

**Subsistence Use and Value:
The Sharing, Distribution and Exchange of Wetland
Resources among Households in Coastal Communities**

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Introduction: The Setting

The southeastern half of the Louisiana coast, south and east of Lake Pontchartrain and west through Vermilion Bay, is known geologically as the "Deltaic Plain." The region was formed by the river we today call the Mississippi, which has snaked across the growing land mass contiguous to the Gulf of Mexico in a series of major deltaic lobe formations and through a process of constantly shifting channelization, deposition and erosion (Saucier 1994). The resulting landscape is a low alluvial plain, much of which is at or slightly above sea level, with the primary "high" grounds being the natural levees of current or past distributaries. European expansion interacted with this geological process and deposited settlements along the more prominent slices of natural levees beginning in the 18th century

Coastal Louisiana has always been a "working coast" (Gramling and Hagelman 2005). Today, the complex of ports along the Mississippi from Baton Rouge and New Orleans are the focal point of commerce for 40 percent of the nation that the river drains, approximately 20 percent of the nation's energy supply passes through and is supported from the Louisiana coast, and a third of the nation's seafood originates in the Louisiana coastal wetland (Gramling 1996). The same coast that produces seafood and supports commerce provides the first line of protection for inland communities and cities from the storm surge associated with tropical storms and hurricanes.

The recognition that much of this environment is threatened because of a variety of natural and human processes that have contributed to coastal subsidence and subsequent erosion is a relatively recent phenomenon, but has been highlighted by the 2005 hurricane season with the destruction caused by Katrina and Rita. This has added credence to the already extensive

calls for coastal restoration and support for the plethora of restoration projects that have been proposed. Coastal restoration projects, however, are often large, expensive, and seem to those supporting them ponderously slow in their approval and implementation. A part of the problem lies with the justification process that requires either a formal or informal cost benefit analysis. This approach looks at the direct monetary benefits that can be attributed to the projects in question, rather than examining the more holistic issue of **what is at risk**, such as those activities outlined in the previous paragraph (cf. Laska et al. 2005).

A second problem, and more relevant to this research, is that as impressive as these summary statistics concerning what is at risk are, they miss an important part of what happens in coastal Louisiana and as a result the monetary and non-monetary value of coastal restoration projects initiated in south Louisiana and the benefits realized through such projects have consistently been underestimated. While some have included the economic value of restoration to commercial fisheries, non-market and non-commercial endeavors have not been considered as benefits, or more importantly and relevantly as **what is at risk**, in the assessment of the importance of wetlands to date. The products of the south Louisiana wetlands and marsh areas and the networks to obtain and exchange them are valued resources to the rural residents of these areas. Systematic research on the household subsistence use of these resources and research on the sharing of wetland resources between households is virtually non-existent. Subsistence use and exchange values need to be included as benefits in the evaluation of coastal restoration projects.

There is good reason to believe that in the Louisiana coastal marsh a relatively large proportion of the support of the people is by means of non-market activities – what we are calling “subsistence” activities. People in and around the Louisiana marshes famously eat fish they catch and ducks they shoot and trade or barter. All of these consist of activities that are at

risk, but that do not appear in any existing data. Yet they may be worth more to coastal residents and communities than all the reported resource harvest economic activity, which can be estimated through existing data sources.

There are three ways that current coastal land loss effects subsistence use of coastal resources. First, as barrier islands erode, and subsequently wetlands convert to open water, these resources will become less available in general, because of declines in the relevant species (U.S. Army Corps of Engineers 2004). Second, in a retreat/relocation scenario, which could be necessitated by the deterioration of barrier islands and wetlands, those community members could not maintain their way of life because they would have less proximity, and hence access, to the resources themselves and to the distribution networks that currently exist in coastal communities. Third, this deterioration will affect resource harvesters in different ways, because they work in different ways and use different technology (Wooddell, Forsyth and Gramling 1996). Thus, in addition to overall declines, pieces of the network will begin to disappear. This access and these networks are real and the fact that they are at risk should be taken into account when restoration activities are evaluated. While “everyone knows” that subsistence use of resources in coastal Louisiana is wide spread, there have been few attempts to delineate these practices and no attempts to quantify them. The first step in quantifying these activities is to identify current use patterns.

Review of Literature

Research on subsistence use and practices specific to south Louisiana is scarce, outdated and limited in scope. One piece of Depression Era literature reviewed a new land use program that included a subsistence homestead plan calling for a return to more self-sufficient farming practices thought to be essential to agricultural and national economic recovery (Wilson 1934).

Research focusing on the population decline in the Louisiana Sugar Bowl as a result of the crisis in the sugar cane industry found that large commercial plantations dependent on the sale of a single crop were less able to adapt to the changing environmental conditions when compared to the smaller family farm with its greater diversification of crops and its subsistence nature which allowed for greater adaptation to the changing conditions of the area (Smith 1938).

Later research from the 1960s, while not specific to subsistence, points to the physical and cultural associations of the Louisiana coast. Specifically, this research found that the physical-cultural associations of the deltaic coast are more pronounced and resistant to change and are especially apparent in the area's economy, settlement patterns, port locations, and transportation (Padgett 1969). Dellenbarger, Schupp and Kanjilal (1993) present a summary of south Louisiana fishing households indicating that 70 percent of these families reported fishing for purposes of obtaining fish for family consumption. Kelso et al. (1991) report that almost 89 percent of freshwater anglers and 91 percent of saltwater anglers said that they eat the fish that they catch. One study indicates that almost 62 percent of consumers who reported eating seafood during the previous week had eaten freshwater finfish that they had caught or had been caught by a friend (Anderson and Rice 1992). Although these studies address coastal farming practices and the close ties between those products found in the physical environment and some of the cultural traditions of the area, they do not provide an understanding of the role that subsistence practices play in the economy of the home, or how the exchange of wetland products contribute to maintenance of social networks in and between coastal communities.

