” by each Cluster.

Items	General	Experiential	Culinary
I would like to eat shrimp cooked in traditional southern recipes	3.61	3.88	4.01
I would like to eat fresh shrimp at local festivals or events	3.31	3.54	3.54
I would like to bring home freshly caught shrimp	3.00	3.19	3.22
I would like to see shrimp boats when I am visiting	3.20	3.12	3.12
I would like to learn from a chef how to cook shrimp in traditional southern recipes	2.89	3.07	3.22
I would like to have a travel guide with information on locations to purchase local shrimp	2.82	2.93	3.08
I would like to learn more about local shrimping heritage	2.85	2.94	2.90
I would like to use a travel guide with information on where to see local shrimp boats	2.87	2.82	2.88
I would like to tour a shrimp trawler that's docked	2.80	2.86	2.80
I would like to time my visit when fresh locally harvested shrimp is available	2.47	2.87	2.94
I would like to learn about shrimp fishing from a commercial shrimp fishermen	2.71	2.71	2.67
I would like to go out on a commercial shrimp trawler	2.48	2.68	2.59
I would like to go out on a charter boat to catch shrimp	2.41	2.71	2.54
I would like to order shrimp to be mailed to me from where I visited	2.16	2.07	2.35

Responses ranged from 1 to 5 (1= “ Strongly Disagree”, 2= “Disagree”, 3= “Neutral”, 4= “Agree” and 5= Strongly Agree”; * = significant difference at .05

5) **Trip characteristics—comparison of SC Coastal and Beaufort Festival (Table 7).**

Respondents who were shrimp eaters were asked about the planning, travel to, onsite, travel from, and recollection phases of their trip. Not surprisingly, the Beaufort Festival survey group placed greater importance on shrimp in travel planning. Table 7 lists some of the more notable trip characteristics. Some highlights are:

- Fewer than 5% of tourists picked up information about South Carolina shrimp at the welcome center.
- SC and Beaufort Festival tourists ate shrimp an average of 3 times during their visit.
- Almost half of Beaufort Festival tourists believed the shrimp they ate was locally harvested, while less than 1/5 of SC Coastal tourists believed the shrimp they ate was local.
- Almost a third of Beaufort Festival tourists had heard advertising about eating local seafood, while less than 1/5 of SC Coastal tourists heard this advertising.
- Beaufort Festival tourists spent on average \$13 more than SC Coastal tourists on purchasing shrimp to bring home.

Table 7. Comparison of SC Coastal and Beaufort Festival Tourists – Trip Characteristics

Trip Characteristic	SC Coastal % (n = 317)	Beaufort % (n = 222)
<i>Anticipation/Trip planning</i>		
Eating locally harvested shrimp on the coast was the primary reason of my trip	1.9	18.9
I planned to purchase locally harvested shrimp at my travel destination	14.8	34.2
I planned to bring locally harvested shrimp home from my travel destination	8.8	25.7
<i>Travel to...</i>		
I picked up information about availability of shrimp from a SC welcome Center	2.8	5.0
I purchased shrimp available from sites along the way	9.1	17.1
I looked for signs on where to purchase shrimp	10.4	11.7
<i>On-site</i>		
How many times did you eat shrimp while visiting the coast (AVERAGE)	3.0	3.3
I ate shrimp at local restaurants	63.7	71.7
I ate shrimp at restaurants known for its shrimp dishes	12.0	24.3
I ate shrimp at festivals or fairs	1.9	74.8
I ate shrimp at high quality restaurants	34.4	30.1
I ate shrimp at dockside or waterfront restaurant	36.6	48.7
I ate shrimp at seafood chain restaurants	12.6	6.2
I purchased shrimp at shrimp boat	6.6	24.6
I purchased shrimp at seafood store	12.6	19.2
I purchased shrimp at festivals or fairs	0.6	19.7
I purchased shrimp at dockside stand/ vendor	8.5	16.8
I purchased shrimp at roadside stand	4.7	8.2
I purchased shrimp at grocery stores	12.3	7.7
I know the shrimp I purchased was locally harvested	18.3	43.0
I know the shrimp I ate was locally harvested	20.5	47.3
I talked to fishermen to learn more about locally harvested shrimp	2.2	19.6
I viewed boats on which shrimp are caught	18.9	66.5
I took pictures of shrimp boats	9.5	42.0
I learned about the history of shrimp fishing in South Carolina	4.1	16.1
I saw/ heard advertising about eating local seafood	17.4	30.4
<i>Travel home...</i>		
I purchased fresh locally harvested shrimp to take back home	9.1	30.8
I purchased local sauces and seasonings to take back home	6.9	14.0
<i>Trip recollection</i>		
Eating shrimp was an important part of my activities as a tourist to the coast	14.2	42.1
Eating shrimp was one of memorable aspects of my travel to the coast	18.3	46.2
Looking back, eating shrimp was an important part of my coast trip	13.6	36.7
Since returning, I have recommended the SC coast as a place to eat shrimps to friends	16.4	40.7
I am planning to return to the SC coast to eat shrimp	27.8	51.6
<i>Expenditures</i>		
Money spent on shrimp at eating establishments	\$58.13	\$61.92
Money spent on shrimp at the destination	\$33.10	\$31.18
Money spent on shrimp to bring back home	\$26.93	\$40.38

