

An Evaluation of the *Final Technical Report: Preliminary Assessment of the Impacts of Hurricane Katrina on Gulf of Mexico Coastal Fishing Communities*

**Prepared by:
Diane Austin
Tucson, Arizona**

**Prepared for:
Center for Independent Experts**

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Executive Summary

The report, *Preliminary Assessment of the Impacts of Hurricane Katrina on Gulf of Mexico Coastal Fishing Communities*, represents the considerable efforts of many individuals during a particularly difficult period, and the researchers and agency personnel involved in the assessment should be commended for their efforts. The work upon which the report is based was carried out by Impact Assessment, Inc. (IAI). The goal of the assessment was to assess the effects of Hurricane Katrina soon after the storm made landfall and to document and monitor the status of commercial fisheries and conditions within coastal fishing communities of Louisiana, Mississippi, and Alabama during the fall of 2005 and the winter, spring, and early summer months of 2006. The objectives included: (1) initial characterization of the effects of the storm on fishing-related businesses and infrastructure in communities directly affected by the storm, (2) highly-focused and in-depth examination of the immediate and short-term social and economic impacts of the event, and (3) documentation of the major financial, material, technical, and logistical impediments to recovery, and analysis of the prospects for recovery. The researchers focused their attention on 38 study communities in 10 parishes or counties across the affected region (26 communities in Louisiana, nine in Mississippi, and three in Alabama), using data they had gathered in these communities prior to the hurricane, and retrospective and new data gathered after the storm. The report's focus on the assessment of changes in the conduct of marine fisheries subsequent to Hurricane Katrina's landfall was intended to enable the researchers to differentiate changes due to the hurricane from other changes occurring in the years and months prior to the hurricane.

The purpose of this review is to evaluate whether the IAI report meets accepted scientific practices for rapid ethnographic assessment and to provide recommendations for improving future rapid assessments of fishing communities damaged by hurricanes and other natural disasters. The review has been organized to address five specific issues. First, the **Rapid Assessment Methodology** (1) used by the IAI team was evaluated. Unfortunately, insufficient information about the research methodology, especially the selection of study communities and qualitative analysis, and incomplete documentation of sources for many assertions, hinders effective review. The IAI researchers focused on 38 communities in an effort to select a representative sample of communities. However, the approach by which the researchers selected communities is incompletely described. Therefore, what can be concluded about infrastructure that remained in communities that were not included in the assessment is unclear.

In general, the assessment suffered from unclear, ambiguous goals and objectives, with deliverables that were not well linked to the overarching goals. Due to this and the lack of information about what was actually done, the goals and objectives of the assessment were found to be only partially achieved. According to the information available, the approach combined formal and informal interviews and field observation with retrospective collection of secondary source data selected to illustrate the changes occurring in the years and months prior to Hurricane Katrina and to be indicative of the larger social and economic context of those changes. This approach is appropriate for a rapid ethnographic assessment. Likewise, the overall design of the fieldwork and the number and type of interviews are adequate for gathering the data necessary for the task. The design consisted of a series of four repeat visits to the study communities to assess ongoing changes and responses over time. Around 450 interviews were

conducted with people involved in many aspects of the commercial fishing industry and with persons involved in the recreational fishing industry and with other roles in their communities.

Though the elements of the rapid ethnographic assessment methodology used in the study are generally scientifically sound, a significant weakness of the assessment is the failure to thoroughly analyze the data that were collected. Interview participants were initially identified through snowball sampling. While snowball sampling is an appropriate technique for identifying potential interviewees, given the large area over which the assessment was carried out and the large number of interviews conducted, an additional step would have ensured that the data were indeed sufficient for further analysis. The research would have benefited from the identification of key attributes – for example, location, role in the industry or community, tenure in the industry – and creation of a matrix highlighting target numbers of interviewees in each of the selected categories. In addition, other key attributes such as age, gender, and ethnicity should have been recorded, especially for categories of interviewees such as captains and crew for which 150 interviews were conducted. The key attributes could then have been considered in the analysis.

The **Analysis and Use of Social and Infrastructure Data** (2) were also reviewed. The IAI researchers collected little data descriptive of the larger social and economic context within which the changes to fishing communities were taking place. As noted above, a significant weakness of the assessment is the failure of the researchers to thoroughly analyze the data that were gathered and to link conclusions with specific findings of the assessment. There is no explicit discussion of the approach to data analysis, but the lack of analysis of either the secondary source data or the interviews and the gaps between information in the report chapters and the initial conclusions indicate that the approach taken was inadequate. Key to an assessment of impacts is an understanding of how impacts are distributed across the fishing industry and communities. Are there effects by community, gender, age, ethnicity, tenure in the industry? While a rapid assessment cannot fully illuminate where such effects might be, it can provide a good indication of patterns that may require further attention. Likewise, an understanding of how the fishing industry relates to other economic activities within each state and across the states and how those interactions changed as a result of the hurricane is critical. The complete lack of even attempts to consider these variables or analyses is surprising.

This review also evaluated the **Pre- and Post-Impact Fisheries-Focused Social and Infrastructure Data** at the **State** (3) and **Community Level** (4). The assessment focused on fishing infrastructure, with data gathered in a prior study (IAI 2005a, IAI 2005b) serving as the baseline. This accounting of the infrastructure that survived the hurricane and its aftermath is an important resource for NMFS and the involved states and communities. However, the assessment report includes no analysis of impacts to this infrastructure beyond the individual communities or across the region or of what the findings indicate for communities other than the 38 studied. In addition, the focus on fisheries infrastructure appears to have precluded careful assessment and analysis of social and economic effects of the hurricane. The problem of focus appears to have originated in the initial IAI Statement of Work.

Finally, the **Conclusions** drawn by the researchers were evaluated. The conclusions fill fewer than two pages in a report that is over 260 pages in length, so even as “Interim Conclusions” (as indicated in the report), they are inadequate. Some of the conclusions are supported by data and analysis in the report, but others introduce new concepts to the assessment. The general statements included there leave many questions unanswered. The major focus of the report was an assessment of the specific fishing infrastructure of the 38 study communities, yet there is no mention of that infrastructure in the conclusions.

Future assessments of this nature should begin with a more consistent and focused statement of work and should require a more systematic approach to both community and informant selection. An assessment of the impacts of a hurricane on fishing communities extends far beyond impacts to fishing infrastructure. It is certainly within the realm of a rapid ethnographic assessment to document and analyze impacts to the fishing industry more broadly and to a community. In addition, rather than a massive effort to collect any data related to the topic, selection of secondary data and inclusion of data collected in other research efforts should be guided by specific notions of what constitute social and economic impacts and how those might be identified and assessed. For example, the state-by-state presentations of community-level data on impacts to fishing infrastructure would be significantly enhanced by both a comparative analysis across communities within each state and by a discussion of those findings in the broader state context. To make this possible, data on state resources, policies, and programs, as well as the acquisition and use of federal funds, are needed

In its conclusion, an assessment should bring together and summarize the data included in separate sections in the report, allowing for comparison and analysis of the impacts of hurricanes or other natural disasters. Where possible, an assessment should include more than one community and support a comparative analysis. Such an analysis would allow researchers and policymakers to determine if some communities are doing better than others. Even though a complete understanding of the causes of such differences would be beyond the scope of a preliminary assessment, when used effectively, rapid assessment methodologies can point to patterns that require further attention.

Section One: Background

Hurricane Katrina went ashore in August of 2005 and caused massive disruption to the ecosystems and communities of coastal Louisiana, Mississippi, and Alabama. The disruption caused by the storm exacerbated various social and economic problems already evident in the region. To assess the impacts of Hurricane Katrina on coastal fishing communities, the National Marine Fisheries Service contracted with Impact Assessment, Inc. (IAI) to conduct a rapid assessment of the coastal communities. IAI was selected for the work because of its existing relationship with the National Marine Fisheries Service (NMFS) of the National Oceanic and Atmospheric Administration (NOAA) and recent completion of a four-volume, 2,000 page report describing social, economic, and demographic attributes of 335 towns and cities across the Gulf of Mexico (IAI 2005a, IAI 2005b). That research was designed to identify towns and cities that are to greater and lesser degrees involved in fishing-related industries and other forms of enterprise across the region.