Moving beyond the boundaries of south Louisiana, the most extensive research effort on current subsistence practices and the distribution and exchange of subsistence resources is provided by technical reports conducted by the Alaska Department of Fish and Game's Division of Subsistence. General summaries of wild resource distribution and exchange are found in

Langdon and Worl (1981) and Wolfe and Magdanz (1993), while Wolfe et al. (2000) provide a valuable annotated bibliography. Typologies of exchange may be found in the Langdon and Worl (1981) and the Wolfe and Magdanz (1993) reports, as well as in Burch (1988) and Wolfe (1981). One simple typology based on categories of exchange recognized “sharing”, “barter”, and “customary trade”. Sharing consists of generalized reciprocity, delayed reciprocity, redistribution and ceremonial gifts. Barter refers to the exchange of one item for another without the involvement of money. Customary trade includes customary and traditional sales of fish and wildlife at non-commercial levels as well as the sale of furs by trappers and the sale of handicrafts by makers. The reports noted that when the sale of products were included in subsistence accounts it was self-limiting small-scale sales following customary and traditional patterns under conditions or levels defined by a management authority.

Documentation of between household sharing of wild resources (percentages of households “giving” and “receiving” a wild resource category) is a feature of most community ethnographies and provides quantitative information for statistical analysis. By far, between-household sharing of wild resources is the most documented type of exchange in the literature. Behnke (1981) and Ellanna and Sherrod (1986) state that sharing is widely practiced with special attention given to elders and others who cannot harvest for themselves because of age, disability, illness and other factors. Betts (1994) also notes that distribution to non-harvesting family members is widespread. Further, the breadth of the distribution appears to relate to the available freezer space, as people with freezers are given to first, and to avoid spoilage and waste, the remainder is given away for immediate consumption (Behnke 1982). Often sharing extends to non-food items, such as fishing and hunting equipment, as well as access to fish camps and smokehouses (Fall, Foster and Stanek 1983, 1984).

Systematic information on the barter and trade of wild resources is rarely reported. Charnley (1984) notes that fish and wildlife resources were sometimes exchanged or traded for labor, materials, or food resources not commonly available in the area. Cohen (1988) reveals that interior products such as moose or caribou hides were often traded for coastal products not easily attainable in inland regions. Qualitative references to barter and trade are found, but systematic information on frequency, volume and prices is rare.

Qualitative information on the cultural and economic contexts of exchange is found in a number of sources (cf., Anderson et al. 1998, Burch 1988, Fall et al 1991, Fall and Hutchinson-Scarborough 1996, Langdon and Worl 1981, Veltre and Veltre 1981, Wolfe 1981, Wolfe et al 1984). Behnke (1980) reports that with reference to sharing, the first few king salmon of the year are ceremonially shared throughout the community. Cohen (1988) discusses the differences in wild food production patterns of Alaska Native and non-Native households pointing to greater involvement of Native households in traditional networks of distribution and exchange of wild resources between households. Fall (1981) points to the sharing that takes place between the generations as important to heritage and identity and how sharing is extended beyond the primary act of giving. Fall (1981:21)states,

One of the most important means available to the Knik Arm Dena'ina for expression of their heritage and identity remains the sharing of wild resources with their kin. For example, a woman in Knik sends salmon products to her sisters in Anchorage, who in turn share with their own children and grandchildren.

Information on sharing networks between communities is relatively rare (Morris 1986), with few authors reporting such exchanges in any detail (cf., Case and Halpin 1990, Chythlook, Coiley and Wolfe 1994). If details are provided it is in the form of what items are exchanged

(for example, giving marine mammal resources to receive land mammals in exchange) rather than any description of the community network. When reports are made, the information appears in the form of case examples of what is described as being “far-reaching and well-organized” distributions of food resources but details of such community networks of exchange are not provided (cf. Fall, Foster and Stanek 1984).

It is clear that for Alaska, documented cases of the harvesting and sharing of subsistence products between households within communities is commonplace. The practices of trading or bartering are known to occur, but systematic studies of such activities are not as readily available. While reference sometimes occurs to the cultural context of exchange, there is a clear need to investigate the role that sharing, trading and bartering play in maintaining the ethnic identity and cultural heritage of communities. The question remains as to whether similar practices to those in Alaska can be found in Louisiana coastal regions. This research attempts to begin the investigation of subsistence uses and practices in south Louisiana.

Methods

Initial Plans

Originally, this research proposed to initiate an inventory of wetland resources subsistence use and begin the process of documentation of between household sharing through ethnographic techniques; interviewing residents. The resource harvest area we initially targeted was the estuarine systems protected by the barrier shoreline, or barrier island arc, ranging from Raccoon Point eastward to Sandy Point (the southern portion of the Barataria/Terrebonne estuary systems).

Because the key informants in this study constituted a previously unidentified and thus unknown population, a technique known as snowballing was initially proposed, a technique that is specifically appropriate to field ethnographic research (Babbie 1992). Snowball sampling is a method through which the researcher develops an ever-increasing set of sample observations by asking respondents in the sample to recommend others for interviewing. We argued in the original proposal that this sampling procedure which would: 1) allow identifying various subsistence user groups through a referral process and, 2) retain flexibility in the field to identify and sample new groups and networks as they are "discovered" through the sampling process.

Required Modifications

The project was funded in July of 2005 and we were prepared for field research that fall. In late August Hurricane Katrina hit the eastern portion of the region, significantly altering portions of the physical environment, human settlement patterns and potentially the distribution of the renewable resources, and subsequently their uses, that we wished to study. A month later Hurricane Rita had less dramatic, but similar effects on the western portion of the study area.

