

# **Public Awareness and Perceptions of Wetland Loss in Coastal Louisiana**

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## **Abstract**

We conducted a self-administered mail survey of 4,111 residents of the Mississippi River Valley during spring 2006. Questionnaire items addressed awareness of problems associated with coastal erosion, attitudes toward ecosystem restoration in general and coastal wetlands specifically, and support for policies and practices for coastal wetland restoration. The sample frame was divided into 4 strata: Upper Mississippi Valley (UMV) (N = 1,373); Lower Mississippi Valley (LMV) (N = 1,371); state of Mississippi (N = 456); and Louisiana (N = 911). We received 1,441 (35.1%) total responses; 513 (37.4%) UMV, 437 (31.2%) LMV, 167 (36.6%) Mississippi, and 324 (35.6%) from Louisiana. Although a majority (71%) of respondents across the 4 regions perceived coastal wetland loss to be a very important issue and a majority (68%) also viewed restoration coastal wetlands as very important, few (7%) were aware of the America's Wetland education campaign. As expected awareness of coastal erosion and restoration activities was higher among Louisiana residents, however awareness of educational programs was also low (17%) among members of this group, as well. Support for greater returns of oil and gas royalties existed across residents from each of the 4 regions, with a significant majority (66% overall) favoring funding equal to other states. Public support was strong for lands created through restoration projects undertaken with public funds to become public lands. Results of this study indicate a public receptive towards receiving information regarding coastal wetland loss and supportive of restoration efforts, however such information is perceived to be lacking given the low awareness and understanding exhibited by respondents to this survey.

## **Introduction**

Coastal Louisiana offers the nation a plethora of commodities. These assets range from providing more than one-third (approximately 40%) of the country's seafood to supplying over one-fourth of its oil and gas supply. Although these commercial goods tend to garner the most attention, the resource that facilitates these goods conversely deserves the national recognition. This precious commodity has been coined as "America's Wetland" by a national awareness and education campaign initiated in August of 2002 by then-Governor Mike Foster. Despite the campaign's claim that it has increased public awareness of coastal erosion, it may be that the importance of Louisiana's wetlands still remains ambiguous to the majority of the nation. It is

vital that the American public understand that the loss of coastal wetlands is not just a local crisis if the issue is to receive the policy priority it requires.

The benefits of restoring Louisiana's wetlands will far exceed the cost. The functions, natural resources, and goods that Louisiana's wetlands provide contribute substantially to the national economy. The seafood industry depends on these wetlands to provide habitat and sanctuary for most of the marine life of the Gulf of Mexico. It is here in coastal Louisiana that one-third of the nation's seafood is produced. This area leads the nation in production of oysters and supplies 50% of the nation's shrimp. The wetlands also serve as a protection barrier for many oil and gas pipelines. Without the protection provided from the wetlands, these pipelines would become susceptible to storm damage and other environmental elements. The Port of South Louisiana, one of the most important ports in the nation is also located in the wetlands of Louisiana along with seven of the top ten commercial fishing ports. Commercial values only account for a portion of the wetlands merit. They also serve as a recreation headquarters for hunting, fishing, and ecotourism. In 2000, an estimated 5 million species of migratory waterfowl utilized habitat in Louisiana's wetlands (Louisiana Department of Wildlife and Fisheries, 2000). In 2005, Louisiana's tourism industry was projected to top \$10 billion dollars (Louisiana Department of Culture Recreation, and Tourism Annual Report, 2004). There are also numerous species of wildlife that depend on the wetlands to provide food, safety, and habitat to ensure their survival. It is within this sensitive coastal ecosystem that many species of neo-tropical migrant birds come to breed. Moreover, eleven threatened/endangered species have been reported to live and thrive off Louisiana's coastal wetlands (Louisiana.gov, 2006). The brown pelican, previously on the endangered species list, now inhabit the barrier islands of coastal Louisiana (Louisiana Department of Natural Resources, 1999). Louisiana's Wetlands also serve as a natural sewer system able to remove chemicals from water, erosion and flood control, and storm buffers (USGS, 2006). If 80 miles of coastal marsh below New Orleans had been restored prior to hurricanes Katrina and Rita, the city would have sustained substantially less flooding (America's Wetland, 2006).

In light of the recent hurricanes that ravished coastal Louisiana during late summer and fall 2005, some attention has been given to the importance of wetland restoration. In a preliminary report, the USGS has declared that south Louisiana lost more than 100 miles of marsh as a result of these horrific storms. Wetland deterioration, the alteration of vegetated

ground to open marsh, is not a new problem, however (America's Wetland, 2006). Since 1930, Louisiana's net loss has been a staggering 1.2 million acres. The current rate of loss total to about 22,000 acres annually which total to about a football field every half-hour (www.louisiana.gov, 2006). Human activity alone accounts for 70% of the damage wetlands sustain. It has been estimated that by 2050 we could lose an additional 800,000 acres if the current rate of loss is not slowed and awareness and support for coastal restoration funding is not made a national priority (USGS, 2006).

## **Methods**

The population in this study consisted of a random sample of 4,500 homeowners residing in the Mississippi River Valley. This area represents a population that may experience a closer connection to the problems of coastal Louisiana and Mississippi due to proximity and use of the Mississippi River for commerce. The sample frame was stratified into 4 groups: 1) 1500 residents of the Lower Mississippi Valley (LMV), consisting of the states of Arkansas, Kentucky, Louisiana, Mississippi, and Tennessee; 2) 1500 residents from the Upper Mississippi Valley (UMV), specifically from the states of Iowa, Illinois, Minnesota, Missouri, and Wisconsin; and 3) 1500 residents from the coastal states (CS) of Louisiana (n = 1000) and Mississippi (N = 500). The difference in sample size between Louisiana and Mississippi was due to relative size of the coastal region of those states and population differences in the coastal areas. Overall sample size was within the 95% confidence interval at +/- 3% sampling error. Participants were randomly selected from property tax data bases purchased from Survey Sampling, Inc. (Fairfield, CN).

