



U.S. Department of Commerce

National Oceanic and Atmospheric Administration

National Marine Fisheries Service

NOAA Technical Memorandum NMFS-SEFC-282

**Recreational Databases
in the Southeast: Applicable to
Economic Modelling**

by:

**Jonathan L. Platt
National Marine Fisheries Service
Southeast Regional Office
9450 Koger Boulevard
St. Petersburg, FL 33702**

April 1991

NOAA Technical Memorandum NMFS-SEFC-282

Recreational Databases in the Southeast: Applicable to Economic Modelling

by: Jonathan L. Platt

U.S. Department of Commerce
Robert Mosbacher, Secretary

National Oceanic and Atmospheric Administration
John A. Knauss, Administrator

National Marine Fisheries Service
William W. Fox, Jr., Assistant Administrator
for Fisheries



April 1991

Technical Memoranda are used for documentation and timely communication of preliminary results, interim reports, or special purpose information, and have not received complete formal review, editorial control or detailed editing.

Notice

The National Marine Fisheries Service (NMFS) does not approve, recommend or endorse any proprietary product or proprietary material mentioned in this publication. No reference shall be made to NMFS, nor to this publication furnished by NMFS, in any advertising or sales promotion which would indicate or imply that NMFS approves, recommends or endorses any proprietary product or proprietary material mentioned herein, or which has as its purpose an intent to cause directly or indirectly the advertised product to be used or purchased because of this NMFS publication.

This report should be cited as follows:

Jonathan L. Platt. 1991. Recreational Databases in the Southeast: Applicable to Economic Modelling, NOAA Technical Memorandum NMFS-SEFC-282, 60p.

Copies may be obtained by writing:
National Technical Information Service
5258 Port Royal Rd.
Springfield, VA 22161

Acknowledgments

I would like to acknowledge the following individuals: Richard C. Raulerson for initiating the research; Frederick Bell, John Bergstrom, Bob Ditton, Anthony Fedler, Duane Gill, Stephen Holland, Jeffrey Johnson, Bob Leeworthy, J. Walter Milon, Richard Perdue, Robin Riechers, David Rockland, John Stoll, Ivar Strand for providing helpful comments/assistance; and Deborah C. Protomaster for her efforts in preparing this document for publication.

TABLE OF CONTENTS:

	<u>Page</u>
I. Introduction.....	1
II. Databases for Analysis of Angler Recreational Benefits.	4
	<u>Topic</u>
	<u>Page</u>
Arndorfer & Bockstael	FL; King Mackerel; Charterboat 7
Bell, Sorensen, & Leeworthy	Florida; Residents & Tourists 9
Bell	Florida; Tourists 12
Bergstrom, Stoll, Titre, & Wright	Louisiana; Hunting, Fishing, Shrimping, Crabbing 14
Bockstael, Graefe, Strand, & Caldwell	SC; Bass & Mackerel; Private Boat; Artificial Reefs 17
Ditton	Southeast; Billfish; Boat 19
Ditton, Gill *	Gulf Charterboat; Headboat 21
Ditton & Stoll	Gulf; Mackerel; Private Boat 23
Gill *	Mississippi Charterboat 25
Holland *	Florida; Charter & Headboat 27
Johnson, et al. **	NC; Striped Bass; Boat & Bank 29
Milon	Miami, FL; Boat; Art. Reefs 31
NMFS	Marine Recreational Fishery Statistical Survey 33
NMFS (KCA Research)	1981 Socioeconomic Survey 34
Perdue *	NC, SC, GA; Charter/Headboat 36
Rockland	FL Keys; Shoreline, Private Boat, Guide Boats, etc. 38
Strand, Bockstael, McConnell	NY to FL; Pollution Study 41
Texas Parks & Wildlife, Texas A & M	Texas; Private Boat, Head & Party Boats 43
US Fish & Wildlife	Nat'l Survey of Fishing, Hunting & Wildlife Associated Recreation 47

	<u>Page</u>
III. Databases for Market Based Analysis:	50
Ditton, Stoll, Gill *** Gulf Charterboat, Party Boat	51
Gill *** Mississippi Charterboat	53
Holland, Milon *** Gulf Charterboat, Party Boat	55
Johnson, Perdue N. Carolina Marinas & Marine Manufacturers	57

*, **, *** Indicate related studies either in terms of the project or the survey instrument(s) utilized.