The aftermath of Katrina and Rita raised at least three new issues. First, we did not know how the whole resource harvest picture was changed. There have been major ecological changes in coastal Louisiana. In addition, to take the example of shrimping, many shrimp boats were destroyed or damaged, as were the businesses that buy and distribute shrimp and the market for shrimp in southern Louisiana has also changed.

Second, many of the people that engage in resource harvest were scattered. With the possible exception of the Civil War, Hurricane Katrina resulted in the greatest diaspora in American history, with more than a million people forced to at least temporarily evacuate.

Finally, it would have been difficult to interview coastal residents about harvest patterns immediately following the storms. Even if individuals were not directly affected, they knew many people who were, and a visit to the proposed study area convinced us that it would have been impossible to get past the influences that the effects of Katrina and Rita would have on any interviews.

This forced a rethinking of the data collection process and, in conjunction with the project management, we decided that we would:

- Delay our data collection to allow the effects of the storms to settle out as much as possible;
- Enlarge the sampling process to include potentially more informants, primarily by changing the sampling procedure to a mail survey instead of in-depth interviews;
- Limit the sampling to the project area least affected by the storms;

We designed and pre-tested the survey instrument during the fall and winter of 2005-2006. We generated a randomly selected mailing list of 5,000 residents from the lower Bayou Lafourche zip codes – the area least impacted by the storms -- using commercially available software. The questionnaires were mailed with postage paid return envelopes in the spring of 2006 and asked respondents about their acquisition and use of 45 coastal species and about whether their use patterns had changed since the hurricanes (see Appendix A for a copy of the questionnaire). The questionnaire also asked about individuals' occupations and about what percentage these species constituted of their total consumption patterns. We received a disappointing 180 returned questionnaires from the mailing. Potential reasons for the low return rate include relocations of people, general social and economic disruptions due to the storms, and the complexity of the survey instrument.

All of our respondents reported that they used in some way at least one of the species on our list. This leads us to believe that the most likely bias in our sample is that those who use subsistence resources were more likely to respond than those who do not. As such, these data can potentially tell us about patterns of subsistence uses, but would be less useful generalizing to the amount of subsistence use in the entire population.

Data Analysis

Appendix B has detailed tables concerning the acquisition and use of the 45 coastal species. A number of patterns are evident. First, recognizing that people only reported use changes about species that they themselves use, in general people report less use of species after the storms. While the modal category in reporting their use before and after the storms is “about the same,” computing the means across all 45 species for use categories “more,” “about the same” and “less” results in obvious differences (see Table 1).

Table 1: Means for Use Before and After the Storms

	N	Mean	Std. Deviation	Std. Error Mean
More	45	1.82	3.20	0.48
About the Same	45	39.49	27.24	4.06
Less	45	21.02	13.01	1.94

It is reasonable to conclude that use patterns, at least those reported approximately six months after the storms, had changed.

One other interesting finding across all species is that respondents report that they are about equally likely to catch/harvest or buy species, unlikely to trade, but are more likely to be given them (see Table 2).

Table 2: Acquisition of Species

	N	Mean	Std. Deviation	Std. Error Mean
Catch/Harvest	45	25.42	23.87	3.56
Given to You	45	33.18	22.12	3.30
Trade	45	1.33	1.76	0.26
Buy	45	23.42	34.98	5.21

Having noted these trends across all species, there are obvious differences in the patterns associated with different species and types of users. In terms of comparisons of species Table 3 displays the use patterns for the 28 most popular species (species that at least 20 percent of the respondents say they eat or consume). There are obvious favorites here with at least half of the respondents saying that they eat or consume 11 species (shrimp, crayfish, redfish, garden vegetables, speckled trout, blue crab, oysters, flounder, satsuma, catfish, and deer). The table also shows how respondents dispose of species they do not use. The same popular saltwater species along with garden vegetables are those most commonly given away, while shrimp are clearly the most common species sold.

Table 4 shows the same species by how respondents obtained them. Again there are some clear patterns in what respondents catch, have given to them, trade, and buy. Clear preferences for individual harvest are saltwater species and berries. The same saltwater species are also common as gifts, although deer is the species most commonly received as a gift. The most commonly purchased species are crayfish, shrimp, crabs, oysters and vegetables.

Interaction between the tables also shows some patterns. For example 47 percent of respondents say they are given redfish, while only 24 percent say they give them away. Likewise, 18 percent of respondents say they are given poule d'eau (coot), while only 4 percent report giving poule d'eau. These indicate patterns of a smaller population of frequent fishers or hunters, with wider networks of friends and relatives that they give to. In the case of poule d'eau it may also indicate their less than stellar reputation as a culinary delight.

Table 3: Species Consumption Patterns*

Species	Eat or Consume	Give away	Trade	Sell	> Monthly
Shrimp	91%	10%	4%	6%	89%
Crayfish	78%	3%	0%	1%	54%
Redfish	76%	24%	1%	0%	49%
Garden Vegetables	73%	11%	2%	1%	67%
Speckled Trout	72%	23%	1%	0%	56%
Blue Crab	67%	9%	2%	2%	58%
Oyster	66%	7%	2%	0%	47%
Flounder	64%	8%	1%	1%	30%
Satsuma	61%	8%	0%	1%	41%
Catfish	57%	6%	1%	2%	41%
Deer	57%	9%	1%	0%	28%
Figs	48%	9%	0%	1%	26%
Chickens/Eggs (Yard)	47%	3%	0%	1%	40%
Blackberry/Dewberry	46%	8%	0%	1%	22%
Ducks	42%	8%	1%	0%	17%
White Trout	40%	13%	1%	0%	17%
Pears	38%	3%	0%	0%	24%
Rabbit	37%	5%	1%	0%	12%
Sassafras (file)	32%	4%	0%	0%	24%
Frogs	32%	4%	0%	0%	9%
Black Drum	29%	11%	1%	1%	13%
Alligator	27%	3%	1%	0%	3%
Loquat (Japanese Plum)	24%	7%	0%	0%	9%
Sacalait	23%	5%	0%	1%	10%
Sheep Head	22%	12%	1%	1%	11%
Poule d'eau (coot)	21%	4%	0%	0%	4%
Persimmon	21%	4%	0%	0%	11%
Turtles	20%	3%	0%	0%	4%

* Percentages may total over 100% since species are used in several ways.

