ACES Project Summary

Period Covered by the Report:	09/01/01-12/31/03
Date of Report:	September 6, 2003
Title:	Monitoring Environmental Orientations and Policy Orientations of Alabama Residents: A Longitudinal Data Base for Alabama Coastal Zone Management
Investigators:	Drs. J. Steven Picou and Keith Nicholls
Institution:	University of South Alabama
Research Category:	Regular Grant Proposal
Project Period:	09/01/01-08/31/02

Objectives of the Research Project: This research proposed to develop a longitudinal database for monitoring the environmental orientations and behaviors of Alabama residents over time. The 1999 probability environmental study of residents in Mobile and Baldwin counties provides an initial baseline of information for monitoring changes in public opinions for coastal residents. This information will allow for a comparative analysis of changes in environmental orientations of Alabama coastal residents. The results from these surveys will provide an understanding of changes in public opinion over time in environmental orientations and resource use within the ACZ. In addition, we were able to collect information regarding public opinion on current environmental concerns, i.e., methylmercury contamination of fish.

Progress Summary/Accomplishments:

A survey instrument of approximately 75 items was developed using baseline questions from an earlier study done in 1999 with a similar sample of Alabama Coastal residents. New questions were added based on pertinent environmental issues. The interview took approximately 15 to 20 minutes with a sample size of 800. The interviews were conducted by the USA Polling race and sex.

Dependent variable: Seafood risk was assessed using a ten item scale in which respondents were asked to assess the risk of eating certain types of fish from no risk at all to a major risk. The following items were included:

- tuna;.
- king mackerel;
- grouper;
- farm-raised catfish;
- farm-raised tilapia;
- perch;
- red snapper;
- speckled trout;
- flounder;
- large-mouth bass.

Independent variables: The following independent variables were used to predict one's

assessment of risk associated with eating fish from the Alabama Coastal zone. First, environmental problems is a scale composed of seven items in which respondents were asked to assess how much of a problem the following were to the area using the scale “not a problems” to “serious problem:”

- contamination of the marine environment;
- water pollution;
- loss of land to development;
- loss of wetlands;.
- industrial accidents involving dangerous emissions or spills;
- bacterial contamination from septic tanks and sewer systems.

A methylmercury awareness scale included the four items:

- seafood taken from the Gulf of Mexico is safer now than it was 50 years ago;
- I trust the government agencies responsible for seafood safety in the Gulf of Mexico;
- As long as amounts of methylmercury do not exceed government standards, eating seafood is not a health risk;
- Cooking fish thoroughly will reduce the risk of methylmercury contamination.

Respondents were asked to strongly agree, agree, neither agree nor disagree, disagree or strongly disagree with these statements.

A third scale which concerned with aquaculture also asked respondents to strongly agree, agree, neither agree nor disagree, disagree or strongly disagree with the following statements:

- The government should do more to promote the production of farm-raised fish;
- Eating farm-raised catfish is safer than eating fish caught in the Gulf of Mexico.

Respondents were also asked to assess the following item using the same scale as mentioned above: “Larger fish are more likely to have higher levels of methylmercury than smaller fish.”

Results

Table 1. Demographic Characteristics of Alabama Coastal Residents.

Average age		49.9
Educational levels (percent)		
	Did not graduate high school	6.3
	High school diploma	28.4
	Some college	35.7
	Bachelor's degree or more	29.7
Residence (percent)	**Mobile county**	52.2
	Baldwin county	47.8
Average income		$40,000-$60,000
Gender (percent)	**Male**	48.3
	Female	51.7

n=800

The average age of our sample was approximately 50 with the majority (65.4 percent) having at least some college or more. The average income range was 40,000 to 60,000 dollars and the sample was split evenly along gender lines and county of residence.

Table 2. Patterns of Fish Consumption among Residents of the Alabama Coastal Zone.

	Mean			
	Male	**Female**	**White**	**Nonwhite**
Number of times per month fish is consumed	4.6	3.7*	4.1	4.1

*p= .05; n=790

There were not any significant differences between whites and nonwhites in terms of fish consumption patterns. Males, on the other hand, consumed more fish per month than did females (4.6 times per month as opposed to 3.7 times a month).

Table 3. Awareness of the Risks Associated with Methylmercury Contamination of Fish among Alabama Coastal Residents by Gender and Race.

	Percent (Yes)			
	Male	**Female**	**White**	**Nonwhite**
As long as amounts of methylmercury do not exceed government standards, eating seafood is not a health risk.	40.3	37.9	39.9	36.4
Cooking fish thoroughly will reduce the risk of methylmercury contamination.	44.7	49.2	39.3	67.5***
Larger fish are more likely to have higher levels of methylmercury than smaller fish.	71.5	56.9**	62.0	72.1*
Read articles in the Mobile Register about mercury contamination in fish.	74.6	59.1***	69.1	59.3*
Changed seafood habits as a result of reading these articles.	28.4	45.0***	33.7	43.8*
Switched to eating types of fish less prone to mercury contamination	75.3	64.4	64.2	83.7*
Aware of government advisories regarding limiting seafood consumption	43.8	38.5	44.8	29.8***