6) **Interest in specific shrimp selection factors, while visiting the coast (Tables 8 and 9).**

• **Comparison of SC Coastal Tourist subgroups (Table 8):**

- *Culinary Tourist (N=107)*: “Tastes Good” was most important, followed by “Appearance”, “Health Safety- Pollution”, “Reputation of a Restaurant”, “Storage temperature since caught”
- *Experiential Tourist (N=140)*: “Tastes Good” was most important, followed by” Health Safety- Pollution”, “Reputation of a Restaurant”, “Storage temperature since caught”, “Appearance”
- *General Tourist (N=109)*: “Tastes Good” was most important, followed by” Health Safety- Pollution”, “Storage temperature since caught”, “Appearance” and “Health Safety Additives”

Table 8. Average responses for shrimp selection factors for each segment.

Selection Items	General	Experiential	Culinary	
Tastes good	4.54 ^a	4.59	4.80 ^a	*
Health safety- pollution	4.38	4.29	4.39	
Appearance	4.10 ^a	4.16	4.41 ^a	*
Storage temperature since caught	4.11	4.17	4.31	
Reputation of a restaurant	3.93 ^{a,b}	4.27 ^b	4.32 ^a	*
Health safety- additives	4.00	4.07	4.15	
Premium quality	3.78	3.99	4.28	*
Reputation of vendor/retailer	3.67 ^{a,b}	4.07 ^b	4.13 ^a	*
Industry inspected	3.58	3.90	3.82	
Government inspected	3.58	3.95	3.72	
Good value for the money	3.71	3.88	3.67	
When the shrimp was caught	3.74	3.48 ^a	4.06 ^a	*
Size	3.56	3.64	3.79	
Fresh, never frozen	3.47 ^b	3.38 ^a	4.00 ^{a,b}	*
Recommended by locals	3.28 ^a	3.62	3.84 ^a	*
Supports local fishermen	3.23 ^a	3.59	3.80 ^a	*
In-season	3.34 ^a	3.41	3.80 ^a	*
USA caught	3.46	3.35	3.70	
Low price	3.35	3.55	3.31	
Nutritional value	2.93	3.27	3.42	*
Harvested in an environmentally sustainable manner	2.94	3.00	3.35	
Local wild caught	2.91 ^b	2.88 ^a	3.50 ^{a,b}	*
State of origin	3.05	3.07	3.12	
A regional shrimp brand name	2.58 ^{a,b}	3.12 ^b	3.14 ^a	*
Where the shrimp was caught	2.67 ^b	2.73 ^a	3.28 ^{a,b}	*
Certified organic	2.43 ^a	2.98 ^a	2.77	*
Local farm-raised	2.54	2.73	2.80	
Who caught the shrimp	1.85 ^a	2.31 ^a	2.30	*

Scale was 1 to 5 with 1= “Not important”, 2 = “Slightly Important” 3 = “Somewhat Important” 4= “Important” and 5= “Extremely Important”. * = significant difference at p<.05. The superscript ^{a b} letters indicate significant differences. Example, if two columns share the same letter ^a, they are significantly different from each other.

- **Comparison of survey groups (SC Coastal, Beaufort, Daniel Island):** Table 9 shows differences among the survey groups. The Daniel Island festival attendees (86% locals) placed more importance on “Support Local Fishermen” than the two other groups. This implies that the local residents place more importance on the fact that by selecting SC shrimp they are supporting the local fishermen.

Table 9. Average responses for shrimp selection factors by survey group.