Table 4: How Respondents Obtained Species*

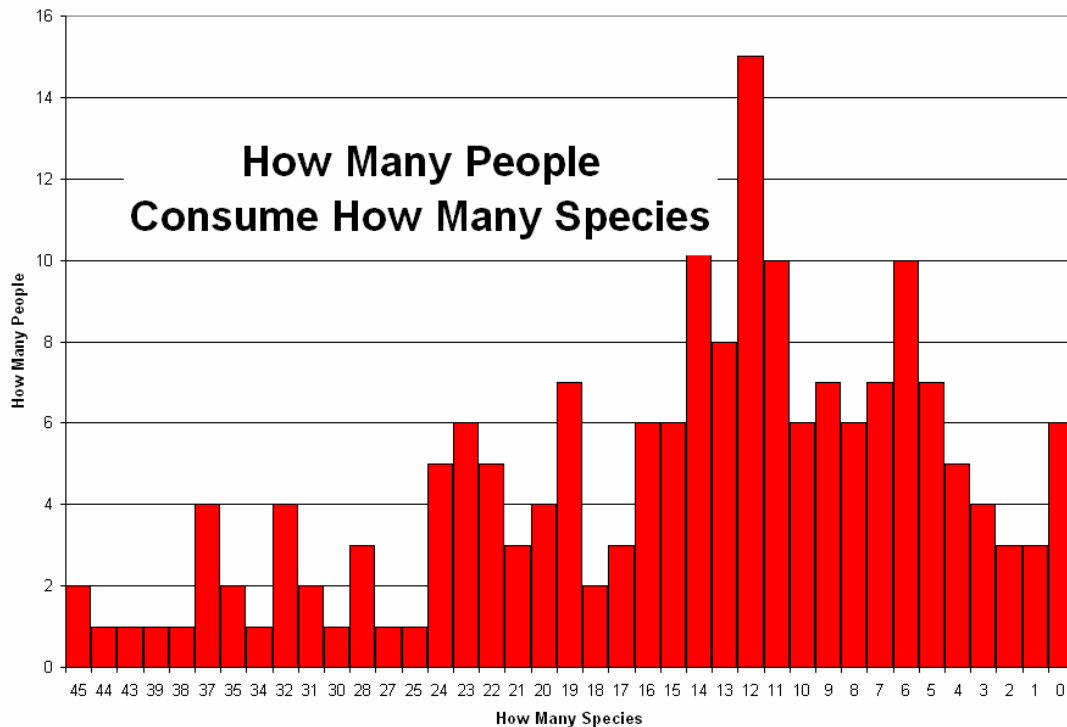
Species	Catch/Harvest	Given to You	Buy	Trade
Speckled Trout	56%	41%	7%	6%
Redfish	54%	47%	6%	1%
Flounder	38%	40%	10%	1%
Blackberry/Dewberry	34%	16%	8%	3%
White Trout	32%	21%	1%	1%
Blue Crab	28%	32%	52%	2%
Shrimp	27%	41%	66%	2%
Figs	26%	28%	7%	2%
Black Drum	25%	15%	1%	2%
Garden Vegetables	24%	34%	52%	1%
Sheep Head	21%	14%	1%	1%
Satsuma	21%	29%	38%	1%
Ducks	19%	34%	4%	1%
Catfish	18%	21%	38%	1%
Deer	16%	52%	3%	1%
Rabbit	16%	27%	3%	1%
Sacalait	15%	14%	1%	1%
Loquat (Japanese Plum)	12%	12%	4%	1%
Crayfish	12%	22%	72%	0%
Oyster	11%	26%	54%	1%
Frogs	10%	21%	12%	1%
Persimmon	8%	10%	7%	1%
Poule d'eau (coot)	7%	18%	2%	1%
Turtles	6%	17%	3%	0%
Pears	6%	13%	28%	1%
Chickens/Eggs (Yard)	5%	16%	37%	2%
Sassafras (file)	2%	10%	25%	1%
Alligator	2%	21%	7%	0%

* Percentages may total over 100% since species are obtained in several ways.

If we look at how individuals cluster instead of species we find similar variety. Among those who answered the question (151 respondents) the 45 species on our original list (see Appendix B) comprise an average of 37 percent of what these respondents eat! However, there is great variation in how many of these species individuals harvest or consume.

Figure 1 displays direct consumption patterns of how many people consume how many of the 45 species on our original list. For example, looking at the figure we can see that only two respondents indicated that they consumed all 45 of the species, while six respondents indicated that they consumed none of the 45 species¹. The modal category was 12 species with 15 respondents indicating that they consumed this number. Obviously there is wide variation in consumption patterns.

Figure 1: Consumption Patterns by Number of Species



¹ They may have traded, given away, or sold one or more of the species.

There is also wide variation in how individuals use the species for other than consumption purposes. Figure 2 shows these distributions. One clear trend is that the more species an individual uses, the more likely that use is for direct consumption.