***p<.001; **p<.01; *p<.05; n=790

When respondents were asked a series of questions pertaining to the issue of methylmercury contamination of fish, several significant differences were noted. In terms of awareness as it relates to the methylmercury contamination of fish, males and whites were more cognizant of the particulars associated with this issue. For example, 71.5 percent of males as opposed to 56.9 percent of females were aware of the fact that larger fish are more likely to have higher levels of methylmercury than do smaller fish. For whites and nonwhites, a similar pattern was noted. Even more striking is the finding that 67.5 percent of nonwhites believe that cooking fish thoroughly will reduce the risk of methylmercury contamination. This indicates a series gap in knowledge within the minority community regarding this issue. Whites and males were also more likely to have read the recent series of articles in the Mobile Register which profiled methylmercury contamination of fish. Interestingly, though, while more males and whites had read these articles, females and nonwhites were more likely to change their behavior as a result of being informed on this issue. Finally, whites (44.8 percent) were more aware than nonwhites (29.8 percent) of government advisories regarding limiting seafood consumption.

Table 4. Alabama Coastal Residents Assessment of the Risks Associated with Consumption

Various Fish taken from the Alabama Coastal Zone by Gender and Race.

	Percent (Moderate or Major Risk)			
	Male	**Female**	**White**	**Nonwhite**
Tuna caught in the Gulf of Mexico	36.7	43.3	36.9	48.8*
King mackerel caught in the Gulf of Mexico	45.2	50.6	46.1	52.6
Red snapper caught in the Gulf of Mexico	37.7	44.5*	39.5	45.0
Grouper caught in the Gulf of Mexico	40.1	47.3	40.9	52.0***
Flounder caught in the Mobile Bay Estuary	42.7	48.6	44.2	48.9
Speckled trout caught in the Mobile Bay Estuary	43.2	49.2	45.5	47.4
Large-mouth bass caught in the Mobile Bay Estuary	45.1	52.0	46.6	52.9
Perch caught in the Mobile Bay Estuary	37.2	47.7	41.2	44.6
Farm-raised catfish	13.7	16.7	14.6	17.5
Farm-raised tilapia	13.9	17.4	12.9	23.4*

*p<.05; ***p<.001; n=687

When asked to assess the risks associated with eating certain types of fish taken from the Alabama Coastal Zone, few differences were noted between males and females and whites and nonwhites. Nonwhites were more likely to view the consumption of tuna, grouper and farm-raised tilapia as being greater than did whites while females assessed the risk of eating red snapper as being greater.

Table 5. Predictors of Seafood Risk: Multiple Regression

	Model 1			Model 2		
	β	Std. error	t	β	Std. error	t
Race	.12	.87	2.19*	.24	1.03	3.69**
Gender	.13	.77	2.41*	.06	.94	.89
Age	.02	.02	.29	.15	.03	2.26*
Education	.01	.37	.08	-.07	.44	-1.07
Income	.01	.33	.10	.04	.40	.58
Env. problems				.26	.13	4.00***
Mercury awareness				-.22	.15	-3.37**
Aquaculture				-.02	.26	-.25
Fish size				-.14	.40	-2.17*
Fish consumption				-.02	.12	-.26
Constant		2.57	6.59***		5.01	2.65**

***p<.001; **p<.01; *p<.05
Model 1 Adjusted R^2=.02; n=347
Model 2 Adjusted $R^{2=}$.21; n=214

In Table 5, the factors which predict seafood risk are assessed. The first model includes demographic predictors of risk associated with consuming fish from the Alabama Coastal zone. From this model, we conclude that nonwhites and females are more likely to perceive greater risks associated with the consumption of fish. For the second model, in terms of demographic predictors, we see that race remains a predictor of the risk associated with the consumption of fish as well as with age (as individuals age, they are more likely to view the consumption of fish as a risky behavior). In addition, those individuals who perceive there to be more problems with the environment are also more likely to view the consumption of fish as risky. Those individuals who were more informed in terms of the methylmercury issue (mercury awareness) were also more likely to perceive the consumption of fish as a risky behavior. Finally, individuals who did not perceive larger fish to be more contaminated than smaller fish (fish size) were also more likely to view the consumption of fish from the Alabama Coastal zone as risky. This finding indicates a lack of general knowledge concerning the methylmercury issue. Interestingly, patterns of fish consumption was not a predictor of seafood risk which indicates that awareness does not necessarilty translate into behavioral changes. As noted previously, seafood consumption and its related activities are a major part of the culture of the Alabama Coastal zone.

Publications/Presentations:

J. Steven Picou, Cecelia Formichella and Keith Nicholls. 2002. "Perceptions of Seafood Risk among Residents along the Alabama Gulf Coast." Paper presented at the annual meetings of the Society for Applied Sociology, October.

Future Activities: The investigators will continue to analyze the data, drawing comparisons between the two years of data and prepare presentations and publications from this analysis.

Relevant Web Sites: None

Supplemental Keywords: environmental attitudes, perceptions of risk, methylmercury contamination, public opinion