A mail survey was deemed appropriate for this study due to several reasons. A mail survey allowed the researchers to address complicated issues and gather more data than other methods (i.e., telephone or Internet survey). Due to the large sample frame (4,500 homeowners), a mail survey was more cost effective and allowed the researchers to reach a large geographical area. Respondents to mail surveys were also permitted to complete the survey on their own time unlike phone/personal interviews where the respondent is forced to complete the survey immediately if they wish to participate. An Internet was ruled impractical, due to questionnaire access to the Internet by individuals in the sampled population.

A self-administered mail-back survey, accompanied by a cover letter and stamped return envelope (hereafter referred to as “complete packet”) was sent to homeowners selected for this study. Questionnaires and envelopes were coded with reference numbers corresponding to names and addresses listed in the sample database. The method utilized to administer the survey followed guidelines for the modified Dillman approach (Dillman 2000). Respondents were informed that participation in the survey was strictly voluntary and their responses remain completely confidential. The survey was administered beginning in May of 2006 and consisted of 3 mailings of the complete packet to nonrespondents. Non-respondents were mailed a reminder postcard 10 days after the initial mailings. A survey wave consisted of the complete packet followed 10 days later by a reminder postcard to nonrespondents. A total of three survey waves were administered for this study. The survey questionnaire items were developed using information available to the public via on-line resources (e.g., Louisiana state government agency websites, and others). The questionnaire was then reviewed by experts in coastal restoration and coastal resources.

Responses were coded as nominal, categorical, or interval data depending on the nature of the questionnaire item using SPSS 14.0 (SPSS 2006). For cross-regional comparisons (i.e., UMV, LMV, and CS) weights were applied to responses based on populations of those regions as of the 2005 census estimate provided by the US Census Bureau (US Department of Commerce, Bureau of Census 2005). In order to compare differences for response by region data were analyzed using One-way Analysis of Variance (ANOVA) tests for variables with multiple responses. For variables with bivariate responses (typically “Yes” or “No”) Pearson’s Chi-square was used to denote significant differences across the 4 regions.

## **Results**

We received a total of 1,441 (35.1%) completed questionnaires from across the sample strata for the study. Responses by region were: Upper Mississippi Valley (UMV) 513 (37.4%); Lower Mississippi Valley (LMV) 437 (31.9%); Mississippi 167 (36.6%); Louisiana 363 (39.5%). Thirty-nine questionnaires were received from former residents of Louisiana now residing in other states and were combined with the Louisiana group.

*Perceived Importance of Wetlands and Coastal Restoration*

Participants were asked to indicate the level of importance various environmental issues had to them using a 5-point scale with 1 = “Not At All Important” to 5 = “Extremely Important”. Several issues relating to coastal erosion and coastal wetland restoration were presented among the issues. Participants gave strong support for “Reducing coastal wetland loss,” with 71% of respondents stating it was “very important” to “extremely important” to them (Table 1). This issue was very to extremely important to respondents from each of the strata throughout the Mississippi Valley, however a larger majority (88%) from Louisiana rated this issue higher than other regions in the study. There was no apparent difference in responses between residents of the state of Mississippi and those of the other states in the Upper or Lower Mississippi Valley.

Table 1. Perceived importance of reducing coastal wetland loss by region. ( $F = 38.44, p < 0.001$ )

	Not At All Important (%)	Slightly Important (%)	Moderately Important (%)	Very Important (%)	Extremely Important (%)	Mean
Upper Mississippi Valley (N=383)	2	8	26	36	29	3.8
Lower Mississippi Valley (N=312)	3	9	27	37	25	3.7
Mississippi (N=118)	3	5	23	38	31	3.9
Louisiana (N=312)	1	4	7	23	65	4.5
Total (N=1125) (Eta <sup>2</sup> = 0.309)	2	7	20	33	38	

Importance of protecting wetlands was the next issues presented to survey participants. No distinction was made between coastal and freshwater wetlands for this response. Residents of Mississippi (mean = 3.9) rated the issues as important as those in the Upper Mississippi Valley states, and similar to those in the Lower Mississippi Valley (mean = 3.8). Louisiana respondents

perceived the issue as more important (85%) than members of the other strata. This importance among Louisiana respondents accounted for the significant difference in responses across the 4 groups ( $F = 25.56, p < 0.001$ ).

Table 2. Perceived importance of protecting wetlands by region. ( $F = 25.56, p < 0.001$ )

	Not At All Important (%)	Slightly Important (%)	Moderately Important (%)	Very Important (%)	Extremely Important (%)	Mean
Upper Mississippi Valley (N=381)	1	7	26	35	31	3.9
Lower Mississippi Valley (N=310)	2	7	28	37	26	3.8
Mississippi (N=118)	3	6	19	42	31	3.9
Louisiana (N=312)	1	4	10	25	60	4.4
Total (N=1121) ( $\text{Eta}^2 = 0.248$ )	2	6	21	34	37	

Perceived importance of restoring damaged ecosystems was relatively constant among respondents from the Upper and Lower Mississippi Valley and the state of Mississippi, with means for the 3 groups at 3.8 (UMV and MS) and 3.7 for the LMV (between “moderately Important” and “Very Important”) (Table 3). Respondents from Louisiana perceived the importance of restoring damaged ecosystems higher than respondents from the other 3 groups, with a mean importance level of 4.2 (between “Very Important” and “Extremely Important”). Reducing the “dead zone” in the Gulf of Mexico was perceived as lower in importance by respondents across the 4 groups than previous questionnaire items presented above (Table 4). A pattern of response similar to the previous issues for perceived importance of reducing the hypoxic zone was noted: respondents from Louisiana rated the issue of higher importance (mean = 4.5) than residents of either the UMV, LMV, or Mississippi, which reported lower mean importance (3.4, 3.4, and 3.6, respectively) than in the 3 issues presented above.