Figure 2: Use Patterns by Number of Species

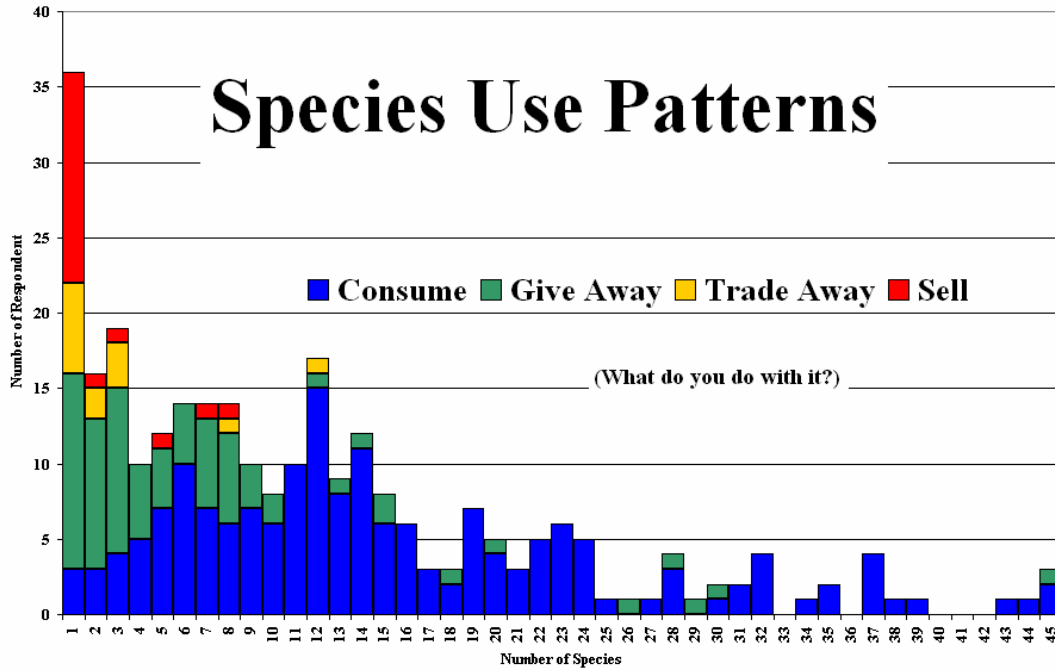
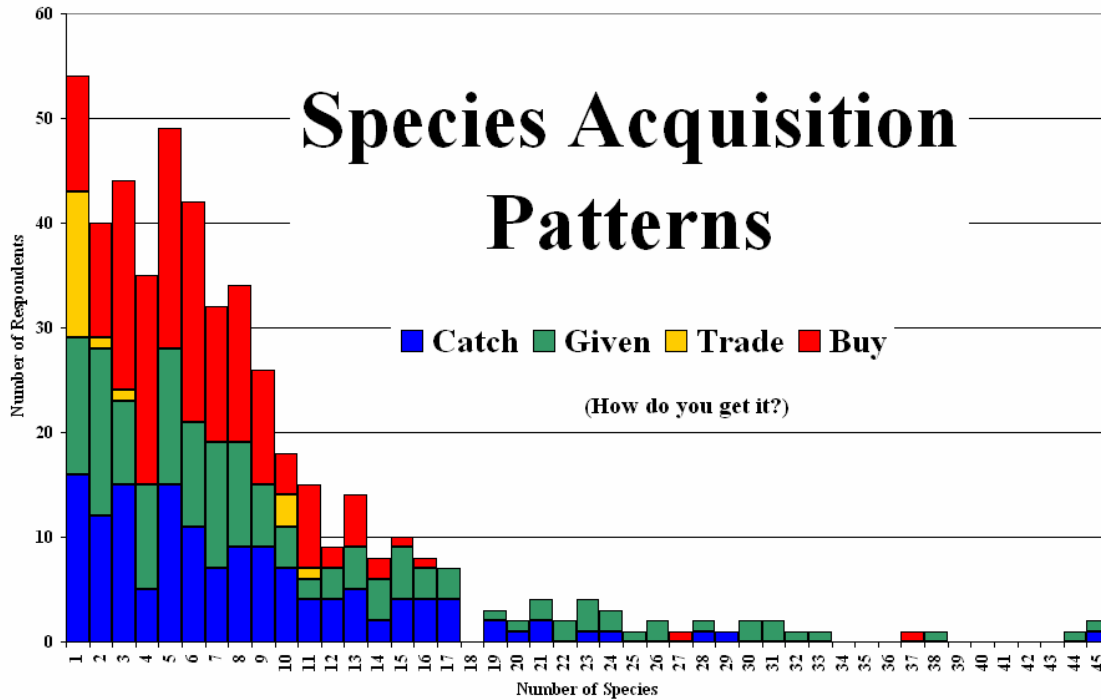


Figure 3: Species Acquisition Patterns by Number of Species



There is also a wide variation in how respondents acquired the species they used. Figure 3 displays these patterns for the number of respondents by the number of species used. The clear trend here is that the greater the number of species used, the greater the chance that respondents will directly harvest or be given the species they use.

We used exploratory factor analysis to examine which harvest practices occurred in clusters in order to see if there were identifiable patterns in the groups of species that people harvested. Some of these factors were obvious and the loadings were strong, some were not obvious and/or the loadings were weak. Table 5 shows these more obvious clusters of harvest patterns.