Items	Tourists	Beaufort	Daniel	
Tastes good	4.63	4.63	4.74	
Health safety- pollution	4.34	4.27 ^a	4.50 ^a	*
Storage temperature since caught	4.21 ^a	4.37	4.42 ^a	*
Appearance	4.23	4.24	4.30	
Health safety- additives	4.09 ^a	4.09	4.30 ^a	*
Reputation of a restaurant	4.16	4.09	4.19	
Premium quality	4.04	4.16	4.19	
Reputation of vendor/retailer	3.97	4.04	4.12	
When the shrimp was caught	3.78 ^{a,b}	4.15 ^a	4.10 ^b	*
Good value for the money	3.75 ^a	3.78	3.96 ^a	*
Supports local fishermen	3.61 ^a	3.84 ^{a,b}	4.09 ^{a,b}	*
Fresh, never frozen	3.63 ^{a,b}	3.88 ^a	3.89 ^b	*
Size	3.69 ^a	3.73 ^b	3.93 ^{a,b}	*
Recommended by locals	3.63 ^a	3.87 ^a	3.85	*
Industry inspected	3.78 ^a	3.51 ^{a,b}	3.86 ^b	*
In-season	3.56 ^{a,b}	3.86 ^a	3.82 ^b	*
Government inspected	3.76 ^a	3.44 ^{a,b}	3.86 ^b	*
USA caught	3.53 ^a	3.64	3.81 ^a	*
Low price	3.42 ^a	3.41	3.69 ^a	
Local wild caught	3.16 ^{a,b}	3.55 ^a	3.51 ^b	*
Nutritional value	3.24 ^a	3.24 ^b	3.60 ^{a,b}	*
Harvested in an environmentally sustainable manner	3.13 ^a	3.22 ^b	3.77 ^{a,b}	*
State of origin	3.12 ^a	3.17	3.45 ^a	*
Where the shrimp was caught	2.93 ^a	3.09 ^b	3.49 ^{a,b}	*
A regional shrimp brand name	3.00	3.03	3.20	
Local farm raised	2.74 ^a	2.85	3.00 ^a	*
Certified organic	2.77	2.73	2.90	
Who caught the shrimp	2.23 ^a	2.41 ^b	2.78 ^{a,b}	*

Scale was 1 to 5 with 1= “Not important”, 2 = “Slightly Important” 3 = “Somewhat Important” 4= “Important” and 5= “Extremely Important”. * = significant difference at p<.05. The superscript ^a ^b letters indicate significant differences. Example, if two columns share the same letter ^a, they are significantly different from each other

APPENDIX B

Low-country shrimp recipe used in both the consumer and expert panels

1 Large Yellow Onion
1 Bell Pepper (any color)
3 stalks celery
2 Cloves Garlic
16 oz sausage (smoked or polish kielbasa)
1 stick butter
2 T All Purpose Flour
48 oz Vegetable Stock (chicken works also)
Old Bay Seasoning
2lbs Cooked Shrimp

1. Dice yellow onion, bell pepper, celery.
2. Mince garlic.
3. Over medium heat Saute onion, bell pepper and celery in $\frac{1}{4}$ stick butter until soft.
4. Remove cooked onion, bell pepper and celery and set aside.
5. Dice sausage into bite size pieces.
6. Cook sausage in same pan used for vegetables.
7. Cook sausage over medium heat until done.
8. Remove sausage from pan and set aside.
9. Adjust heat to medium-low
10. Add remaining butter to sausage grease and stir until butter is melted.
11. Slowly whisk in 2T flour to butter/fat mixture. Stir continuously to avoid clumping of flour.
12. Cook Roux (flour/butter mixture) until light brown in color.
13. Once light brown in color, slowly whisk in vegetable stock.
14. Add cooked vegetables, sausage, and minced garlic to sauce.
15. Allow mixture to cook over low heat until it begins to thicken.
16. Once mixture begins to thicken, add Old Bay to taste.
17. Add cooked shrimp to sauce and allow to heat all the way through.

APPENDIX C

RESTAURANT & SHRIMP CASE STUDY INTERVIEW QUESTIONS

Restaurant Name _____

Person Interviewed _____

Title _____

Date _____

Background Questions

How many years have you been in the industry?

How many years has this restaurant been in business?

Please describe your restaurant?

Dining area

Menu

Bar/no bar

Wait staff

Lunch/dinner

Catering

To Go

What type of customer is your restaurant's target market?

Local %

Visitors %

Is your restaurant a member of Chamber of Commerce?