Table 3. Importance of restoring damaged ecosystems, by sample strata. ( $F = 11.18, p < 0.001$ )

Restoring damaged ecosystems	Not At All Important (%)	Slightly Important (%)	Moderately Important (%)	Very Important (%)	Extremely Important (%)	Mean
Upper Mississippi Valley (N=380)	2	8	28	36	26	3.8
Lower Mississippi Valley (N=311)	3	9	25	37	26	3.7
Mississippi (N=118)	3	9	20	42	28	3.8
Louisiana (N=310)	1	6	18	28	47	4.2
Total (N=1119) ( $\text{Eta}^2 = 0.117$ )	2	8	24	35	32	

Table 4. Perceived importance of reducing the “dead Zone” in the Gulf of Mexico by region. ( $F = 15.07, p < 0.001$ )

Reducing the “dead Zone” in the Gulf of Mexico	Not At All Important (%)	Slightly Important (%)	Moderately Important (%)	Very Important (%)	Extremely Important (%)	Mean
Upper Mississippi Valley (N=371)	6	17	31	29	17	3.4
Lower Mississippi Valley (N=300)	7	13	33	28	19	3.4
Mississippi (N=116)	6	11	23	35	24	3.6
Louisiana (N=302)	2	9	21	33	34	4.5
Total (N=1089) ( $\text{Eta}^2 = 0.202$ )	5	13	28	31	23	

The final issue to be rated for perceived importance was “Protecting our coasts from hurricanes” (Table 5). Louisiana residents responded with the highest mean (4.5) across the 4 groups, followed by residents of Mississippi (mean = 4.2), respondents from the Lower Mississippi Valley (mean = 3.6), and Upper Mississippi Valley (mean = 3.4). Differences between the 4 groups were significant ( $F = 71.54, p < 0.001$ ), due to the higher levels of importance reported by Louisiana residents (88% “Very” to “Extremely” Important) compared especially with the Upper and Lower Mississippi Valley. Not surprising given the hurricane season of 2005, respondents from Louisiana and Mississippi were more similar in their importance ratings for this issue than others.

Table 5. Perceived importance of protecting our coasts from hurricanes, by region. ( $F = 71.54, p < 0.001$ )

Protecting our coasts from hurricanes	Not At All Important (%)	Slightly Important (%)	Moderately Important (%)	Very Important (%)	Extremely Important (%)	Mean
Upper Mississippi Valley (N=371)	7	17	28	26	23	3.4
Lower Mississippi Valley (N=300)	5	13	27	27	28	3.6
Mississippi (N=116)	3	3	17	25	53	4.2
Louisiana (N=302)	1	3	8	17	71	4.5
Total (N=1089) ( $\text{Eta}^2 = 0.427$ )	4	11	21	23	41	

#### *Awareness of Wetland Loss and “America’s Wetland” Campaign*

Slightly less than two-thirds of respondents had heard some report regarding coastal wetland loss in the 12 months prior to this study (Table 6). Outside of Louisiana the percentage of people who had heard some news of coastal wetland loss increased with proximity to the Gulf

Coast, from 51% in the UMV to 58% in the state of Mississippi. Eighty-eight percent of respondents from Louisiana had heard news of coastal wetland loss with the 12 month period.

Table 6. Percent respondents who have heard of coastal wetland loss during previous 12 months, by region. ( $\chi^2 = 121.8, p < 0.001$ )

“In the past 12 months, have you read, seen, or heard anything about coastal wetland loss in the U.S. (newspapers, magazines, TV/radio, internet, etc.)?”	Yes (%)	No (%)
Upper Mississippi Valley (N=383)	51	49
Lower Mississippi Valley (N=308)	54	46
Mississippi (N=117)	58	42
Louisiana (N=317)	88	12
Total (N=1125)	63	37

Survey participants were asked to provide their awareness of the “America’s Wetland” Campaign administered by the Office of Coastal Affairs of the Louisiana Governor. In addition to level of awareness, specific understanding of the focus of the program was investigated (Table 7). A majority of respondents in the UMV (64%) and LMV (59%) were unaware of the program, with a slight majority (51%) from Mississippi reporting they had not heard of the campaign. More than one-third (39%) of Louisiana residents reported they had not heard of the campaign. Overall, few respondents (7%) correctly identified the program as focused on protecting wetlands in coastal Louisiana. A higher proportion (17%) of respondents from Louisiana understood the intent of the program, however the remaining 83% had either not heard of the program or incorrectly identified its focus.

A series of 10 bivariate questions (Yes/No response) were presented to participants in this study in order to determine knowledge of the role Louisiana’s coastal wetlands play in food, fuel, and ecosystem production (Table 8). Overall trends across all items was that reported knowledge (as indicated by “Yes” responses) increased with increased proximity to coastal

Louisiana. A slight increase in “Yes” responses was observed when sample strata moved from the Upper Mississippi Valley to the state of Louisiana. A majority of respondents from Louisiana reported they knew of the facts presented in 5 of the 10 items. Participants from the state of Mississippi provided a majority of responses for 1 item related to the percentage of the U.S. gas and oil supply originating from coastal Louisiana, as did respondents in the both Lower and Upper Mississippi Valley groups.