Table 5: Catch/Harvest Clusters

White Trout	Saltwater Fishing
Speckled Trout	
Redfish	
Flounder	
Black Drum	
Sheep Head	
Shrimp	
Blue Crab	
Horsetail	Construction Material
Black Gum	
Palmetto	
Cypress	
Roseau Cane	Alternative Species ?
Choupique	
Gar	
Croaker	
Mullet	
Alligator	Non Hunters
Rabbit	
Squirrel	
Geese	
Ducks	
Deer	
Poule d'eau (coot)	Horticulture
Satsuma	
Garden Vegetables	
Figs	
Oyster	

Qualitative Data

In the surveys we asked respondents who wanted to talk to us in more detail about subsistence activities to give us their contact information. In order to get a feel for how well ethnographic techniques would work in the hurricane damaged area in-depth interviews were conducted with five of these respondents. Another 10 informal interviews were conducted with (sometimes a group of) people fishing in Bayou Lafourche over the 4th of July weekend. Respondents were asked what species they harvested and what they did with their catch.

Coastal residents have a history of harvesting wetland resources that continues into the present. Most learned to fish, hunt, shrimp and crab as children along side an adult family member. Most of the interviewees stated that their father or grandfather had been employed as a shrimper or trapper at some time, if not for all of their life. Many of the respondents stated that when they were growing up their families were dependent on the harvesting of wetland products for food. Respondents often described their families as “a family that lived off the land as much as they lived off store bought groceries,” and stated that when difficult times placed economic strains on the family that they “...lived more off the land, that’s for sure.” There were no reports from any of the respondents interviewed of having to depend completely on harvested products for feeding their families, but many stated that they “stocked the freezer in case of hard times” or had needed to fish to put food on the table “...a time or two.” One woman replied that she had never had to fish to put food on the table because she had always managed to maintain a job, but she then added, “...if we ever had to do that we could because we know how to fish.” Another man replied that there were times when “we couldn’t afford to buy enough food to last until the next paycheck, so I would take the boys and we would go out to catch our next meal, or try to anyway. I guess I am making it sound worse than it was. We had food but fishing made what we had last longer.”

Respondents were asked about the sharing of their wetland harvest. Most of the respondents replied that if they had enough to go around then they did share. Others replied that they were sometimes the recipients of another's catch, "I think most sharing happens in families or between close friends and neighbors. It does happen now though. I have a nephew who likes to fish more than he likes to eat. He brings me fresh fish whenever he goes out in the marsh or in the Gulf. He's a good boy." One respondent, the son of a commercial fisherman, described the process of sharing.

[Dad] always made sure my grandparents had fish in the freezer. On the other side too, my mom's parents. He would always give to them. My parents had a deep freeze, if it was full then the left over I mean what ever didn't fit in the freezers would be given away. Well, let me back up. First, he would sell whatever he could. Then he would make sure to fill the freezers at home. Then he gave to my grandparents. If there was more left to give, he would give to his brothers and sisters. In lean times, they would do the same. What I mean is that if Daddy got sick or couldn't go fishing, or whatever then his brothers would make sure my mama had enough to feed us all.

One respondent spoke to the importance of sharing, "Giving strengthened the relationships that people had. Sometimes the giving came by having a big family gathering where all the food was shared. I loved those times."

Sharing was not limited to food products. Respondents mentioned that equipment was sometimes shared, "It seems like everybody had a boat. And even if your boat wasn't in good enough shape to take out, you could borrow one. We always had a boat. We didn't always have a boat motor, but that's lagniappe, the motor."

Sharing is seen as distinctly different from trading. Respondents explained that sometimes trading did occur.

There was no exchange of money, but it was understood that if your help was needed for something then you gave what you could. My dad was good at fixing

things, like the boat motors, whatever. If my grandpa or my uncles or aunts needed help fixing something, my Dad would help them out. If a hurricane did damage to a house or a camp, especially if it was a family member or another trapper, my Dad would help out. That was done all the time. It was understood. Everybody was there for each other. Everybody looked out for each other. It was just part of living in this part of the country.

Some respondents talked of the difficulties that commercial shrimpers are facing in today's market. Trading with shrimpers was mentioned by more than one respondent as an important feature of supporting one's neighbors. As one respondent states...

Everybody knows how difficult times are for the shrimpers, and they are our neighbors, some are our family members. People are trying to help, so they will trade their skills for some of the shrimpers catch. For example, my niece will babysit for the kids of the shrimpers and get paid in shrimp. Or, the local mechanic will work on their car, charge for parts, but labor is exchanged for shrimp. I know people here are trying to help, but how long can that last? Eventually those relationships will wear out, I mean, how often can a mechanic trade his labor? Eventually he will need to be paid for his labor in money. The electric company won't take shrimp for paying the light bill. It's not like the old days when you paid the doctor with a bag of pecans and eggs from the chicken. But people are trying to help when they can. I see that happening. It's just a question of how long it can last.

Conclusions and Further Research

Given the findings of the Alaskan research and our findings of a similar fairly intense, widespread, diverse, extensive and complex network of use, sharing, barter and sale of subsistence resources, the safest hypothesis remains that the subsistence economy is too important and too large to be simply ignored, as it is by some of the rather blunt measures of economic activity/costs and benefits typically used in economic impact assessments. In the not too distant future, therefore, the researchers do still believe that there will be much to be gained by gathering ethnographic data on the Louisiana coast at a time when disasters of the proportions of the two recent hurricanes are not still disturbing subsistence practices.

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Appendix A
The Survey Instrument

Louisiana is losing coastal marsh at an alarming rate. While there are many ideas on how to slow or stop this loss, all of these ideas take money and resources. In order to justify spending these funds we need to be able to show how people use the Louisiana coast. In spite of the studies done on the coast, we still don't have a lot of actual scientific data on how real people use the natural foods and other resources they can find along the coast. This survey will help to give us specific information about how people use products that live and grow in coastal Louisiana. It is important that we get your response about how your household uses these coastal resources. This survey is being conducted by the Center for Socioeconomic Research at the University of Louisiana at Lafayette.