References.....	59
-----------------	----

Appendix A: Concise list of Recreational Economic Databases in the Southeast (funding source, author, title, survey date, species focus, data collection objective, geographic area, status)

SECTION I: INTRODUCTION:

The purpose of this paper is to present a list of saltwater fisheries related recreational economic databases for the southeastern United States (specifically the Gulf and South Atlantic subregions of the National Marine Fisheries Service¹). Not all the databases presented should be considered as purely economic, many were collected for alternative purposes but also provide some useful data applicable to recreational economic analyses.

Recreational economic analysis covers a broad spectrum - for the purposes of this document, the analyses of interest are limited to (1) estimation of angler recreational values and (2) analysis of the profitability of marketed components of the marine recreational fishing sector (eg. charter and party/head boat industries). Databases of regional economic impact, marketing, and sociological preferences while of interest in economics are not considered.

Given the focus of the paper, this document has been separated into two primary areas: databases relating to angler value estimation and databases relating to profitability analysis. The survey instruments from each database were reviewed and the relevant economic components presented.

¹ Gulf subregion: Texas, Louisiana, Mississippi, Alabama, and West Coast of Florida

South Atlantic Subregion: North Carolina, South Carolina, Georgia, East Coast of Florida

Each database is described in terms of the following items:

- Authors
- Project Title
- Population Sampled
- Years Sampled
- Species Focus
- Geographic Area
- Mode
- Sampling Approach
- Sampling Objective
- Data Checklist
- Data Collected.

While this paper is written mainly for recreational economic practitioners, it should also be of interest to data collection managers. For recreational economists, an attempt has been made to present the potentially useful economic data components from each database, in this way practitioners can evaluate the applicability of each database to their specific modelling/analytical interest. For data management, an attempt has been made to compile a fairly comprehensive list of recreational economic databases from which managers may wish to draw on to round out their data systems.

A concise list of the recreational economic databases reviewed can be found in Appendix A. This list provides information as to principal investigator, title/topic, funding source, survey date, data collection objective, geographic area, current status (date), and data contact. Anyone interested in a copy of the data and documentation on a specific project should pursue the identified data contact (final column of Appendix A).

This is an initial attempt by the NMFS Southeast Region economics group to piece together a recreational economic database list. It is intended that this list be distributed and updated periodically (perhaps annually). Databases which were inadvertently excluded can be added via subsequent updates. Also, the scope of the "economic" databases may be expanded to include regional economic impact, marketing, preference or other categories of interest.

SECTION II: DATABASES FOR ANALYSIS OF ANGLER RECREATIONAL VALUES

Given that the estimation of nonmarket benefits such as angler recreational values is a relatively new field (since 1960's), theories and applications within the discipline are constantly changing. With the field still evolving, it is difficult to keep pace let alone anticipate data needs. Nevertheless, there are certain elements which are quite useful in the construction of many recreational economic benefit estimation models.

Before discussing data needs, the following paragraphs consist of a very brief presentation of some of the ideas involved in recreational economic modelling. The basic objective of recreational economic modelling is to estimate recreational demand (number of visits) and/or value (consumer surplus). These demands and values are influenced by a multitude of factors, some of which may be impacted by human interaction or intervention (ie. fishery management activities).

There are a number of techniques available to estimate recreational demand and value, the two most popular and accepted approaches being the Travel Cost Method and the Contingent Valuation Method.

The Travel Cost Method attempts to estimate recreational demand as represented by number of trips or days involved in the activity over a given time period based upon observed recreational behavior.

A demand curve is constructed and value measured based upon the area under the curve (willingness-to-pay). The Travel Cost Method is referred to as an indirect valuation approach since value estimates are not directly obtained from angler survey responses.

The Contingent Valuation Method is much different, this approach involves directly asking individuals their value (willingness-to-pay) for an activity or a change in the activity. With the Contingent Valuation Method a bid function can be developed which is used to directly estimate value, as a result the Contingent Valuation Method is known as a direct valuation approach. With the Contingent Valuation Method, demand is not estimated, therefore demand models (sometimes referred to as use estimation models²) are sometimes constructed in addition to the bid function. Given that the researcher composes the willingness-to-pay questions asked, the Contingent Valuation Method is quite flexible in its application.

Despite the basic conceptual differences in the techniques, the construction of demand curves (Travel Cost) and bid functions (Contingent Valuation) are somewhat similar in terms of the basic explanatory variable areas utilized in the modelling. For sake of simplicity, four basic areas of explanatory variables are noted: price, quality, substitutes, and socioeconomics.

² Water Resource Council, 1983

Price: Cost of accessing the site - often estimated as a function of travel distance.

Quality: Quality of a site - in fishery modelling, this is normally based upon catch rates.