What is your plate price?

Purchase Decisions

How much control do you have over your restaurant's menu?

Do you have control over the subsequent purchasing decisions?

How many food purveyors do you use?

What criteria do you use when choosing food suppliers?

Price

Quality

Loyalty

Convenience

Reliability

Professionalism

Do you purchase any food products locally?

If yes, please describe:

Type of products:

From whom:

How often:

If yes, does your restaurant advertise or promote the availability of local products?

If yes, what do you look for in a local food product supplier?

Do you have philosophy about purchasing local products?

What is your definition of “local” (Lowcountry, SC, US)?

Shrimp Questions

How prominent is seafood on your menu?

Do you serve shrimp?

If yes, what are the primary ways that you prepare shrimp?

What type of shrimp do you purchase?

What are your criteria for purchasing shrimp?

Are you advertising and promoting shrimp more than you used to?

What type of customer is your restaurant’s target market for shrimp?

Local %

Visitors %

Do you ever purchase shrimp harvested by South Carolina Commercial Fishermen?

Please describe:

Who?

What?

Where?

When?

How?

Why?

What do you feel are the barriers to purchasing locally harvested shrimp?

How have/can these barriers been/be overcome?

How much more are you willing to pay per pound for shrimp harvested locally by commercial fisherman?

How much more are your customers willing to pay per pound for shrimp harvested locally by commercial fisherman?

How are you advertising and promoting the availability of locally harvested shrimp?

Added purchasing questions from Henry and Barkley economic study

Pounds of shrimp per year?

Seasonal purchasing: %Spring/Summer; %Fall/Winter

Size preference

%Frozen vs. %Fresh

%Imports

Preferred form(example: heads on v. heads off)

APPENDIX D—Chef Workshop Agendas

“Sea the Difference”

Roanoke, VA

March 11, 2005

Agenda:

- 1:30 Welcome & Pre-workshop questionnaire
- 1:40 Introduction to the Culinary Science connection (A blending of culinary arts and food sciences) – *Marge Condrasky, Food Science, Clemson Univeristy*
- 1:50 Why the Commercial Shrimp Industry Thinks About Chefs
Laura Jodice, Recreation, Travel and Tourism Institute, Clemson University
- 2:10 Research on Shrimp and Culinary Tourism in Coastal South Carolina
Sajna Shenoy, Department of Parks, Recreation and Tourism Management, Clemson University
- 2:25 Sensory Shrimp Research with South Carolina Chefs and Consumers (2004)
David Howell, Food Science (Culinology), Clemson University
- 2:40 Exploration of possible Marketing Strategies to enhance culinary & seafood partnerships in South Carolina and other coastal shrimp states. *Marge Condrasky and Laura Jodice*
- 2:50 Wrap-up

Sponsors

Gulf and South Atlantic Fisheries Foundation
Department of Food Science, Clemson University
Recreational, Travel and Tourism Institute, Clemson University

“Sea the Difference”
Myrtle Beach, SC
Horry Georgetown Technical College
March 14, 2005

Agenda:

- 8:00 Early morning shrimp prep by David Howell
- 9:00 Welcome & Pre-workshop questionnaire
- 9:10 Commercial Shrimp Fishing Heritage in South Carolina
Amber Von Harten, Fisheries Specialist, South Carolina Sea Grant Extension
- 9:20 Why the Commercial Shrimp Industry Thinks About Chefs
Laura Jodice, Recreation, Travel and Tourism Institute, Clemson University
- 9:35 Shrimp and Culinary Tourism in Coastal South Carolina
Sajna Shenoy Department of Parks, Recreation and Tourism Management, Clemson University
- 9:45 Developing relationships with the local shrimp industry members
Rutledge Leland, Carolina Seafood, McClellanville
- 9:55 Sensory Shrimp Research with South Carolina Chefs and Consumers (2004)
David Howell, Food Science (Culinology), Clemson University

& a shrimp snack.
- 10:10 Wrap up—Exploration of possible Marketing Strategies to enhance culinary & seafood partnerships in South Carolina and other coastal shrimp states. *Jodice and Condrasky*

Sponsors

Gulf and South Atlantic Fisheries Foundation
Department of Food Science, Clemson University
Recreational, Travel and Tourism Institute, Clemson University
Horry Georgetown Technical College

“Sea the Difference”
Charleston, SC
Trident Technical College
April 14, 2005

Agenda:

- 8:00 Early morning shrimp prep by David Howell
- 9:00 Welcome & Pre-workshop questionnaire
- 9:10 Commercial Shrimp Fishing Heritage in South Carolina
Amber Von Harten, Fisheries Specialist, South Carolina Sea Grant Extension
- 9:30 Why the Commercial Shrimp Industry Thinks About Chefs
Laura Jodice, Recreation, Travel and Tourism Institute, Clemson University
- 9:45 Shrimp and Culinary Tourism in Coastal South Carolina
Sajna Shenoy Department of Parks, Recreation and Tourism Management, Clemson University
- 10:00 Developing relationships with the local shrimp industry members (Micah or Clay?)
- 10:15 Wild American Shrimp and the South Carolina Shrimp Quality Initiative
Jason D. Goins, Shrimp Quality Extension Associate and Georgia Tisdale, Clemson Extension - Charleston County
- 10:30 Sensory Shrimp Research with South Carolina Chefs and Consumers (2004)
David Howell, Food Science (Culinology), Clemson University
- & a shrimp tasting.*
- 10:50 Wrap up—Exploration of possible Marketing Strategies to enhance culinary & seafood partnerships in South Carolina and other coastal shrimp states. *Jodice and Condrasky*

Sponsors

Gulf and South Atlantic Fisheries Foundation
Department of Food Science, Clemson University
Recreational, Travel and Tourism Institute, Clemson University
Trident Technical College

APPENDIX E

Restaurant Case Studies: Summary of Results from selected questions

QUESTION	PURCHASING BEHAVIOR CATEGORY			
	Always (n=8)	Seasonal (n=5)	Purveyor dependent (n=10)	Never (n=4)
Size/Ownership	2 medium, 4 small, 1 corporate national, 1 corporate regional	3 medium, 2 large	1 small, 5 medium, 4 large	1 small, 2 corporate, 1 five star hotel
Purchase Behavior Re: local shrimp	<ul style="list-style-type: none"> • Use variety of suppliers to get fresh or frozen year round • Local supplier freezes • Use local so can see facilities • Have own shrimp boats 	<ul style="list-style-type: none"> • Use local as much as possible; off season when available 	<ul style="list-style-type: none"> • When available through supplier • Use mix to ensure quality 	<ul style="list-style-type: none"> • Do not use local - from gulf/Texas • Use local if regular supply isn't available
local/visitor mix	<ul style="list-style-type: none"> • Mix of both tourist and local depending on season. 	<ul style="list-style-type: none"> • Mix of both tourist and local depending on season. 	<ul style="list-style-type: none"> • Mix of both tourist and local depending on season. 	<ul style="list-style-type: none"> • Mix of both tourist and local depending on season.
Control over your restaurant's menu?	<ul style="list-style-type: none"> • Full or shared within restaurant (e.g., owner and executive chef) • Menu has not changed for a long time 	<ul style="list-style-type: none"> • Full or shared within restaurant (e.g., owner and chef) 	<ul style="list-style-type: none"> • Full or shared within restaurant (e.g., owner and executive chef) • Menu has not changed for a long time 	<ul style="list-style-type: none"> • Not much or limited control; corporate decision
Control over the purchasing decisions?	<ul style="list-style-type: none"> • Restaurant has control over purchasing (one person or shared) 	<ul style="list-style-type: none"> • Restaurant has control over purchasing (one person or shared) 	<ul style="list-style-type: none"> • Restaurant has control over purchasing (one person or shared) 	<ul style="list-style-type: none"> • Limited control/corporate decision
# food purveyors?	<ul style="list-style-type: none"> • 2-10 • Combination of major suppliers and smaller ones for local products • Use local seafood suppliers or own dock • Use wholesale stores if necessary to assure local 	<ul style="list-style-type: none"> • 4-12 	<ul style="list-style-type: none"> • 1-10 	<ul style="list-style-type: none"> • 4-8
Criteria used when choosing food suppliers? (Price, quality, loyalty, convenience, reliability, professionalism)	<ul style="list-style-type: none"> • Primarily price & quality • Reputation, like to visit plant/warehouse and inspect products • Loyalty - good long term relationship with seafood supplier • Own docks 	<ul style="list-style-type: none"> • Primarily price & quality, and reliability 	<ul style="list-style-type: none"> • Price and quality 	<ul style="list-style-type: none"> • Price and quality • Corporate decision or guidelines