Your help is needed in this effort, it doesn't cost anything, we won't share your personal information with anyone. So, please help us by taking about five minutes to fill out these three pages. Thank you for your help!

Please tell us about the household that lives at this address.

How many adult females (18 years or over) live in this household? _____

How many adult males (18 years or over) live in this household? _____

How many Children (under 18 years) live in this household? _____

Please list all the jobs (up to 8) that people in this household have. And check whether these jobs are full time or part time.

1. _____ Full time Part time
2. _____ Full time Part time
3. _____ Full time Part time
4. _____ Full time Part time
5. _____ Full time Part time
6. _____ Full time Part time
7. _____ Full time Part time
8. _____ Full time Part time

On the **other side of this page** there is a table that asks you about what foods or resources you get from fishing, hunting or collecting. Please check each species for how often you use them, how you get them, how necessary you consider them, how you use them and whether the Hurricanes last summer have changed your use. For example if your household eats redfish about once a month, you catch them yourselves and also get them from a friend who catches them, consider them necessary, eats them but also gives them to friends and relatives when you catch a lot, and have not been able to get redfish as often since the hurricanes, you would check as in the example below.

Species	How often does household eat or use it?				How does household get it? Check all that apply				Is it necessary?		What do you do with it? Check all that apply				Since the Hurricanes do you use it...?			
	More than once a week	Weekly	Monthly	Seldom	Catch, harvest	Given to you	Trade	Buy	Yes	No	Eat or consume	Give away	Trade	Sell	More	About the same	Less	Stopped using
Redfish			✓		✓	✓			✓		✓	✓					✓	

If you do not use a species, please leave that line blank.

(over)

About the list above, are there any coastal resources you use, that we forgot? Please list

What percentage of your households food needs are supplied by the food items listed above? _____ %

How many members of your household participate in actively harvesting the coastal resources your household consumes? _____

Aside from common uses, do you use these resources in any uncommon way? Please explain

If you know a lot about harvesting coastal resources, **particularly ones that are not common**, and would be willing to be interviewed about them, please give us the contact information below and which species you would be willing to talk about.

Name: _____

Address: _____

City: _____ State: ____ Zip: _____

Phone: (____) _____

Species: _____

Now we would like to know a little about you.

What is your age? ____ What is your sex? (check in box) Male Female

What is your race? White Black American Indian Asian Hispanic Other

What is your educational level? Less than High School High School Graduate

Some College College Graduate Advanced Degree

Please estimate what your household's annual income is _____.

Appendix B

Table B-1: Since the Hurricanes do you use it...?	More	About the same	Less
Shrimp	2%	60%	24%
Garden Vegetables	9%	52%	8%
Blue Crab	4%	43%	19%
Speckled Trout	2%	46%	27%
Crayfish	1%	44%	31%
Redfish	1%	44%	31%
Oyster	3%	38%	23%
Satsuma	2%	46%	11%
Catfish	1%	37%	13%
Chickens/Eggs (Yard)	7%	33%	7%
Flounder	1%	37%	24%
Deer	2%	38%	15%
Figs	1%	34%	13%
Sassafras (file)	1%	25%	6%
Pears	1%	27%	8%
Blackberry/Dewberry	1%	30%	14%
White Trout	1%	22%	19%
Ducks	1%	24%	17%
Black Drum	1%	18%	12%
Rabbit	0%	23%	14%
Persimmon	1%	15%	8%
Sheep Head	1%	17%	12%
Sacalait	1%	14%	11%
Loquat (Japanese Plum)	2%	16%	7%
Frogs	0%	21%	12%
Bream	1%	11%	9%
Other Saltwater Species	1%	9%	7%
Other? _____	1%	5%	2%
Poule d'eau (coot)	0%	14%	9%
Cypress	0%	7%	5%
Turtles	0%	11%	11%
Medicinal Plants	1%	9%	4%
Croaker	1%	11%	9%
Soco (Muscadine)	1%	9%	6%
Squirrel	0%	16%	7%
Mullet	0%	9%	8%
Alligator	0%	16%	11%
Geese	0%	9%	7%
Choupique (bowfin)	0%	9%	7%
Roseau Cane	1%	7%	5%
Gar	0%	6%	6%
Goat	0%	7%	7%
Palmetto	0%	6%	5%
Horsetail	0%	4%	5%
Black Gum	0%	5%	5%