The assessment under review began almost immediately after Hurricane Katrina made landfall and continued for one year. Due to the rapid changes taking place in the affected communities in the weeks and months following the storm, the staff of the NMFS Southeast Regional Office had considerable and ongoing interaction with IAI researchers, and the study design was modified to best respond to the emergent conditions in the communities. The assessment report was submitted to NMFS in August 2006.

In October 2006 the Center for Independent Experts (CIE) was tasked to organize a group of social scientists to conduct independent reviews of IAI's *Final Technical Report: Preliminary Assessment of the Impacts of Hurricane Katrina on Gulf of Mexico Coastal Fishing Communities*. The goals of the review were to evaluate whether the document meets accepted scientific practices for rapid ethnographic assessment and to provide recommendations for improving future rapid assessments of fishing communities damaged by natural disasters like those occurring in the 2005 hurricane season. This review report aims to meet those goals. The review is divided into four additional sections, a "Summary of Review Activities," "Review Findings," "Conclusions," and "Appendices," as specified in the review Statement of Work (see Appendix B).

Section Two: Summary of Review Activities

On November 22, 2006, a CIE intern sent me instructions about how to access the IAI assessment report and a memo with additional information about the report. I began the review by downloading the report and memo from the CIE website. The memo addressed specific issues related to the inability of the researchers to report data that could be deemed confidential, as required by law and NOAA policy. No IAI Statement of Work (IAI SOW) was included in the online documents, so on November 26 I contacted the CIE intern via email to obtain a copy. Over the next several days I contacted CIE again by email and phone, and on December 1 I received notice that the SOW had been requested from the NMFS. On December 5 I received the IAI SOW from the CIE via email.

While waiting for the IAI SOW, I read the assessment report. Because of a general lack of information on the methods for selecting the study communities and reference to the earlier IAI work (IAI 2005a, IAI 2005b), I went online to find copies of the IAI reports. I located them on the NOAA website and downloaded them. I read through both reports, focusing on the descriptions of the study communities and the demographic variables used to compare them. I was particularly interested in the definition of “extensively involved” communities, the stated criterion for selection of the 38 study communities for the 2005-2006 assessment.

Then, due to the extensive use of published reports and studies in the assessment, I did a quick examination of some of those referenced documents. One report, published by the National Association of Charterboat Operators (NACO; see Walker, Zales, and Rockstall 2006), was cited extensively in reporting the conditions of the charter fishing industry. Because I was unfamiliar with the organization and its work, I went online to obtain a copy of that report. The internet link on the NACO website was not working, so on November 27 I contacted the organization and requested a copy be sent via electronic mail. I received the report via email on November 28 and was able to review it. I discovered that the study had been funded by the NMFS-NOAA and determined that I would not have any greater concern with it than any other government reports from which much of the information in the assessment was drawn. I did not have time to acquire and review those reports to check the accuracy or interpretation of their findings, so I have assumed in this review that the documentation and interpretation of cited reports are adequate.

Following review of the assessment report and selected references, I developed a plan for evaluating the assessment and its findings. In reading the report I had become concerned with the lack of information about methods and my inability to effectively review the report because of this. In addition, the SOW for my review required a specific assessment of the rapid assessment methodology employed in the report. Therefore, I elected to use a set of published criteria (Utarini, Winkvist, and Pelto 2001) to systematically appraise the methods used in the report and the information provided about them. Following a careful review using those criteria, I began assessing the other aspects of the report, as specified in my SOW.

At this point, I received the IAI SOW and realized that some of the problems I had noted with the report stemmed from the SOW. Then, I went back to the report to re-review several sections and complete my evaluation. I then completed my review.

Section Three: Review Findings

A. Rapid Assessment Methodology

To assist in a systematic appraisal of the Rapid Assessment methodology used by the IAI team, eleven criteria are applied to assess whether or not sufficient information is provided in the report to evaluate the methodology (see Utarini, Winkvist, and Pelto 2001). While these criteria set a high standard and it is not expected that the IAI assessment will meet all of them – Utarini, Winkvist, and Pelto applied them to 15 published studies and found that none provided the information needed to assess each one of them and that just over half provided information on at least 9 of the 11 criteria – they nevertheless provide a useful benchmark against which to

evaluate the report. The results of the appraisal are summarized in Table 1 and discussed in the paragraphs following the table. For the criteria for which there is sufficient information in the report to permit evaluation of whether or not the approach meets accepted rapid social assessment standards, the adequacy of IAI’s efforts is assessed in the table and discussed below.

Table 1. Appraisal of IAI Report Using Published Criteria for Rapid Assessment Procedures

Criterion	Adequate Information Provided	Summary	Meets Accepted Rapid Social Assessment Standards
Clear statement of study’s aim	Yes	Established in Statement of Work and repeated in report	Somewhat
Awareness of investigators’ effect on research process	No	No information on characteristics of researchers	Unable to assess
Systematic development of appropriate field guide	Yes	No copies of the research protocols or key questions	Unknown
Staff appropriately trained and recruited	No	No information on backgrounds or training of researchers except acknowledgement of researchers from University of West Florida public history graduate program	Unable to assess
Appropriate data collection methods	Yes	Generally different types of data in different sections	Somewhat
Appropriate sampling strategy for research site selection	No	Discrepancies in aim of including only “extensively involved” communities and those actually selected; little information about how communities were selected	Unable to assess
Systematic process for selecting informants	Yes	Snowball sampling	Yes
Credibility is assessed, triangulation for validation of findings	No		Unable to assess
Sound process of analysis, including coding strategies and mechanisms to improved interobserver agreement	No	No information on analysis of qualitative data; though 450 interviews were conducted, 150 with one special group, there is no indication that efforts were made to identify patterns across interviews or to find and explore anomalies	Unable to assess, but suspect cursory analysis

Findings and discussion clearly presented	Somewhat	Bulk of report is from secondary source data. Not clear what is the difference between “Personal Communication,” “Field Observations,” and “Field Interview” (latter used on p. 234 only). Inconsistent reporting of source of data – when specific quote used the general category of source (e.g., speaker) named, but often not (yes p. 219, no p. 218)	Somewhat
Ethical principles respected and process of getting informed consent used	Yes	Use of written consent	Yes

1. Clear statement of study’s aim

The aim was determined by NMFS, as stated in the IAI Statement of Work: “Impact Assessment, Inc. will immediately, or as soon as practical, deploy staff researchers to conduct follow-up field investigations of the impacts of Hurricane Katrina on the study communities in the state of Mississippi, Alabama, and Louisiana.” It was stated in the project report on p. 2: “The research described in this report was conducted to assist NOAA Fisheries in its efforts to assess the social and economic impacts of Hurricane Katrina as these relate to the conduct of marine fisheries in the affected region.” Study objectives include: (1) initial characterization of the effects of the storm on fishing-related businesses and infrastructure in communities directly affected by the storm, (2) highly-focused and in-depth examination of the immediate and short-term social and economic impacts of the event, and (3) documentation of the major financial, material, technical, and logistical impediments to recovery, and analysis of the prospects for recovery. However, the broad goal and objectives are overshadowed by the statement describing as the assessment’s deliverables “a written report documenting the existence and status of existing fishing infrastructure compared to pre-Katrina.” This latter, narrow focus does not encourage the sort of data collection and analysis that would be needed to assess community-level impacts of the hurricane.