Substitutes: Substitutes in recreational economics are activities, sites, species, etc. which detract from the demand or value of the focal activity, site, species, etc. For example, the presence of substitute sites will tend to attract demand away from the focus site.

There are a number of categories of substitutes, the two receiving the most attention in fisheries modelling pertain to site and species substitution.

Socioeconomics/Demographics: A number of socioeconomic or demographic factors may affect recreational demand or value. Perhaps the most basic variables being income, years of fishing experience, age, etc.

The following pages of this section present, in alphabetical order, the list of databases. The information discussed above is provided for each.

DATABASE REVIEW:

INVESTIGATOR(S): David Arndorfer and Nancy Bockstael

PROJECT TITLE: Estimating the Effects of King Mackerel Bag Limits on Charterboat Captains and Anglers

POPULATION SAMPLED: Charterboat Anglers at the ports of Panama City and Destin FL.

YEAR(S) SAMPLED: 1985

SPECIES FOCUS: King Mackerel

GEOGRAPHIC AREA: Panama City and Destin, FL

MODE(S) SAMPLED: Charterboat

SAMPLING APPROACH: Combination of on-site intercept and mail questionnaires

SAMPLING OBJECTIVE: Estimate economic value of King Mackerel to charterboat anglers.

DATA CHECKLIST: Angler Benefit Estimation

	<u>Gathered</u>	<u>Not Gathered</u>
1) Dependent Variable:		
- Trips, days.....	X	
- Willingness-to-pay.....	X	
2) Independent Variables:		
- Price.....	X	
- Quality (individual catch).....	X	
- Substitutes (site).....	X	
- Socioeconomics (income).....	X	

DATA COLLECTED: Relevant to Economics

I. Dockside Questionnaire:

1. Party size
2. Expected hours fishing
3. Expected type of fishing (trolling vs bottom fishing)
4. Expected catch (species and quantity)
5. Expected catch of King Mackerel
6. Age and sex.

II. Mail Questionnaire:

A. General:

1. Main purpose of the trip
2. Mode of transportation to site
3. Group (party) relationship
4. Length of stay in region

B. General Trip Data:

1. Years of charterboat experience
2. Number of charterboat trips in 1985
3. " " King Mackerel trips in 1985
4. " " charterboat trips to Panama City or Destin
5. Other charterboat sites used

C. Interviewed Trip Data:

1. Number of fish caught and kept by species
2. Actual fishing hours
3. Targeting King Mackerel? If so, farthest distance from shore traveled.
4. Satisfaction with overall trip, species caught, size caught, number caught.

D. Cost Data:

1. Dollars spent to each port
2. Expenditures per day while at port
3. Travel time to each port
4. Travel miles to each port

E. Socioeconomics/Demographics:

1. Employment situation (work?, part-time or full-time, self-employed, number of hours worked per week, number of paid vacation days)
2. Hourly wage rate (if individual could work)
3. Age
4. Household income before taxes

DATABASE REVIEW:

INVESTIGATOR: F. Bell, P. Sorensen, V. Leeworthy
PROJECT TITLE: The Economic Impact and Valuation of Saltwater Recreational Fisheries in Florida
POPULATION SAMPLED: Florida resident anglers and tourists
YEAR(S) SAMPLED: 1981
SPECIES FOCUS: Non specifically
GEOGRAPHIC AREA: Florida
MODE(S) SAMPLED: All
SAMPLING APPROACH: Residents: Telephone survey of 1002 adult anglers
Tourists: Used an add-on survey to the Florida Division of Tourism Study, surveyed at airports and road arteries exiting the state
SAMPLING OBJECTIVE: Estimate the total net benefits of saltwater angling in the state of Florida

DATA CHECKLIST: Angler Benefit Estimation

	(FL Residents)		(Non-residents)	
		Not		Not
1) Dependent Variable:	<u>Gathered</u>	<u>Gathered</u>	<u>Gathered</u>	<u>Gathered</u>
- Trips, days.....	X			X
- Willingness-to-pay.....	X			X
2) Independent Variables:				
- Price.....	X			X
- Quality (individual catch).		X		X
- Substitutes (site).....	X			X
- Socioeconomics (income)....	X			X

DATA COLLECTED:

I. Resident Survey:

A. Socioeconomics:

1. Years of experience
2. Occupation
3. Income & number of household members
4. Age
5. Ethnic background
6. Sex

B. Demand:

1. Number of trips in Florida
2. Counties fished from and days in each
3. Modes used and number days by each (for boat modes: number of days by area)
4. Number of days fishing outside of Florida

C. Costs:

1. Annual equipment costs
2. Initial boat costs, maintenance
3. Costs in last 12 months for: travel, food, lodging, guide fees, equipment, rental, launch fees, mileage, etc.