Table B-2: How often do you eat or use it?	More than once a week	Weekly	Monthly	Seldom	>=once a month
Shrimp	16%	41%	32%	6%	89%
Garden Vegetables	39%	21%	7%	15%	67%
Blue Crab	4%	19%	34%	21%	58%
Speckled Trout	3%	16%	36%	29%	56%
Crayfish	2%	15%	37%	31%	54%
Redfish	3%	8%	39%	37%	49%
Oyster	4%	11%	32%	31%	47%
Satsuma	9%	14%	18%	31%	41%
Catfish	1%	11%	29%	26%	41%
Chickens/Eggs (Yard)	19%	14%	7%	14%	40%
Flounder	2%	6%	22%	45%	30%
Deer	1%	6%	21%	39%	28%
Figs	6%	6%	14%	34%	26%
Sassafras (file)	1%	11%	13%	17%	24%
Pears	3%	6%	15%	24%	24%
Blackberry/Dewberry	3%	3%	16%	36%	22%
White Trout	1%	4%	12%	33%	17%
Ducks	0%	2%	16%	37%	17%
Black Drum	0%	3%	11%	30%	13%
Rabbit	0%	2%	10%	38%	12%
Persimmon	2%	2%	7%	21%	11%
Sheep Head	0%	2%	8%	26%	11%
Sacalait	0%	2%	8%	23%	10%
Loquat (Japanese Plum)	2%	2%	6%	26%	9%
Frogs	0%	1%	8%	35%	9%
Bream	0%	1%	8%	19%	8%
Other Saltwater Species	1%	2%	5%	18%	8%
Other? _____	2%	1%	2%	6%	5%
Poule d'eau (coot)	1%	0%	4%	28%	4%
Cypress	2%	0%	2%	16%	4%
Turtles	0%	0%	4%	28%	4%
Medicinal Plants	1%	1%	2%	18%	3%
Croaker	0%	1%	2%	25%	3%
Soco (Muscadine)	0%	1%	2%	19%	3%
Squirrel	0%	1%	3%	27%	3%
Mullet	1%	0%	2%	24%	3%
Alligator	0%	1%	2%	34%	3%
Geese	0%	1%	2%	24%	2%
Choupique (bowfin)	0%	1%	2%	23%	2%
Roseau Cane	0%	0%	2%	19%	2%
Gar	0%	1%	1%	20%	1%
Goat	0%	1%	0%	19%	1%
Palmetto	0%	0%	1%	17%	1%
Horsetail	0%	0%	0%	16%	0%
Black Gum	0%	0%	0%	17%	0%

Table B-3: How do you get it? Check all that apply	Catch, harvest	Given to you	Trade	Buy
Shrimp	27%	41%	6%	66%
Garden Vegetables	24%	34%	3%	52%
Blue Crab	28%	32%	2%	52%
Speckled Trout	56%	41%	1%	7%
Crayfish	12%	22%	1%	72%
Redfish	54%	47%	1%	6%
Oyster	11%	26%	2%	54%
Satsuma	21%	29%	2%	38%
Catfish	18%	21%	1%	38%
Chickens/Eggs (Yard)	5%	16%	1%	37%
Flounder	38%	40%	2%	10%
Deer	16%	52%	1%	3%
Figs	26%	28%	1%	7%
Sassafras (file)	2%	10%	0%	25%
Pears	6%	13%	1%	28%
Blackberry/Dewberry	34%	16%	1%	8%
White Trout	32%	21%	1%	1%
Ducks	19%	34%	1%	4%
Black Drum	25%	15%	1%	1%
Rabbit	16%	27%	1%	3%
Persimmon	8%	10%	1%	7%
Sheep Head	21%	14%	1%	1%
Sacalait	15%	14%	0%	1%
Loquat (Japanese Plum)	12%	12%	1%	4%
Frogs	10%	21%	1%	12%
Bream	13%	9%	0%	1%
Other Saltwater Species	8%	8%	0%	4%
Other? _____	5%	2%	1%	4%
Poule d'eau (coot)	7%	18%	2%	2%
Cypress	2%	5%	0%	6%
Turtles	6%	17%	0%	3%
Medicinal Plants	3%	8%	0%	2%
Croaker	11%	11%	1%	2%
Soco (Muscadine)	6%	9%	0%	3%
Squirrel	8%	16%	0%	1%
Mullet	7%	11%	1%	3%
Alligator	2%	21%	1%	7%
Geese	3%	12%	0%	2%
Choupique (bowfin)	7%	10%	1%	2%
Roseau Cane	3%	6%	0%	1%
Gar	4%	8%	0%	1%
Goat	1%	8%	0%	2%
Palmetto	2%	6%	0%	1%
Horsetail	1%	5%	0%	1%
Black Gum	1%	4%	0%	1%

Table B-4: What do you do with it? Check all that apply	Eat or consume	Give away	Trade	Sell
Shrimp	91%	10%	4%	6%
Garden Vegetables	73%	11%	2%	1%
Blue Crab	67%	9%	2%	2%
Speckled Trout	72%	23%	1%	0%
Crayfish	78%	3%	0%	1%
Redfish	76%	24%	1%	0%
Oyster	66%	7%	2%	0%
Satsuma	61%	8%	0%	1%
Catfish	57%	6%	1%	2%
Chickens/Eggs (Yard)	47%	3%	0%	1%
Flounder	64%	8%	1%	1%
Deer	57%	9%	1%	0%
Figs	48%	9%	0%	1%
Sassafras (file)	32%	4%	0%	0%
Pears	38%	3%	0%	0%
Blackberry/Dewberry	46%	8%	0%	1%
White Trout	40%	13%	1%	0%
Ducks	42%	8%	1%	0%
Black Drum	29%	11%	1%	1%
Rabbit	37%	5%	1%	0%
Persimmon	21%	4%	0%	0%
Sheep Head	22%	12%	1%	1%
Sacalait	23%	5%	0%	1%
Loquat (Japanese Plum)	24%	7%	0%	0%
Frogs	32%	4%	0%	0%
Bream	18%	6%	0%	1%
Other Saltwater Species	17%	4%	0%	1%
Other? _____	7%	2%	0%	0%
Poule d'eau (coot)	21%	4%	0%	0%
Cypress	8%	3%	1%	0%
Turtles	20%	3%	0%	0%
Medicinal Plants	9%	4%	0%	0%
Croaker	13%	7%	1%	0%
Soco (Muscadine)	14%	5%	0%	0%
Squirrel	19%	3%	0%	0%
Mullet	13%	6%	1%	1%
Alligator	27%	3%	1%	0%
Geese	13%	3%	0%	0%
Choupique (bowfin)	11%	4%	1%	1%
Roseau Cane	7%	4%	0%	0%
Gar	7%	4%	0%	1%
Goat	8%	3%	0%	1%
Palmetto	7%	3%	0%	0%
Horsetail	4%	4%	0%	0%
Black Gum	4%	4%	0%	0%