A problem that recurs in the report is whether the researchers are focusing on Hurricane Katrina or Rita or both. On p. 3, the report authors note that they were responding to “NOAA Fisheries’ need for an assessment of changes in the conduct of marine fisheries subsequent to the landfall of Hurricane Katrina.” The initial discussion in the “Demographic Overview” continues to address only Katrina, but suddenly on p. 15 in the subsection, “Preliminary Assessment of Vulnerability,” the authors state, “This analysis thus provides a “baseline” portrait of the impact of Hurricanes Katrina and Rita on population shifts and changing characteristics in the Gulf Region in the immediate months following the storms.” Throughout the report, tables of infrastructure changes and other impacts name both Katrina and Rita (there are 54 mentions of “Katrina and Rita” in the report). While Hurricane Rita could not have been anticipated when either the Statement of Work or initial study design were created, its occurrence should have

been more clearly accounted for in both revisions to the Statement of Work and the assessment. In general, it is difficult to determine if the authors are considering only one or both storms.

2. Awareness of investigators' effect on research process

Throughout the report, the investigators are referred to as "IAI" and "study teams." Neither the full number nor specific expertise of the members of the teams are provided. In the acknowledgements, the reader learns that "Patrick Moore and his University of West Florida public history graduate students and an IAI team comprised of 8 named individuals collected, organized, and prepared the research results." It can be inferred from the acknowledgement of Bichnga Boulet as a Vietnamese translator recruited from the NMFS Southeast Fisheries Science Center that the teams lacked Vietnamese speakers.

3. Systematic development of appropriate field guide

"The teams developed and tested research protocols during an initial phase of fieldwork under the instruction of senior IAI staff. Focus was applied to documentation of the initial physical impacts of Hurricane Katrina, such as direct damage to homes, vessels, and infrastructure; and to the immediately recognizable human impacts such as displacement of families, issues surrounding financial support and related problems and services, changes in social and economic networks, and decisions and factors associated with moving or rebuilding. The protocols were revised as needed based on emergent issues and topics of relevance to the description and assessment... The draft report served as a basis for configuring the next phase of fieldwork, and for further refinement of the research protocols. A special communities field visit was arranged for the purposes of conducting interviews with Vietnamese-speaking shrimp harvesters in Bayou La Batre and Biloxi, and in St. Bernard and Plaquemines Parishes in Louisiana" (p. 6).

Unfortunately, no additional information on the content of the research protocols is provided, so it is impossible to assess whether problems with qualitative data collection and analysis (detailed below) are due primarily to inadequate protocols or failure to follow those protocols.

4. Staff appropriately trained and recruited

There is no discussion of training or backgrounds of the study team members, other than the mention that the teams that assisted in Alabama and Mississippi in the initial round of fieldwork were drawn from the University of West Florida public history graduate program.

5. Appropriate data collection methods

The data collection methods are summarized: "Much of the primary source data was obtained through formal and informal interview methods, and through observation while in the study communities. During initial field site visits, study teams engaged willing participants in informal, open-ended interviews" (p. 4). Both interviews and observation are appropriate methods for rapid ethnographic assessment.

6. Appropriate sampling strategy for research site selection

The report authors provide selection criteria, "Communities were selected for in-depth study based on relative extent and type of historical involvement in fishing-related industries, and proximity to the storm surge and associated damage propagated by Katrina," but there is really very little in the report to indicate why some communities were selected and others were not.

The authors state that “(s)election of the study communities was also informed by an earlier research program conducted for NOAA Fisheries by IAI...(Impact Assessment, Inc. 2005a, 2005b, and 2005c). The research was designed to identify towns and cities that are to greater and lesser degrees involved in fishing-related industries and other forms of enterprise across the region. All communities included in the current assessment were at the time of the hurricane extensively involved in some aspect of the commercial and/or recreational fishing industries” (p. 2). Due to the lack of additional information on the study communities, this reviewer obtained copies of the cited IAI reports and read them to determine how the communities were selected for inclusion in those reports, what was the basis for the general assessment of “extensively involved,” and upon what basis the selected communities were deemed to be involved. Those reports consist of 11 pages of summary text about the purpose and approach used in selecting and describing communities (basically the same text for each report) and then a catalog of the communities, resulting in reports of just over 250 pages (Alabama and Mississippi) and more than 600 pages (Louisiana) in length, and conclude with preliminary typologies of fishing communities in the three states. Of the 38 communities included in the 2006 Assessment, in the 2005 reports 19 had been deemed “Primarily-Involved,” 14 had been deemed “Secondarily-Involved,” four had been deemed “Tangentially-Involved” in fishing, and one (Hopedale) was not included in that evaluation at all (the random listing of communities in the tables made it challenging to find the communities and determine how they were classified). Thus, there appears to be some discrepancy between communities designated as “extensively involved” in the 2006 report and the designations used in the 2005 reports.

Beyond the identification as “extensively involved” in fishing, there is little additional information about why the 38 communities were selected among the 150 communities discussed in the 2005 reports, 34 of which were deemed “Primarily-Involved” in fishing. The authors state that they used a “representative sampling strategy” based on (a) local social, economic, and demographic conditions and attributes, (b) historic and ongoing community involvement in marine fisheries, and (c) local physical environmental and social effects resulting from Hurricane Katrina. However, no further mention is made of what demographic conditions and attributes, fisheries involvement, or hurricane effects were considered, and there is no table or matrix through which these attributes are linked to the selected communities. Given the lack of information, it is impossible to assess whether the 38 selected communities can be considered representative.

In the “Demographic Overview,” the authors note that “(t)he social and economic baseline conditions of affected coastal areas were not equal,” but they say nothing about how those inequalities affected selection of the study communities. Was there an attempt to select a cross-section of communities based on race/ethnicity, on mean household or per capita income, or on some other relevant variable(s)?

It is unclear why the researchers did not include any communities from Vermilion, Iberia, or St. Mary Parish. Rationale for including such communities would be either because they were affected by Hurricane Rita only and would provide a comparison for examining impacts or because they were only affected indirectly by one or both of the hurricanes (for example, due to population shifts within the region) and therefore provide additional benchmarks against which to measure the impacts of Katrina.

7. Systematic process for selecting informants

“A snowball or network sampling technique was subsequently used to identify respondents knowledgeable of factors and issues pertinent for purposes of description and assessment... Research participants included persons in the harvesting, processing, and distribution sectors of the region's commercial fisheries, persons involved in the recreational fishing industry, government officials, and local residents not directly involved in the fishing industry. Over 450 interviews were conducted in the affected region, including 150 interviews with captains and crew in the harvesting sector.” (p. 4-5). The use of snowball techniques and the use of follow-up interviews with key informants are both appropriate processes for selecting informants. In addition, because of the wide range of potential respondents, in a rapid assessment it is also valuable to pre-identify categories of people with whom to talk and track whether or not the researchers have obtained sufficient coverage of the community. Given the large number of interviews conducted for this assessment, it would be beneficial to have some sort of matrix showing the categories of respondents (only the captains and crew in the harvesting sector are distinguished) and how many were actually interviewed; these data are obscured when only number of interviews rather than number of respondents are reported. Given the approach of repeat visits to the communities, information about the number of interviewees, rather than simply the number of interviews, would be valuable.

8. Credibility is assessed, triangulation for validation of findings

Assessment of the credibility of the data – both quantitative and qualitative – is spotty. In a few places the authors specifically address noted weaknesses in or their suspicions of numeric data (see Section B below). However, they are completely silent on their assessment of the qualitative data they have collected. The authors used triangulation in several places in the assessment; qualitative data were used to validate quantitative findings and vice versa. However, in most cases they used different types of data in different sections and there was little integration or evaluation of the data (see Table 2 below).

Of additional concern, the authors liberally used newspaper sources to report findings of federal agencies and other government bodies without checking the original sources. In general, newspapers and other public media are recognized as primary source data for assessing community interest in or awareness of topics, dates when events occurred (or became known in a community), and information available to the community that might influence perceptions. They must be used cautiously as secondary sources of data because of uncertainty in the approaches used by journalists in obtaining information for a story.