Table 7. Awareness of America’s Wetland Campaign, by region. ( $\chi^2 = 99.97, p < 0.001$ )<sup>1</sup>

	Upper Mississippi Valley (N=371) (%)	Lower Mississippi Valley (N=300) (%)	Mississippi (N=116) (%)	Louisiana (N=302) (%)	Total (N=1089) (%)
I have not heard of the America’s Wetland Campaign	64	59	51	39	55
It aims to protect wetlands throughout the US	21	22	21	20	21
It is focused on protecting coastal wetlands throughout the US	10	14	17	20	15
It is focused on protecting wetlands in the Gulf of Mexico	2	1	5	5	3
It is focused on protecting wetlands in coastal Louisiana	2	5	5	17	7

<sup>1</sup> Pearson’s Chi-square analysis was conducted using collapsed categories for all incorrect or unaware responses compared to correct response.

Table 8. Knowledge of Louisiana coastal wetland productivity and economic function, by region.

Before receiving this questionnaire, did you know that Louisiana's wetlands were...

	Upper Mississippi Valley <u>% Yes</u>	Lower Mississippi Valley <u>% Yes</u>	Mississippi <u>% Yes</u>	Louisiana <u>% Yes</u>	$\chi^2$
the leading producer of oysters in the US?	21	28	39	66	168.76 <sup>a</sup>
supplying over 50% of shrimp for the US?	41	44	44	66	51.22 <sup>a</sup>
the location of 40% of US coastal wetlands?	18	24	33	46	73.20 <sup>a</sup>
where 25% of the nation's gas and oil supply are transported?	55	55	59	77	43.60 <sup>a</sup>
losing more than 1,900 sq. miles of land since the 1930's?	20	19	28	64	192.96 <sup>a</sup>
losing more than a football field of land every 38 minutes?	10	8	22	49	203.48 <sup>a</sup>
the location of 30% of the fisheries catch for the US?	21	21	31	42	46.37 <sup>a</sup>
the largest wintering habitat for migratory birds?	44	40	44	53	13.69 <sup>a</sup>
habitat for more than 70 threatened and endangered species?	17	14	15	27	19.32 <sup>a</sup>
supports the largest menhaden catch in the US?	2	2	6	14	56.15 <sup>a</sup>

<sup>a</sup> = significant at  $p < 0.001$

*Coastal Restoration Policies*

Perceptions of and support for coastal restoration policies and practices were measured across several differing dimensions. Respondents reported their familiarity with efforts to restore and manage coastal wetlands on a 4-point scale from “Not Familiar” to “Very Familiar” (Table 9). Familiarity was highest among Louisiana respondents, however the mean response category for that group was 2.20, close to “Slightly Familiar.” Familiarity decreased with increased distance from the Gulf Coast, culminating with 61% of respondents from the Upper Mississippi Valley reporting they were “Not Familiar” with efforts to restore and manage coastal wetlands.

Table 9. Reported familiarity with efforts to restore and manage coastal wetlands in Louisiana and Mississippi, by region. (F = 61.32;  $p < 0.001$ )

“How familiar are you with efforts to restore and manage coastal wetlands in Louisiana and Mississippi?”	Not Familiar (%)	Slightly Familiar (%)	Fairly Familiar (%)	Very Familiar (%)	Mean
Upper Mississippi Valley (N=389)	61	30	9	<1	1.49
Lower Mississippi Valley (N=300)	57	34	7	3	1.56
Mississippi (N=116)	33	46	15	7	1.95
Louisiana (N=302)	24	40	29	8	2.20
Total	46	36	15	4	1.76

In addition to reported familiarity with efforts to restore coastal wetlands survey participants were asked how well they felt they could explain various wetland concepts and benefits to a friend. This technique was employed as it provides insight into the level of familiarity with and comfort in explaining complicated concepts, allowing subjects to provide responses that do not appear to be “answers” to test questions (e.g., “true and false” questions). The first concept to be examined was “How coastal ecosystems are restored” (Table 10). For each strata of respondents more than 50% either could not explain this concept or could slightly explain it to a friend. Among Louisiana residents 52.6% were in these 2 response categories, with 27.2% stating they could not explain how coastal ecosystems were restored to a healthy

state. This group reported the lowest response for this category, whereas 46.2% of UMV and 46.6% of LMV respondents reported they could not explain this concept. Conversely, more than twice the percentage of respondents from Louisiana (7.1%) as from other regions reported they could “explain well” how coastal wetlands are restored to a healthy state. The same margin between Louisiana respondents and the other 3 groups was observed for the “moderately well” category.

Table 10. Perceived ability to explain to a friend how coastal ecosystems are restored, by region. ( $\chi^2 = 50.27, p < 0.001$ )

“...how coastal ecosystems are restored to a healthy state”	Can Not Explain (%)	Slightly Explain (%)	Fairly Explain (%)	Moderately Explain (%)	Explain Well (%)
Upper Mississippi Valley	46.2	23.9	21.0	6.8	2.1
Lower Mississippi Valley	46.6	23.1	21.2	6.2	2.9
Mississippi	39.8	22.8	26.8	7.3	3.3
Louisiana	27.2	25.4	26.6	13.6	7.1
Total	40.2	24.0	23.3	8.6	3.9

Self-defined ability to explain why coastal ecosystems were restored was highest among Louisiana residents and lowest among those from Mississippi (Table 11). A combined 40% of Louisiana residents stated they could explain moderately or well why coastal ecosystems were restored, compared with 25% from the UMV, 29.9% from the LMV, and 20.1% from the state of Mississippi. Fully twice as many people from Louisiana defined themselves as able to explain moderately or explain well why restoration is done than residents from neighboring Mississippi.