QUESTION	PURCHASING BEHAVIOR CATEGORY			
	Always (n=8)	Seasonal (n=5)	Purveyor dependent (n=10)	Never (n=4)
Does restaurant advertise or promote availability of local products?	<ul style="list-style-type: none"> • Word of mouth • in literature • Advertise “fresh food” • Fishing dock across street • Say using local if interviewed by media 	<ul style="list-style-type: none"> • Staff tells customers • On menu/printed literature • word of mouth 	<ul style="list-style-type: none"> • Some no, some yes • “Fresh” or “fresh local” • On menus or special board 	<ul style="list-style-type: none"> • no • “fish is fresh”
If yes, what do you look for in a local food product supplier?	<ul style="list-style-type: none"> • Quality • Freshness • Locals have better product 	<ul style="list-style-type: none"> • Quality • Availability, seasonality 	<ul style="list-style-type: none"> • Quality • Availability • Fresh • Service 	<ul style="list-style-type: none"> • Reliability • Sanitary facilities
Philosophy about purchasing local products?	<ul style="list-style-type: none"> • Buy and use local to build connections and loyalties so you are better able to get special requests. • Build a relationship with a vendor who will also know what they need to keep the restaurant going • Support the local economy • See the product that local suppliers have • Keep it in the family • People raised in an area will be able to digest and use the products from their native area better than products from other regions 	<ul style="list-style-type: none"> • Varies between definitely to try to buy local • Better quality • Support local economy 	<ul style="list-style-type: none"> • Try to use local • Quality of local products important • Not enough quality control for local products • Price • Support local economy • Availability • Taste/freshness important 	<ul style="list-style-type: none"> • Quality • Freshness
Criteria for purchasing shrimp?	<ul style="list-style-type: none"> • Like white, • See product before purchasing • Flavor/taste/texture/color • Size • Availability • Freshness 	<ul style="list-style-type: none"> • Consistency • Size • Flavor • Price 	<ul style="list-style-type: none"> • Fresh • Consistency • Size • Quality • Taste/flavor • Price 	<ul style="list-style-type: none"> • Quality • Corporate decision

QUESTION	PURCHASING BEHAVIOR CATEGORY			
	Always (n=8)	Seasonal (n=5)	Purveyor dependent (n=10)	Never (n=4)
Purchase shrimp harvested by South Carolina Commercial Fishermen?	<ul style="list-style-type: none"> Primarily yes 	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> Yes, when available Not enough in the heavy part of the season (he uses 700 to 1000pounds of shrimp per week in height of the season) Uses huge quantities 	<ul style="list-style-type: none"> No or rarely (i.e. If shipment doesn't come in)
Barriers to purchasing locally harvested shrimp?	<ul style="list-style-type: none"> Price often outweighs quality in a "budget tourist area" Timeliness Availability 	<ul style="list-style-type: none"> Consistency Time – staff to peel and devein Finding suppliers/developing a relationship with a supplier Availability Price 	<ul style="list-style-type: none"> Price Availability Competition with shrimp baiting? Lack of quality control Need volume Time for peeling/deveining Shelf life 	<ul style="list-style-type: none"> Availability No/little processing in SC (deveining) for high volume Corporate decides
Overcoming barriers?	<ul style="list-style-type: none"> May not matter to people who visit the beach and only eat shrimp once Restaurants need to absorb cost 	<ul style="list-style-type: none"> Can't say 	<ul style="list-style-type: none"> Better standards and quality control measures Have shrimp processed locally Supply more quantity Consistency 	<ul style="list-style-type: none"> Corporate decides
How much <u>more</u> are you willing to pay per pound for shrimp harvested locally by commercial fisherman?	<ul style="list-style-type: none"> Quality makes a difference Primarily yes/always \$.50 to \$2.00/lb. Or more Need to consider menu price limits 	<ul style="list-style-type: none"> Yes/Maybe – marginal increase Need to consider menu price limits 	<ul style="list-style-type: none"> Yes and No Not if frozen Marginal price increase Need consistency 	<ul style="list-style-type: none"> No Focus on "Gulf Shrimp"
How much <u>more</u> are your customers willing to pay per pound for shrimp harvested locally by commercial fisherman?	<ul style="list-style-type: none"> Wouldn't matter Quality VS. Quantity Primarily yes, particularly if only a marginal increase that would be unnoticeable 	<ul style="list-style-type: none"> Probably, but only so much customers will pay for a meal. 	<ul style="list-style-type: none"> Yes & No 	<ul style="list-style-type: none"> No?