9. Sound process of analysis, including coding strategies and mechanisms to improved interobserver agreement

This is clearly one of the weakest aspects of the assessment and report. Despite the section heading, “Secondary Source Data Collection and Analysis,” nowhere is there explicit discussion of how either qualitative or quantitative, primary or secondary source data were analyzed or how findings from the various approaches were combined. It is interesting to note that the section heading for primary data was labeled, “Primary Source Data Collection and Sampling Methods,” with not even an indication that discussing analysis of primary source data would be relevant.

The section entitled “Field Teams” has additional information on collecting data but nothing on analysis or how members of the team would share or corroborate findings.

Table 2 summarizes the type of data cited in each major report section and its source, where known. In numerous places throughout the report, the authors make fairly significant generalizations with no indication of the source of the information. For example, on p. 15: “The full demographic impacts of these distributions, however, are not reflected in these summary numbers. This is because those that suffered the greatest human losses, in terms of severity of the consequences, were disproportionately distributed among the poor, the undereducated, the unemployed, the underemployed, and minorities.” On p. 20: “In contrast, counties along the Mississippi coast lost a sizeable share of their white residents and homeowners after the hurricane, while other Gulf Coast metro areas, especially those that gained residents, experienced relatively minor overall shifting in their demographic profiles. Figure 6 maps poverty levels and median household income of coastal Mississippi residents prior to the storm, as well estimated storm surge and flooding.” The maps do not provide the data necessary for coming to the conclusion of the quoted statement.

Table 2. Type of Data Cited in IAI Assessment

Report Section	Type of Data Used in Discussion and Source	Type and Level of Analysis of the Data by IAI
B: PRE-HURRICANE KATRINA: AN OVERVIEW OF THE COMMERCIAL AND RECREATIONAL FISHING INDUSTRIES IN LOUISIANA		
I. Primary Fishing Industries in Louisiana	Secondary: NMFS, LASG	Reporting of data via text, maps, and tables; a little discussion of patterns; no information about relationship of economic gain from various groups such as fishermen to the rest of the state economy
II. Primary Fisheries and Production Levels in Coastal Louisiana: 1995-2004	Secondary: NMFS, LSUAC, LDWF	Reporting of numbers via text, graphs, maps, and tables; some discussion of patterns
III. Recreational and Commercial Fishing Industries and Participants in Louisiana	Secondary: NMFS, LDWF, American Sportsfishing Assn., U.S. Census, etc.	Reporting of data via text, maps, and tables; a little discussion of patterns

Report Section	Type of Data Used in Discussion and Source	Type and Level of Analysis of the Data by IAI
C. HURRICANE KATRINA: LOUISIANA STATE FISHERIES IMPACT		
I. Geography of Storm Surge and Winds Associated with Hurricane Katrina	Primary: aerial survey? (not mentioned in methods), interviews ¹ Secondary: Some sources not specified	Reporting of data via text, map, and photos; no information about whether interviews were coded; no analysis of interview data by age, type of fishery, ethnicity or other presumably relevant characteristics
II. Effects of Hurricane Katrina on Louisiana's Marine-based Infrastructure	Primary: observation, interviews Secondary: LSUAC, LDWF, LASG, NMFS, newspapers Some sources not specified	Reporting of data via text, tables, graphs, maps, and photos; no overall analysis of data on infrastructure in each community; no information about how interviews were analyzed; quotes used to illustrate points; no analysis of interviews of fishermen by parish, age, type of fishery, ethnicity, or other presumably relevant characteristics
III. Estimated Economic Effects of Hurricane Katrina on Louisiana Fisheries and Related Industries	Primary: interviews Secondary: LDWF, SLUAC, NMFS, NACO, newspapers Some sources not specified	Reporting of data via text, tables, graphs, maps, and photos; inconsistencies in data reported in text and tables; no explanation of increases in dockside landings; perspectives of interviewees are noted (e.g., "fishery participants") but no indication of prevalence; quotes used to illustrate points
IV. Response and Adaptation to Hurricane Katrina	Primary: interviews	Reporting of data via text and photos; no information about whether interviews were coded; no analysis of interview data by age, type of fishery, ethnicity or other presumably relevant characteristics
D. PRE-HURRICANE KATRINA: AN OVERVIEW OF THE COMMERCIAL AND RECREATIONAL FISHING INDUSTRIES IN MISSISSIPPI		

¹ Interviews is used here as the catchall term for any data that appear to have been collected in the field through talking with someone, whether the source is cited as personal communication, field observations, or there is no citation but there is a general statement that indicates the data came from a person or group of persons.

Report Section	Type of Data Used in Discussion and Source	Type and Level of Analysis of the Data by IAI
I. Primary Fishing Industries in Mississippi	Secondary: MSSG, NMFS, MSUCREC	Reporting of data via text and tables; no information about relationship of economic gain from various groups such as seafood processors to the rest of the state economy
II. Primary Fisheries and Production Levels in Coastal Mississippi: 1995-2004	Secondary: MSSG, MDMR, NMFS, MSUCREC,	Reporting of data via text, graphs, map, and tables; some discussion of patterns
III. Recreational and Commercial Fishing Industries and Participants in Mississippi	Primary: interviews Secondary: USFWS, American Sportfishing Association, MDMR, NMFS, US Census;	Reporting of data via text, tables, graphs, and maps; a little discussion of patterns
E. HURRICANE KATRINA: MISSISSIPPI STATE FISHERIES IMPACT		
I. Geography of Storm Surge and Winds Associated with Hurricane Katrina	Primary: aerial survey? (not mentioned in methods) Secondary: NWS Some sources not specified	Reporting of data via text, tables, maps, and photos
II. Effects of Hurricane Katrina on Mississippi's Marine-based Infrastructure	Primary: observation, interviews Secondary: MDSR, NMFS, MSUCREC, MDMR, news Some sources not specified	Reporting of data via text, tables, maps, and photos; some discussion of patterns; no overall analysis of data on infrastructure in each community; no information about whether interviews were coded; no analysis of interview data by age, type of fishery, ethnicity or other presumably relevant characteristics
III. Estimated Economic Effects of Hurricane Katrina on Mississippi Fisheries and Related Industries	Primary: interviews Secondary: GOM Fishery Management Council; GCRL, NMFS, MSUCREC, NACO, news	Reporting of data via text, tables, graphs, maps, and photos; when perspectives of interviewees are noted (e.g., "charter boat operators") no indication of prevalence or analysis by relevant characteristics

Report Section	Type of Data Used in Discussion and Source	Type and Level of Analysis of the Data by IAI
IV. Response and Adaptation	Primary: interviews Secondary: FEMA	Reporting of data via text and photos; no information about whether interviews were coded; no analysis of interview data by age, type of fishery, ethnicity or other presumably relevant characteristics
F. PRE-HURRICANE KATRINA: AN OVERVIEW OF THE COMMERCIAL AND RECREATIONAL FISHING INDUSTRIES IN ALABAMA		
I. Primary Fisheries in Alabama	Secondary: NMFS Some sources not specified	Reporting of data via map, text, and tables
II. Primary Fisheries and Production Levels in Coastal Alabama: 1995-2004	Secondary: NMFS, news	Reporting of data via text, graphs, and tables; inconsistencies in data reported in text and graph; some discussion of patterns
III. Recreational and Commercial Fishing Industries and Participants in Alabama	Secondary: NOAA, US Census, NMFS, American Sportfishing Association,	Reporting of data via text and map
G. HURRICANE KATRINA: ALABAMA STATE FISHERIES IMPACT		
I. Geography of Storm Surge and Winds Associated with Hurricane Katrina	Primary: interviews? Secondary: NWS Some sources not specified	Reporting of data via text, maps, and photos; some discussion of patterns
II. Effects of Hurricane Katrina on Alabama's Marine-based Infrastructure	Primary: interviews Secondary: NMFS, news Some sources not specified	Reporting of data via text, graphs, tables, and maps; inconsistencies in data reported in text and tables; inconsistencies with findings of earlier chapter without explanation; introduction of new terms such as "secondary study community" and "shallow roots" without explanation; some discussion of patterns
III. Estimated Economic Effects of Hurricane Katrina on Alabama Fisheries and Related Industries	Secondary: OSAA, NOAA, NMFS, NACO	Reporting of data via text and tables; some discussion of patterns