Table 11. Perceived ability to explain why coastal ecosystems are restored, by region. ( $\chi^2 = 66.40, p < 0.001$ )

“...why coastal ecosystem restoration is done”	Can Not Explain (%)	Slightly Explain (%)	Fairly Explain (%)	Moderately Explain (%)	Explain Well (%)
Upper Mississippi Valley	29.4	23.6	22.1	19.5	5.5
Lower Mississippi Valley	33.0	21.2	24.8	13.7	7.2
Mississippi	29.0	19.4	31.5	14.5	5.6
Louisiana	15.7	15.7	26.6	28.8	13.2
Total	26.5	20.3	25.1	20.0	8.1

A majority of residents of the Upper and Lower Mississippi Valley (56.9% and 53.1%, respectively), and 50% of those from Mississippi were either unable or could slightly explain the importance of coastal ecosystems to their everyday life (Table 12). These results differed significantly from Louisiana residents, among whom 15.5% reported they could explain well the contributions coastal ecosystems played in their daily lives. A similar pattern was found when survey participants were asked how well they could explain how coastal ecosystems affect the economy where they lived (Table 13). Majorities of residents from the state of Mississippi (53.3%), and both the Upper (56.9%) and Lower (64.2%) Mississippi Valley indicated they could either not explain or could slightly explain the role coastal ecosystems played in the economies where they lived. More Louisiana residents (13.4%) were more confident they could explain the economic contribution of coastal wetlands.

Table 12. Perceived ability to explain to a friend the perceived importance of coastal ecosystems to one’s everyday life, by region. ( $\chi^2 = 63.36, p < 0.001$ )

“...importance of coastal ecosystems to your everyday life”	Can Not Explain (%)	Slightly Explain (%)	Fairly Explain (%)	Moderately Explain (%)	Explain Well (%)
Upper Mississippi Valley	31.7	25.2	23.1	15.1	4.9
Lower Mississippi Valley	31.9	21.2	26.1	14.3	6.5
Mississippi	26.6	23.4	23.4	16.9	9.7
Louisiana	17.4	14.9	29.2	23.0	15.5
Total	27.2	21.0	25.7	17.3	8.9

Table 13. Perceived ability to explain to a friend how coastal ecosystems affect the economy where one lives, by region. ( $\chi^2 = 113.75, p < 0.001$ )

“...how coastal ecosystems affect the economy where you live”	Can Not Explain (%)	Slightly Explain (%)	Fairly Explain (%)	Moderately Explain (%)	Explain Well (%)
Upper Mississippi Valley	36.5	25.5	22.9	11.5	3.6
Lower Mississippi Valley	39.1	25.1	22.1	8.8	4.9
Mississippi	33.1	20.2	22.6	15.3	8.9
Louisiana	17.5	14.7	25.9	28.4	13.4
Total	31.5	21.8	23.5	15.9	7.3

Causes of coastal erosion were little understood by survey participants, as majorities of residents in the Upper (54.6%) and Lower (54.9%) Mississippi Valley and a large plurality of residents from the state of Mississippi (45.5%) reported they could not explain or could explain slightly the factors leading to coastal erosion, whereas 28.9% of Louisiana residents felt the same (Table 14).

Table 14. Perceived ability to explain to a friend different causes of coastal erosion, by region. ( $\chi^2 = 95.32, p < 0.001$ )

“How well can you explain to a friend different causes of coastal erosion”	Can Not Explain (%)	Slightly Explain (%)	Fairly Explain (%)	Moderately Explain (%)	Explain Well (%)
Upper Mississippi Valley	31.7	22.9	26.2	15.6	3.6
Lower Mississippi Valley	29.7	25.2	25.2	14.7	5.2
Mississippi	27.6	17.9	34.1	12.2	8.1
Louisiana	14.3	14.6	26.8	29.9	14.1
Total	25.8	20.6	27.0	19.0	7.6

Causes of Gulf Hypoxia (“dead zone”) appear little understood by the public, as majorities in all 4 groups felt they were unable or could slightly explain the causes of this problem (Table 15). Slightly less than two-thirds of residents from the Upper (62.3%) and Lower (62.2%) Mississippi Valley felt they could not explain the causes of this problem to a friend.

Table 15. Perceived ability to explain to a friend causes of the “dead zone” in the Gulf of Mexico, by region. ( $\chi^2 = 72.91, p < 0.001$ )

“How well can you explain to a friend causes of the ‘dead zone’ in the Gulf of Mexico”	Can Not Explain (%)	Slightly Explain (%)	Fairly Explain (%)	Moderately Explain (%)	Explain Well (%)
Upper Mississippi Valley	62.3	17.4	10.9	7.0	2.3
Lower Mississippi Valley	62.2	18.2	11.1	5.9	2.6
Mississippi	49.6	19.5	20.3	6.5	4.1
Louisiana	38.9	19.0	19.9	13.3	8.8
Total	54.4	18.3	14.5	8.4	4.4

Survey participants were asked to provide their opinion regarding the amount of funding (\$50 million annually - the level of funding during 2005) provided for coastal restoration in Louisiana by the Federal government using a 5-point scale whereby 1 = “Much Too Low” and 5 = “Much Too High” (Table 16). No majority of responses were received for any category across the 4 strata in this study; pluralities were noted for “Too Low” and “About Right.” The exception for this trend was respondents from Louisiana, as this group provided higher responses in the combined lower categories (69%): (34%) for “Much Too Low” and “Too Low” (35%).

In order to determine opinions as to what percentage of oil and gas revenues Louisiana deserved to receive compared to current levels and that which other states receive, individuals were asked if they felt royalty payments for Louisiana should be less, same as, or more than other states (Table 17). Majorities for all groups reported preferred level of funding “Same as other States.” That majority was lowest among Louisiana respondents, with 52% preferring “Same as Other States” and 45% preferring “More than Other States.”