Report Section	Type of Data Used in Discussion and Source	Type and Level of Analysis of the Data by IAI
IV. Response and Adaptation	Primary: interviews Secondary: FEMA Some sources not specified	Reporting of data via text and photos; no information about whether interviews were coded; no analysis of interview data by age, type of fishery, ethnicity or other presumably relevant characteristics
H. CHALLENGES TO RECOVERY		
One section	Primary: interviews	Reporting of data via text, photos, and table; no information about whether interviews were coded; no analysis of interview data by age, type of fishery, ethnicity or other presumably relevant characteristics

10. Findings and discussion clearly presented

Generally, the data – especially from secondary sources – are clearly presented in the form of text, tables, graphs, and maps. However, a number of significant issues are not raised until the final sections of Chapters C, E, and G on response and adaptation or until Chapter H on challenges to recovery (see Section B below) and the data to support the authors’ assertions are uneven. These and other issues that are mentioned in the report – such as reliance on immigrant labor – require more explanation and discussion. In general, the data provided to support findings based on interviews are insufficient; quotes are used to illustrate points made by the authors with no indication of the degree to which the views are held by members of relevant groups of interviewees such as fishermen or processors.

11. Ethical principles respected and process of getting informed consent used

The only reference to procedures for informing participants of the study and securing their consent is made in Section A.II. on research methods. The authors state that quotes are included only for participants who signed consent forms. It is unclear the extent to which others were informed of the assessment and in what way.

Assessment: The elements of the rapid ethnographic assessment methodology used in the study are generally scientifically sound. The study would have been improved by clear, unambiguous goals and objectives and deliverables that matched that goal. The assessment methodology incorporates other necessary features: a systematically developed field guide, an experienced research team, and appropriate data collection methods. Analysis of the data, however, is lacking. The secondary data are generally presented in tables with little or no actual discussion of them and no tables or analyses that combine and compare data from across sections. The research team conducted approximately 450 interviews, but there appears to be no systematic way in which the data from the interviews was coded and/or categorized, demographic data

about the interviewees was gathered and used in the analysis, the frequencies of responses were obtained, or the findings were reported.

Recommendations for Improvement: The assessment should begin with clear goals and objectives that are linked to specific types of data and the analyses that will make it possible to achieve them. A rapid assessment is not simply a short-term effort to grab whatever data and information can be identified and obtained during the assessment period. Beyond the methods of collecting data, the approaches that will be used to analyze the data should be articulated and followed.

B. Analysis and Use of Social and Infrastructure Data

As stated above, it is in the analysis that the report is weak. The authors present a lot of data, much of it from secondary sources and published reports, but they offer little in the way of evaluation of the data or of analysis. In a rare examination of the data presented, when comparing the sources estimating the economic effects of the hurricanes on fisheries, the authors explain why two sources reach vastly different conclusions, though they offer very limited analysis of these sources and only a cursory explanation of differences (see p. 224).

More typical is the presentation of data – sometimes with the claim that an analysis was done – without much discussion of what they mean and few or no attempts to integrate data from one section with that from other sections. Section A.IV, “Demographic Overview,” is an attempt to describe the social and economic characteristics of the affected coastal areas to provide a context within which to understand the impacts of Hurricane Katrina. As the authors note on p. 13, “(t)he following preliminary discussion and demographic analyses are needed in order to understand the general characteristics of Hurricane Katrina’s impacts and their distribution.” Unfortunately, though there are numerous maps in that section, there is little in the way of demographic analysis, and the presentation of data is uneven.

The authors use data from the U.S. Census, both the 2000 Census and the Special Census released January 1, 2006, “Special Population Estimates for Impacted Counties in the Gulf Coast Area,” for their state-by-state synopses. They note in general that the data are less-than-perfect and in one instance articulate a particular concern, “(O)ur field experience, including several visits since January, however, lead us to question this particular enumeration” (p. 13). In the case of Alabama, they also note that “the homes that were occupied in Bayou La Batre prior to the hurricane do not appear to be registered in this census” and offer a plausible explanation of what they understand to be an underreporting of loss in the study communities.

The authors then attempt to apply the concept of vulnerability to discuss impacts of Hurricane Katrina (beginning on p. 15). This section is particularly weak. It includes general statements that are not tied to any specific data or other analyses, such as “The full demographic impacts of these distributions, however, are not reflected in these summary numbers. This is because those that suffered the greatest human losses, in terms of severity of the consequences, were disproportionately distributed among the poor, the undereducated, the unemployed, the underemployed, and minorities” (p. 15). Furthermore, the section includes an amalgam of statements and maps that are intended to provide “a ‘baseline’ portrait of the impact of

Hurricanes Katrina and Rita² on population shifts and changing characteristics in the Gulf Region in the immediate months following the storms” (p. 15). The authors comment on the problems with the using both the U.S. Special Census and U.S. Census 2000, the latter of which they use in their geographic information system (GIS) analysis. On p. 15, the authors note that they provide “GIS analyses and depictions;” the latter is the more accurate portrayal as the fact that a GIS was used to create maps does not constitute analysis.

Two examples will be provided to illustrate the problems with this section. First, according to the authors, “Figure 3 represents the distribution of population in Southeast Louisiana by density and by poverty levels prior to Hurricane Katrina and, then, immediately after the hurricane as indicated by the storm-surge and flooding boundaries” (p. 15), but the figure shows only percent in poverty for areas affected by Katrina, based on Census Block Group. There is no indication whether the map reflects pre- or post-Katrina data, but based on the earlier statement, it is assumed these are the former. In either case, Figure 3 is simply a static map showing the percent of people living in poverty at one point in time.

The only additional information provided for Louisiana – and clearly the most detailed – is a series of maps with demographic data for New Orleans. The maps (p. 18-19) and the discussion on p. 17 are strangely out of place. New Orleans is not a study community. It is unclear why the authors did not instead do any additional analysis for the Louisiana parishes in which the study communities were located. The data for Mississippi and Alabama are all pre-Katrina, so they only show what groups might have been potentially impacted but nothing about who was actually affected.

While the above problems are significant, their impact on the rest of the report is quite minimal because there are no additional data or discussion about demographic characteristics in the report. Questions of response and adaptation to the hurricanes are left out of the analysis of impacts of each state and community until section IV of each of Chapters C, E, and G, “Responses and Adaptations,” where the authors attempt to draw conclusions about both impacts to the communities and recovery. In all cases, these sections, while interesting, are scientifically weak. They include many unsupported statements and lack any integration with the vast quantities of numeric data presented in the preceding sections. For example, Section IV of Chapter G on Alabama introduces the concept of “community cohesion” (p. 231), a concept not discussed elsewhere or explained adequately when it is mentioned.

For the most part, the data for Section IV of each chapter appear to come from interviews and field observations, but there is no indication how such data were analyzed. In places where significant information about community capacity could have been gained from use of demographic data (such as proportion of community members eligible for public assistance before the hurricanes according to economic status), no additional data are incorporated. As a result, while the particular responses that the researchers identify are interesting, I have little confidence that they represent the most significant ones.

² Note that this is the first mention of Hurricane Rita, but there is no information in this section on the extent or impacts of Rita.

The problems cited above are magnified in Chapter H, “Challenges to Recovery.” Consequently, instead of that being a chapter with potentially significant implications for policy, it is largely a rehash of well-known problems facing Gulf of Mexico fishing communities. The aim of Chapter H is to discuss a number of factors that are likely to impede recovery from the hurricanes. While there is no question that the challenges identified in this chapter – from declining shrimp prices to gentrification – are important, it is unclear upon what basis they have been selected for inclusion and others have been left out; there is no clear link to the data provided in the earlier chapters. The majority of the data in this chapter were drawn from interviews. Quotes and some statements are cited as “Personal Communication,” though it is generally only for the quotes that characteristics of the speakers (e.g., “processing plant owner” or “shrimper”) are also provided. Despite the detailed listing of numbers of facilities, fishery landings, etc. in previous chapters, in the absence of a systematic analysis of other factors, an overall analysis of the situation and challenges is problematic.