Table 16. Perceptions of adequacy of federal funding for coastal restoration, by region. (F = 14.23;  $p < 0.001$ )

“The federal government spends \$50 million annually on coastal restoration projects. Do you think this amount is...?”	Much Too Low (%)	Too Low (%)	About Right (%)	Too High (%)	Much Too High (%)	Mean
Upper Mississippi Valley (N=389)	14	39	38	6	3	2.46
Lower Mississippi Valley (N=300)	14	38	37	7	4	2.50
Mississippi (N=116)	12	37	40	8	4	2.54
Louisiana (N=302)	34	35	24	4	3	2.07
Total	19	37	34	6	3	2.37

Scale: 1 = Much Too Low; 5 = Much Too High

Table 17. Preferred level of gas and oil revenues for coastal restoration in Louisiana, by region. (F = 61.85;  $p < 0.001$ )

What percentage of oil and gas revenues do you think Louisiana deserves to receive? Current revenues = 27%	Less than currently Received (%)	Same as currently received (%)	Same as other states (%)	More than other states (%)	Mean
Upper Mississippi Valley (N=389)	5	16	69	10	2.84
Lower Mississippi Valley (N=300)	3	11	76	9	2.91
Mississippi (N=116)	2	15	72	11	2.92
Louisiana (N=302)	<1	3	52	45	3.42
Total	3	11	66	20	3.04

Current practices for coastal wetland restoration provide for restoration or creation of private coastal wetlands with public funds, and retention of those lands remaining in private ownership (Table 18). A majority of survey participants (63% total) reported they felt new lands created using public funds should become public lands. This attitudes was more prevalent among Upper Mississippi Valley respondents (67%) and lowest among Louisiana residents (61%), although differences were not significant.

Table 18. Attitudes toward ownership of new lands created through publicly-funded restoration projects, by region. (F=1.49; *p*=0.216)

“Federal funds used for coastal restoration often result in creating new land though projects on private land. In your opinion, who should own that land?”	Upper Mississippi Valley (%)	Lower Mississippi Valley (%)	Mississippi (%)	Louisiana <sup>1</sup> (%)	Total (%)
New land created on private land with public funds should be public land	67	61	61	61	63
New land created on private land with public funds should remain private land	33	39	39	40	37

<sup>1</sup> Total > 100 due to rounding

## Discussion

Louisiana residents expressed greater awareness of and appreciation for coastal wetland restoration, as well as higher levels of perceived importance coastal wetlands play in their lives. This is not surprising given the proximity of these wetlands and the role coastal wetlands play in the economic, cultural, and recreational aspects of life in Louisiana. Such level of importance among Louisiana residents was not unexpected. What was less expected was the lower levels for appreciation and importance of coastal wetlands expressed by residents of the state of Mississippi. In general, responses by residents of the state of Mississippi did not differ significantly from those of the lower or upper portions of the Mississippi River Valley. If proximity to coastal wetlands was the primary factor contributing to understanding and perceived importance it could be assumed that Mississippi residents would also express greater importance attributed to coastal wetland restoration and the role these wetlands play in their state's economy. In terms of reducing wetland loss and protecting coastal wetlands Mississippi residents did not vary significantly from residents of the remainder of the Mississippi Valley. Given the relative proximity to these wetlands, it could be reasonable to hypothesize that residents of the state of Mississippi would attach greater importance to coastal wetlands than residents of, for example, Minnesota or Wisconsin, however that was not evident in results from this study. Respondents from Mississippi did express greater familiarity than residents of the Mississippi River Valley with efforts to restore and manage coastal wetlands in Louisiana and Mississippi, although results suggest such awareness is not being translated into understanding of the relationship between restoration efforts, the role wetlands play, and the importance of restoration.

Overall, support for wetland restoration is relatively high among respondents in this study, however awareness, knowledge and understanding of the importance of coastal wetlands is lacking outside of Louisiana. Coastal wetlands are an important component of food production, provide gas and oil resources, and protect valuable shipping for the entire nation, yet according to the results presented here such benefits are unknown among the public beyond the state of Louisiana. Results of this study suggest that current educational efforts do not appear to be effective with respect to informing individuals of the importance of Gulf coastal wetlands or to the connections of these wetlands to regions inland from the coast. Support for increased funding for restoration exists, but would likely be strengthened with greater education on the part of the public. The America's Wetlands campaign has not reached a wide audience in Louisiana,

much less throughout the remainder of the nation. Little recognition of the campaign is reported by respondents to this study (17% in Louisiana was the highest reported), although there exists a need for greater education concerning coastal wetlands. One specific aspect of education that comes to light is the need to educate the public concerning Gulf Hypoxia. Given the degree to which residents in both the agricultural and urban regions of the Mississippi River watershed contribute to the non-point sources of hypoxia, informing and educating these residents is important.

In conclusion, members of the public surveyed through this project exhibited an appreciation of the issue and a propensity to support restoration efforts, but also report a lack of understanding of the causes, restoration efforts, or reasons why such efforts are undertaken. Increased educational programming may provide an expanded base of public support and perhaps increased funding for restoring coastal wetlands of Louisiana and Mississippi.

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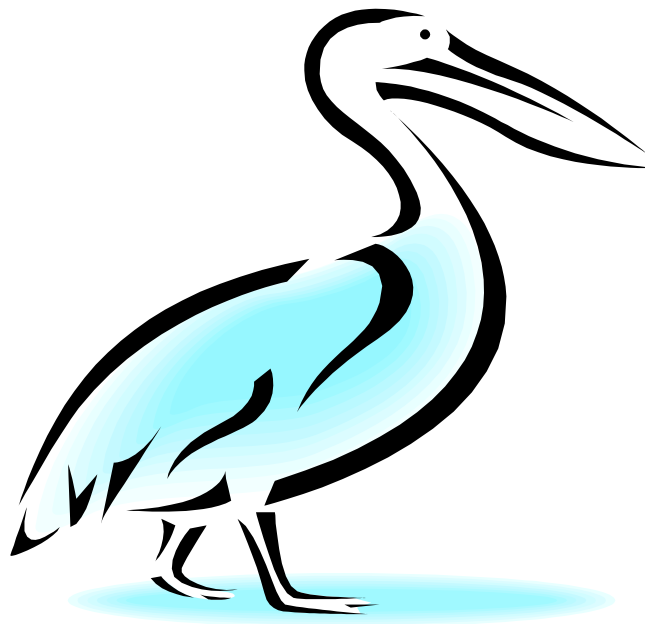
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SPSS 2006

US Department of Commerce, Bureau of Census 2005

# Coastal Wetland Survey



**School of Renewable Natural  
Resources  
Louisiana State University  
Renewable Natural Resource Building  
Baton Rouge, La 70803**



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ALL RESPONSES ARE CONFIDENTIAL  
Thank You For Your Participation  
Postage-paid return envelope provided

**Section 1. Environmental issues facing our country** Listed below are several environmental issues facing citizens in the United States. How important is each issue to you? (Please circle one number for EACH issue).