Reliance on qualitative data derived from interviews is certainly appropriate, though without any details on the interview protocols it is impossible to determine if the information being gathered in the 450 interviews could address the issues of recovery. Also, the qualitative data could and should be supported by secondary source data where possible (e.g., information about repossession of vessels can be systematically gathered). Along with the problems of analysis, Chapter H is very uneven. For example, there is a long discussion of gentrification in coastal Mississippi that runs for more than two pages; this would have been more appropriate in a background section such as on p. 11. The entire discussion of insurance is critical and should have been introduced, analyzed, and discussed much earlier and more thoroughly in the report, rather than brought in as a one-page discussion at the end.

The lack of integration of social and demographic data into the assessment is a serious weakness, so the source of the problem requires special attention. Although the IAI Statement of Work specifies that the researchers should investigate the impacts of Hurricane Katrina on “study communities,” both the Statement of Work and the IAI report focus on the fishing-dependent businesses and other fishing-dependent entities.³ The SOW specifies that during Part Two of the assessment the research effort would involve examination of the social and economic impacts of the hurricanes and both impediments to and prospects for recovery. However, in the specification of deliverables, the SOW is very clear: IAI “shall provide a written report documenting the existence and status of existing fishing infrastructure compared to pre-Katrina.” Consequently, the social, economic, and demographic characteristics of each community, region, or state that contributed to the immediate and short-term social and economic impacts of the hurricane or would be major factors in recovery are not considered. This is a significant shortcoming of the assessment, and it can be traced, at least in part, to the SOW.

³ There were clearly significant deviations from the Statement of Work, presumably based upon conversations with NOAA Fisheries’ staff. For example, the timeline was changed significantly from that presented in the Statement of Work – instead of two parts to the assessment (one immediately following the storms and another after NMFS review of a preliminary report of findings), the researchers went out in four stages (September to December 2005, January through February 2006, March 2006, and April through May 2006). It is possible that the narrow focus on fishing infrastructure was changed as well.

Recommendations for Improvement: An assessment of the impacts of a hurricane on fishing communities extends far beyond impacts to fishing infrastructure. It is certainly within the realm of a rapid ethnographic assessment to document and analyze impacts to the fishing industry more broadly and to a community. A specific plan for integrating social and demographic data into the assessment is needed and should be followed.

C. Pre- and Post-Impact Fisheries-Focused Social and Infrastructure Data – State Level

According to the Statement of Work, the focus of the assessment is on fishing infrastructure, and it is that which will be considered here. The problems with the social data, in general, have been discussed in Section B of this report, so they will not be repeated here.

The assessment was designed around 38 study communities in 10 counties and parishes within the three states of Mississippi, Alabama, and Louisiana. Given the community focus, the aggregation for state level analyses is only partially successful (see Section D of this report for further discussion of this issue). Data for these analyses are drawn primarily from secondary data, as shown in Table 2, with specific information on fishing infrastructure drawn from “Field Observations.” In general, state-level data were taken from reports of state agencies such as the Louisiana Department of Wildlife and Fisheries (LDWF) or the Mississippi Department of Marine Resources (MDMR) or from NMFS.

There is some inconsistency with regard to the parishes/counties for which data were reported. In some cases, the authors stick to the “study parishes” (e.g., p. 69) while in others additional parishes are included (e.g., Table 16 includes Terrebonne, Lafourche, Jefferson, St. Bernard and Orleans parishes while Table 18 includes parishes where the hurricanes made landfall – Plaquemines, Lower Lafourche, Jefferson, St. Bernard, Orleans, and St. Tammany). In addition, numerous newspaper articles are cited, though generally uncritically. The exact nature of field observations is not discussed, so it is unclear whether data on number of plants of various types, number of employees, etc. come from literally observing the facilities or vessels, discussions with plant personnel, or some other source. In addition, there are no statements that assess the data that are presented.

More generally, throughout the chapters, where possible, the authors use data from published sources, such as LDWF, as the baseline against which to compare post-storm conditions (see p. 67). They then provide updates at various points in time. Unfortunately, there is a good deal of inconsistency in whether the time periods during which the information was collected are explicitly indicated and also in the tense in which the text is written. Given that a major objective of the assessment was to document changes in the conduct of marine fisheries subsequent to the landfall of Hurricane Katrina, the assessment was carried out in four phases (September to December 2005, January through February 2006, March 2006, and April through May 2006). To gain the most from that study design, more careful attention is needed to when statements or assertions were made. Otherwise, many of the statements are very hard to interpret. For example, in discussing oysters in the section on estimated effects of Katrina on Louisiana’s fisheries and related industries, the authors conclude, “Dire projections notwithstanding, recent interviews with oyster harvesters in Terrebonne Parish revealed that participants have been battling through

caked mud and debris to reach the beds” (p. 119). The meaning of “recent” is uncertain since no additional information is provided about the date or source of such interviews.

In some cases, only the September/October figures are given while in others there are data from several different dates. Clearly, the researchers were challenged to get into the communities and gather data both immediately after and for the entire period under study due to the difficult situation facing many of the respondents shortly after the storms. However, what data were collected require more effective reporting – the use of present tense to report statements made in May 2006 and also in October 2005 is misleading. Also, while the problems of irregular time periods are understandable, some sort of explanation of the unevenness is warranted, especially when decisions not to return to certain communities were made. The problems of presentation of the data should have been remedied prior to publication of the report.

Recommendations for Improvement: The state-by-state presentations of community-level data on impacts to fishing infrastructure would be significantly enhanced by both a comparative analysis across communities within each state and by a discussion of those findings in the broader state context. To make this possible, data on state resources, policies, and programs, as well as the acquisition and use of federal funds, are needed. The process of recovery could be better understood by a careful chronicling of changes that occurred throughout the study period with attention paid to the circumstances under which conditions improved or got worse over time. Of special interest is whether the changes were due to specific actions by private or public interests or due simply to the passage of time.

D. Pre- and Post-Impact Fisheries-Focused Social and Infrastructure Data – Community Level

According to the Statement of Work, the focus of the assessment is on fishing infrastructure, and it is that which will be considered here. Within the assessment, the problems with the social data and with reporting changes over time have been discussed in Sections B and C of this report, so they will not be repeated here.

The most detailed data are provided about select infrastructure, services, and boats in each of the 38 selected study communities. The initial lists of infrastructure were drawn from IAI reports published in 2005 (IAI 2005a, IAI 2005b); these were updated by IAI researchers in the field. The authors do not attempt to discuss the extent to which the information on the selected study communities would or would not be expected to reflect conditions in other communities. Thus, the data are useful primarily for updating the pre-Katrina baseline data for only the communities included in the study. With additional information about why the 38 communities were selected and a bit of analysis of the data from the 38 study communities and from the others included in the IAI 2005a and 2005b reports, it may be possible to use the given data to address the nature and extent of damage in the non-studied communities that would be expected of communities based on size, location in or out of the path of the storm(s), and more.

Other than as a chronicle of infrastructure community by community, without further analysis, the tables on infrastructure conditions do little to address the question of impacts of Hurricane Katrina on the study communities. There is no comparison across communities, or analysis by

certain features of the community, to draw out patterns in the data or associate the findings with any other relevant phenomena. Within the assessment, there are two mentions of “secondary study communities” (p. 169 and 222), but it is not clear how those are different from any of the communities studied.

Recommendations for Improvement: The community-level data on impacts to fishing infrastructure would be significantly enhanced by both a comparative analysis across communities and the integration of the results of the infrastructure assessment with other variables such as mean per capita income, that are aggregated from individual or household data, and measures such as property tax base, that are derived at the level of the community.