Environmental Issues	Not At All Important	Slightly Important	Moderately Important	Very Important	Extremely Important
Consumption of fossil fuels	2%	6%	21%	39%	32%
Protecting water quality	0%	1%	5%	28%	66%
Global warming	8%	10%	19%	25%	38%
Dependence on foreign oil	2%	4%	15%	28%	51%
Protecting air quality	1%	1%	10%	32%	56%
Protecting endangered species	3%	10%	25%	32%	30%
Reducing coastal wetland loss	2%	7%	20%	33%	38%
Protecting wetlands	2%	6%	21%	34%	37%
Restoring damaged ecosystems	2%	7%	24%	35%	32%
Reducing the “dead zone” in the Gulf of Mexico	5%	13%	28%	31%	23%
Protecting our coasts from hurricanes	4%	11%	21%	23%	41%

2. In the past 12 months, have you read, seen or heard anything about coastal wetland loss in the U.S.?

(newspapers, magazines, tv/radio, internet, etc.)?

63% Yes      37% No

3. Please state your understanding of the “America’s Wetland” campaign by checking the appropriate response below:

- 55% I have not heard of the “America’s Wetland” campaign
- 21% It aims to protect wetlands throughout the U.S.
- 14% It is focused on protecting coastal wetlands throughout the U.S.
- 3% It is focused on protecting wetlands in the Gulf of Mexico
- 7% It is focused on protecting wetlands in coastal Louisiana

4. How do the following issues concerning coastal wetlands affect you personally? Please circle the number that matches the importance you place on each issue.

Wetland Issues	Not At All Important	Slightly Important	Moderately Important	Very Important	Extremely Important
Gas and oil prices	2%	5%	14%	29%	50%
Provides recreation	11%	20%	30%	24%	15%
Habitat for wildlife and fisheries	2%	6%	19%	36%	37%
Provides hurricane protection	7%	10%	19%	26%	38%
Shipping exports (grain, etc.)	6%	13%	31%	29%	21%
Shipping imports (coffee, fruit, etc.)	6%	14%	33%	28%	19%

**Section 2. Environmental Attitudes.** Please circle the number that best matches your attitude toward each statement.

	Strongly Disagree	Disagree	Slightly Disagree	Unsure	Slightly Agree	Agree	Strongly Agree
We are approaching the limit of the number of people the earth can support.	8%	15%	7%	26%	13%	19%	12%
Humans have the right to modify the natural environment to suit their need.	18%	26%	17%	10%	16%	8%	5%
When humans interfere with nature, it often produces disastrous consequences.	3%	5%	8%	8%	17%	31%	28%
Human ingenuity will insure that we do NOT make the earth unlivable.	10%	19%	10%	25%	15%	15%	6%
Humans are severely abusing the environment.	4%	5%	6%	5%	17%	32%	31%
The earth has plenty natural resources if we just learn how to develop them.	4%	8%	6%	13%	17%	34%	18%
Plants and animals have as much right as humans to exist.	5%	8%	8%	5%	15%	34%	25%

	Strongly Disagree	Disagree	Slightly Disagree	Unsure	Slightly Agree	Agree	Strongly Agree
The balance of nature is strong enough to cope with the impacts of modern industrial nations.	18%	28%	15%	17%	10%	9%	3%
Despite our special abilities, humans are still subject to the laws of nature.	1%	1%	1%	6%	11%	49%	31%
The so-called “ecological crisis” facing humankind has been greatly exaggerated.	17%	21%	10%	21%	14%	11%	6%
The earth is like a spaceship with very limited room and resources.	5%	15%	12%	12%	19%	25%	12%
Humans were meant to rule over the rest of nature.	13%	20%	12%	12%	14%	18%	11%
The balance of nature is very delicate and easily upset.	2%	6%	8%	9%	21%	35%	19%
Humans will eventually learn enough about how nature works to be able to control it.	15%	29%	12%	22%	11%	9%	2%
If things continue on their present course, we will soon experience a major ecological catastrophe.	4%	10%	8%	22%	14%	26%	16%

**Section 3. Coastal Wetlands. Please answer the following questions about the coastal Gulf of Mexico**

1. How well would you be able to explain the following concepts about wetland ecosystems to a friend? A wetland ecosystem is a system made up of all the animals and plants in a wetland. Please circle the number that matches your response.

Wetland Concepts	1	2	3	4	5
How coastal ecosystems are restored to a healthy state	40%	24%	23%	9%	4%
The importance of coastal ecosystems to your everyday life	27%	21%	26%	17%	9%
Why coastal ecosystem restoration is done	27%	20%	25%	20%	8%
How coastal ecosystems affect the economy where you live	32%	22%	23%	16%	7%
Causes of the “dead zone” in the Gulf of Mexico	54%	18%	15%	9%	4%
Different causes of coastal erosion	26%	20%	27%	19%	8%

2. Please tell us if you knew about each statement below **before receiving this questionnaire** by circling the number that matches your response.