E. Conclusions

The IAI assessment ends with a two-page summary of interim conclusions. While some of those conclusions are supported by data and analysis in the report, others appear for the first time in this section. The observation of a decline in commercial fishing in the region is one with which the authors began the assessment. Surprisingly, though, the major focus of the report was an assessment of the specific fishing infrastructure of the 38 study communities, yet there is no mention of that infrastructure in the conclusions.

The authors conclude that some industry participants have left because of the storm, but they offer no information about where they are going; if they are permanently leaving the industry or turning to temporary, alternative forms of income generation; or if they are leaving their communities as well as the industry. Such information is necessary to assess the impacts of the storm. The general statement about a shift from commercial fishing leaves many questions unanswered.

Given the importance of the charter boat/recreational fishing industry, much more attention is needed to this industry and its relationship to commercial fishing. Despite claims that the industry is growing, almost no data are provided on changes over time. The only such data are the figures provided for 2001 and 2003 for Mississippi (p. 139). The relationship between charter boat/recreational fishing and commercial fishing needs to be analyzed as well, with data from the two industries laid side by side and considered in the context of their relative contributions to the economy and their patterns of growth and decline. Are commercial fishermen becoming charter boat operators?

More generally, the relationship between commercial fishing and other economic sectors in the study communities and the states of Louisiana, Mississippi, and Alabama warrants much more attention in any assessment of changes to the industry and communities, whether from a hurricane or any other cause. What other occupations are available to those seeking to leave the industry? Do they vary by age of individual, location, or gender? If so, what might be expected in terms of demographic shifts within the Gulf region over time? The offshore petroleum industry in the Gulf of Mexico has been a major source of employment for commercial fishermen who are leaving the industry and an industry from which commercial fishermen have been drawn when it goes through its cyclical downturns, yet it is mentioned only three times in the entire assessment report, and the discussion of the relationship between fishing and

petroleum is much too simplistic. The post-Katrina recovery and rebuilding of the offshore oil and gas industry has certainly had an impact on the job prospects of commercial fishermen, but this receives no mention.

Several of the conclusions introduce new concepts to the report. The discussion of the future of commercial fishermen, and especially the entry of children into the industry, is not supported by data or even really discussed in the report. For example, the authors conclude that few young people are entering commercial fisheries and associated industries. Yet only in one other place in the assessment is this issue brought up (see the generalized discussion of labor shortages on p. 240 in Chapter H, for which no supporting data are provided). It is unclear upon what basis the authors have reached this conclusion. If such a conclusion is warranted, it requires much greater analysis. Does it hold for all communities and ethnic groups? If not, why not? Similarly, the statement that small vessel fishery participants may prove resilient in adapting to storms and other pressures is not justified given the complete lack of data and analysis of small vessels as opposed to larger ones and of differentiation of small vessel owners and operators from others.

On the other side, significant issues raised (though not fully explored) in earlier chapters, such as the use of immigrant laborers, do not appear at all in the conclusions. In short, there is little relationship between the report and its conclusions.

To adequately assess the impacts of Hurricane Katrina, special attention is also needed on the contribution of the commercial and recreational industries to overall state economies. As the economic contributions of industries decline and fall, others may come in to take their place, and people employed in those industries may find other work or be left out altogether. The authors provide no data that would make it possible to draw conclusions about the relative importance of the fishing industries in the impacted states and how that changed due to the storms.

Recommendations for Improvement: The conclusion should bring together and summarize the data included in the separate sections in the report, allowing for comparison and analysis of hurricane impacts. In general, the conclusions should be informed by a comparison of data on the fishing industry and fishing communities across communities and states. In addition, there are numerous other comparisons that would be informative, such as an effort to bring together data on the commercial fishing and charter boat industries. The lack of comparative data and analysis is especially notable given the detailed information about fishing infrastructure of individual communities. Among other important benefits, a comparative analysis would make it possible to determine if some communities are doing better than others. Even though a complete understanding of the causes of such differences would be beyond the scope of a preliminary assessment, when used effectively rapid assessment methodologies can point to patterns that require further attention. Likewise, at least an initial assessment of the contribution of the fishing industries to the overall economies of the states within which they are located is within the scope of a rapid assessment.

Review Conclusions

The Preliminary Assessment of the Impacts of Hurricane Katrina on Gulf of Mexico Coastal Fishing Communities by Impact Assessment, Inc. is the product of a significant effort to describe conditions in the region in the days immediately following the hurricane and on three additional occasions over the next nine months. In addition to data collected in the field via interviews and observations, the IAI researchers gathered a large amount of secondary data on the conditions of fisheries in Louisiana, Mississippi, and Alabama both before and after the storm from state and federal agencies and private associations. Using these and data gathered during an earlier study to identify fishing communities in the region, the IAI researchers attempted to characterize the nature and scope of impacts of Hurricane Katrina on the communities, and particularly on the fishing infrastructure.

The assessment resulted in a 261 page document consisting of text, tables, graphs, maps, and photographs. The information presented in the report is largely descriptive. Even as a descriptive review of conditions in coastal fishing communities following Hurricane Katrina, the report suffers from serious shortcomings. The selection of the 38 study communities, which the authors claim are representative of coastal fishing communities in the three states, is inadequately described, and the relationships between these communities and others in the region are not known. Also, despite the large volume of information presented in the report, the authors provide little in the way of analysis that would allow questions about impacts to fishermen and their communities to be assessed or significant issues requiring further study to be identified.

The IAI assessment focused on fishing infrastructure, with data gathered in a prior study (IAI 2005a, IAI 2005b) serving as the baseline. This accounting of the infrastructure that survived the hurricane and its aftermath is an important resource for NMFS and the involved states and communities. However, the assessment report includes no analysis of impacts to this infrastructure beyond the individual communities or across the region or of what the findings indicate for communities other than the 38 studied. The focus on fisheries infrastructure appears to have precluded careful assessment and analysis of social and economic effects of the hurricane. The problem of focus appears to have originated in the initial IAI Statement of Work.

Future assessments of this nature should begin with a more consistent and focused statement of work and should require a more systematic approach to both community and informant selection. Beyond the methods of collecting data, the approaches that will be used to analyze the data should be articulated and followed. In addition, rather than a massive effort to collect any data related to the topic, selection of secondary data and inclusion of data collected in other research efforts should be guided by specific notions of what constitute social and economic impacts and how those might be identified and assessed.

Appendix A

Bibliography of Materials Provided by CIE and Acquired by Reviewer

Bibliography of Materials Provided by the Center for Independent Experts

Center for Independent Experts (CIE)

nd Consulting Agreement between the University of Miami and Diane Austin: Statement of Work

Impact Assessment, Inc.

2006 Preliminary Assessment of the Impacts of Hurricane Katrina on Gulf of Mexico Coastal Fishing Communities: Final Technical Report.

National Marine Fisheries Service (NMFS)

nd Socioeconomic Research in Fishing Communities Affected by Katrina: Statement of Work

Additional Literature Gathered for the Assessment by Reviewer

Impact Assessment, Inc.

2005a. Identifying Communities Associated with the Fishing Industry in Louisiana. Final Technical Report prepared for NOAA Fisheries, Southeast Regional Office under Contract WC133F-02-SE-0297. St. Petersburg.

Impact Assessment, Inc.

2005b. Identifying Communities Associated with the Fishing Industry in Alabama and Mississippi. Final Technical Report prepared for NOAA Fisheries, Southeast Regional Office under Contract WC133F-03-SE-0603. St. Petersburg.

Utarini, Adi, AnnaWinkvist, and Gretel H. Pelto

2001 "Appraising studies in health using rapid assessment procedures (RAP): Eleven critical criteria," *Human Organization*, Vol. 60 (4): 390-400.

Walker, Bobbi M., Zales, Robert F., and Betty W. Rockstall

2006 Charter Boat Fleet in Peril: Losses to the Gulf of Mexico Charter Fleet from Hurricane Storms during 2005. National Association of Charterboat Operators.