Did you know that Louisiana’s coastal wetlands are...	No, I did not know this	Yes, I knew this
...the leading producer of oysters in the United States	63%	37%
...supplying over 50% of shrimp for the United States	51%	49%
...the location of 40% of the United States coastal wetlands	71%	29%
...where 25% of the nations oil and gas supply is transported	38%	62%
...losing more than 1,900 square miles of land since the 1930s	67%	33%
...losing a football field of land every 38 minutes	78%	22%
...the location of 30% of the fisheries catches for the U.S.	72%	28%
...the largest wintering habitat for migratory birds	55%	45%
...habitat of more than 70 threatened and endangered species	81%	19%
...supporting the largest Menhaden catch in the U.S	94%	6%

3. How familiar are you with efforts to restore and manage coastal wetlands in Louisiana and Mississippi? Please circle the number below that best matches your response.

Not Familiar	Slightly Familiar	Fairly Familiar	Very Familiar
46%	35%	15%	4%

4. The federal government spends \$50 million annually on coastal restoration projects. Do you think this amount is \_\_\_\_\_? (Please circle the number that matches your answer)

Much too low	Too low	About right	Too high	Much too high
19%	37%	34%	6%	4%

Louisiana receives around 27% of royalties from oil and gas production in the states offshore waters while other states receive 50% of royalties from drilling.

5. What percent of oil and gas revenues do you think Louisiana deserves to receive?

3% Less than is currently received (27%)  
11% Same as is currently received (27%)  
66% Same as other states (50%)  
20% More than other states (50%)

**Section 5. Attitudes Toward Coastal Wetland Restoration.** Please indicate whether you agree or disagree with the following statements.

People have different reasons for thinking coastal wetlands are important to our society. Indicate below how strongly you AGREE OR DISAGREE with each of the following statements. While some of the following statements may sound similar, please read each and respond by circling the number that best matches your response.

	Strongly Disagree	Disagree	Slightly Disagree	Unsure	Slightly Agree	Agree	Strongly Agree
Tough wetland laws are needed even if they interfere with development.	2%	4%	6%	11%	18%	37%	22%
Coastal wetlands are not worth spending money to save.	39%	39%	10%	7%	2%	2%	1%
Wetlands have value whether people are present or not.	2%	1%	1%	7%	10%	47%	32%
The primary value of wetlands is to provide products useful to people.	15%	29%	12%	18%	10%	12%	4%
Dredging canals through wetlands harms them and should not be done.	2%	6%	7%	40%	9%	21%	15%
Wetland wildlife and plants have as much right to exist as people.	5%	8%	10%	7%	16%	31%	23%
Tough coastal wetland laws interfere with human development.	9%	23%	12%	25%	15%	12%	4%
Preserving coastal wetlands is more important than coastal economic development.	2%	7%	9%	25%	16%	27%	14%
The value of wetlands exists only in the minds of people: without people wetlands have no value.	29%	38%	11%	10%	3%	5%	4%

	Strongly Disagree	Disagree	Slightly Disagree	Unsure	Slightly Agree	Agree	Strongly Agree
The primary value of wetlands is to generate money and economic self-resilience for communities.	23%	38%	11%	18%	5%	4%	1%
Wetlands should not be altered for human benefit.	4%	11%	17%	18%	13%	24%	13%
Too much attention is given to preserving wetlands in our society.	24%	35%	16%	15%	5%	3%	2%

**Section 6. General Information.** The following information is helpful to describe different groups of households. Your answers will be used for statistical purposes and will not be identified with you personally. All responses are kept confidential.

1. Please give your gender: (Circle one number)      65% Male                      35% Female

2. Please give your age (Fill in blank)                      \_\_\_\_\_ Years old

3. What is your ethnic/cultural group? (Please check one)

88% Caucasian/White                      1% Hispanic  
8% African-American                      1% Native American (American Indian)  
1% Asian-American                      1% Other (Please specify) \_\_\_\_\_

4. What is the highest level of education you have completed? (Check one number)

4% Less than high school                      9% Associate degree (2 years of college)  
19% Graduated high school                      18% Bachelor's degree  
9% Technical/Vocational school                      5% Some graduate study  
19% Some college                      17% Graduate or professional degree

5. In what state do you now live?

5% Iowa    9% Tennessee  
12% Illinois    4% Arkansas  
9% Wisconsin    7% Missouri  
7% Minnesota    10% Mississippi  
3% Montana    29% Louisiana  
5% Kentucky

6. Have you ever lived in Louisiana? 66% Yes (If yes, go to 6a) 34% No

6a. How long did you live in Louisiana?

<u>3%</u>	0-6 months	<u>2%</u>	2 years
<u>2%</u>	1 year	<u>3%</u>	3 years
		<u>90%</u>	more than 3 years

7. How would you describe the size of the community where you live? (Check one number)

<u>13%</u>	Rural, farm	<u>35%</u>	Small city (10,000 to 100,000)
<u>8%</u>	Rural non-farm	<u>21%</u>	Mid-sized city (100,000 to 1 million)
<u>15%</u>	Small town (under 10,000)	<u>8%</u>	Large city (over 1 million)

8. How would you describe the size of the community where you grew up?

<u>22%</u>	Rural, farm	<u>25%</u>	Small city (10,000 to 100,000)
<u>5%</u>	Rural non-farm	<u>17%</u>	Mid-sized city (100,000 to 1 million)
<u>22%</u>	Small town (under 10,000)	<u>9%</u>	Large city (over 1 million)

9. Do you belong to any conservation groups? 84% Yes 16% No

10. Have you or a member of your immediate family made a trip to Louisiana during the past 12 months?

57% Yes 15% No 28% Live in Louisiana

**Please use the following space for any additional comments you would like to make**

**Please mail the completed survey in the self-addressed envelope**

**THANK YOU FOR YOUR COOPERATION**