Appendix B

**Consulting Agreement between the University of Miami and Diane Austin
Statement of Work**

**Consulting Agreement between the University of Miami and Diane Austin
STATEMENT OF WORK**

CIE Review of report on "Preliminary Assessment of the Impacts of Hurricane Katrina on Gulf of Mexico Coastal Fishing Communities"

The NOAA/NMFS Office of Science and Technology/Division of Economic and Social Analysis in collaboration with NOAA/NMFS Southeast Regional Office commissioned an assessment of the impacts of Hurricane Katrina on the most heavily impacted Gulf of Mexico fishing communities in Louisiana, Mississippi, and Alabama. The Final Technical Report *Preliminary Assessment of the Impacts of Hurricane Katrina on Gulf of Mexico Coastal Fishing Communities* has been completed. The review by the CIE of this report is in partial fulfillment of the requirements set out in the Information Quality Act (IQA). The IQA requires independent review of influential federal documents.

The goals of the review are to evaluate whether the document meets accepted scientific practices for rapid ethnographic assessment, and to provide recommendations for improving future rapid assessments of fishing communities damaged by natural disasters like those occurring in the 2005 hurricane season. The document consists of an introductory chapter providing an overview of the problem, research methods used to conduct the assessment, and a broad overview of both regional fishing industry and demographic trends on the eve of Hurricane Katrina. This is followed by six chapters assessing in detail the impacts of Katrina in Louisiana, Mississippi, and Alabama fishing communities. The report concludes with a chapter that discusses challenges to recovery, and a final brief chapter of interim conclusions. The report is approximately 276 pages in length, of which approximately 165 pages is 12 point, single spaced text, including references. The remaining 111 pages are photos, figures and tables.

Background

The Gulf of Mexico is home to a significant share of the U.S. fishing industry, representing 20% of commercial fishing, and 30% of salt water recreational fishing. Local residents also participate to an unknown, but probably significant extent in salt water subsistence fishing. The agency recognized that it was important to assess the extent of storm damage to fishing industry infrastructure and to the communities in which it was located as the seriousness and geographical extent of the storm became evident. This report addresses these impacts. The assessment was to be based on rapid ethnographic assessment using a combination of standard ethnographic field techniques including participant observation; intensive interviews with fishing industry participants from various industry sectors including commercial harvest, processing, distribution, recreational for hire, and others; enumeration of fishing infrastructure; creation of GIS maps; and use of data and reports on storm damage produced by others. Surveys based on random sampling were precluded under the circumstances. Separate reports by others were commissioned to assess economic impacts.

Since 2002, NOAA Fisheries has conducted research on the fishing communities of all five states bordering the Gulf of Mexico. As a result of this effort, NOAA Fisheries had gained substantial knowledge and familiarity with the fishing communities in the area impacted by

Hurricane Katrina. Reports on Gulf of Mexico fishing communities that included analysis of secondary data such as licenses, permits, landings data, and GIS maps which physically located fishing-dependent businesses, infrastructure and, in some instances, the homes of fishermen were completed during 2004 and 2005 before Katrina struck. These reports contained the most complete and current baseline data available on fishing communities in the Gulf of Mexico in August 2005. Using these reports as *Time 1 Assessments*, field teams returned to the storm damaged areas to do *Time 2 Assessments* of the condition of the damaged fishing communities. Because of their intimate knowledge of the region's fishing communities based in their work compiling the baseline data, the contract research firm that had just completed the baseline community reports was asked to do the assessment.

The assessment need was current and critical, requiring researchers to enter the affected Gulf communities as soon as possible, visually evaluate the damage, and conduct interviews with fishermen and others in fishing-dependent businesses to determine the extent of hurricane damage. They began data collection activities in September 2005, ceasing data collection in May 2006. Thirty-eight communities distributed across 10 parishes and counties in three states were assessed; each was visited up to three different times --first during the fall/early winter 2005/2006, then during the mid/late winter 2006, and finally during mid/late spring 2006.

Reviewer Responsibilities

The Center of Independent Experts (CIE) shall provide three expert reviewers. Each reviewer's duties shall require a maximum of seven days of effort, including time to read relevant documents and to produce an individual written report consisting of their comments and recommendations. No travel is required, so each reviewer shall work from their home location. Each reviewer's report shall reflect his/her area(s) of expertise, and no consensus opinion (or report) will be required. Further, each reviewer shall only comment on sections within his/her area of expertise.

Expertise needed to review the *Final Technical Report* is social science expertise (primarily anthropological and sociological) in community-level rapid social impact assessments of areas damaged by sudden natural and/or man-made disasters, e.g., those caused by major storms like hurricanes or tornados, those caused by tsunamis or other sources of flooding, or those caused by major oil spills. Reviewers should be knowledgeable about rapid assessment processes in general, and rapid ethnographic assessment in particular (e.g., Leonard Bickman and Debra J. Rog, *Handbook of Applied Social Research Methods*, Thousand Oaks, CA: Sage, 1997; James Beebe, *Rapid Assessment Process*, Walnut Creek, CA: Altamira Press, 2001; Adi Utarini, AnnaWinkvist, and Gretel H. Pelto, "Appraising studies in health using rapid assessment procedures (RAP): Eleven critical criteria", *Human Organization*, Vol. 60 (4): 390-400 (2001); Setha M. Low, Dana H. Taplin, and Mike Lamb, "Battery Park City: An Ethnographic Field Study of the Community Impact of 9/11", *Urban Affairs Review*, Vol. 40 (5): 655-682 (2005). Familiarity with the marine fishing industry and fishing communities is desirable.

The documents supplied to the reviewers shall consist of the (1) original Statement of Work for Impact Assessment, Inc., and the (2) *Final Technical Report, Preliminary Assessment of the*

Impacts of Hurricane Katrina on Gulf of Mexico Coastal Fishing Communities. The reviewers shall become familiar with the research plan and the background documents.

Specific Reviewer Tasks and Schedule

1. Read the Statement of Work for Impact Assessment, Inc.
2. Read and assess the *Final Technical Report, Preliminary Assessment of the Impacts of Hurricane Katrina on Gulf of Mexico Coastal Fishing Communities*.
3. Specific points to be addressed in the reviewers' reports include:
 - (a) Is the rapid ethnographic assessment methodology used scientifically sound? Does it fall within the range of accepted rapid social assessment approaches used in the United States? If not, provide recommendations for improvement with attention to future rapid assessment studies
 - (b) Are the fishing community social and infrastructure impact data and analyses presented in the report consistent with the methodology described in the report? If not, provide recommendations for improving the data and/or the analyses with attention to future rapid assessment studies.
 - (c) Does the report provide comparable pre- and post-impact, fisheries-focused social and infrastructure data at the state level for the states of Alabama, Mississippi, and Louisiana? If not, recommend improvements.
 - (d) Does the report provide comparable pre- and post-impact, fisheries-focused social and infrastructure information at the community level for affected communities for the states of Alabama, Mississippi, and Louisiana? If not, provide recommendations for improvement.
 - (e) Are the report's conclusions supported by and consistent with the data and their analysis as described in the report? If not, provide recommendations for improvement.
5. No later than December 1, 2006, submit a written report⁴ to the CIE that addresses the points in item 3 above. See Annex I for additional details on the report outline. Each report shall be sent to Dr. David Sampson, via email at david.sampson@oregonstate.edu, and to Mr. Manoj Shivlani, via email at mshivlani@rsmas.miami.edu.

⁴ Each written report will undergo an internal CIE review before it is considered final.

ANNEX I: REPORT GENERATION AND PROCEDURAL ITEMS

1. The report should be prefaced with an executive summary of comments and/or recommendations.
2. The main body of the report should consist of a background, description of review activities, summary of comments, and conclusions/recommendations.
3. The report should also include as separate appendices the bibliography of materials provided by the Center for Independent Experts, including any additional literature cited, and a copy of the Statement of Work.

Please refer to the following website for additional information on report generation:

<http://www.rsmas.miami.edu/groups/cie/cierevrep.htm>