D. Value:

1. Open-ended willingness-to-pay question
2. Closed-ended " " of \$6.75 for license

E. Catch:

1. Types of species usually caught

II. Non-resident Survey:

A. Socioeconomic:

1. Years of saltwater fishing experience
2. Age and sex
3. Ethnic origin
4. Zip code
5. Occupation
6. Income

B. Demand:

1. Number of days saltwater fishing in Florida in the past 12 months, number of trips
2. Number of days fished in each county
3. Number of days by mode, number of days by area (boat mode)
4. Average party size

C. Costs:

1. Total miles for saltwater fishing in the past 12 months, percent of miles in Florida, if flew: round-trip miles from lodgings to fishing site.
2. Florida expenditures: tackle, boats, motors, maintenance, equipment, fuel, etc.
3. Travel, bait, fees in past 12 months
4. Opportunity cost: lost wages

D. Value:

1. Open-ended maximum willingness-to-pay before give up fishing
2. Close-ended willingness-to-pay \$10.50 for a license

E. Catch:

1. Average length, number, pounds, and disposition by species in past 12 months

DATABASE REVIEW:

INVESTIGATOR(S): F. Bell
PROJECT TITLE: Florida Tourist Resource Scarcity Study
POPULATION SAMPLED: Florida Tourists (Beach and Saltwater Fishing Participants)
YEAR(S) SAMPLED: 1990
SPECIES FOCUS: None
GEOGRAPHIC AREA: Florida
MODE(S) SAMPLED: All
SAMPLING APPROACH: Personal interviews.
SAMPLING OBJECTIVE: Gather participation, expenditure, and economic value information from a sample of Florida tourists.

DATA CHECKLIST: Angler Benefit Estimation

	<u>Gathered</u>	<u>Not Gathered</u>
1) Dependent Variable:		
- Trips, days.....	X	
- Willingness-to-pay.....	X	
2) Independent Variables:		
- Price.....	X	
- Quality (individual catch).....	X	
- Substitutes (site).....		X
- Socioeconomics (income).....	X	

DATA COLLECTED: Relevant to Economics

- I. Participation Information: (Activities: marine recreational fishing & beach use)**
- A. Participate in marine recreational fishing and/or beach use in the past 12 months?
 - B. If not, why?

II. Trip Demand Data: (past 12 months)

- A. Number of Florida trips
- B. " " days of marine recreational fishing
- C. " " beach use
- D. " " pursuing other recreational activities
- E. Total number of days spent in Florida
- F. Principal site used for each activity

III. Expenditures: (principal site)

- A. Automobile miles
- B. Airfare
- C. Daily expenditures (lodging, food & drink, travel, bait, guides, fees, licenses, rentals, etc.)

IV. Maximum Willingness-to-Pay: For maintaining current fishing/ beach conditions.

V. Site Quality: (on average, across all sites)

- A. Fishing: - Target species?
 - Average number of target species caught
 - " " non-target species caught
 - Minimum catch per day before quit fishing in Florida
- B. Beach Use: - Crowding
 - Public access

VI. Socioeconomics/Demographics:

- A. Age
- B. Income
- C. Sex
- D. Race
- E. Years of fishing/beach experience

DATABASE REVIEW:

INVESTIGATOR(S): John Bergstrom, John Stoll, John Titre, and Vernon Wright

PROJECT TITLE: Economic Value of Wetlands-Based Recreation

POPULATION SAMPLED: Waterfowl hunters, fresh & saltwater anglers, recreational shrimpers and crabbers

YEAR(S) SAMPLED: 12/85 to 12/86

SPECIES FOCUS: No specific fish, shrimp, crabs

GEOGRAPHIC AREA: Southeast Louisiana wetland area

MODE(S) SAMPLED: Boat

SAMPLING APPROACH: Personal, on-site interviews at 88 boat launch sites plus a follow-up mail survey

SAMPLING OBJECTIVE: Estimate total use and nonuse values associated with wetland recreation

DATA CHECKLIST: Angler Benefit Estimation

	<u>Gathered</u>	<u>Not Gathered</u>
1) Dependent Variable:		
- Trips, days.....	X	
- Willingness-to-pay.....	X	
2) Independent Variables:		
- Price.....	X	
- Quality (individual catch).....	X	
- Substitutes (site).....		X
- Socioeconomics (income).....	X	

DATA COLLECTED: Relevant to Economics

I. Trip Demand Data: (Waterfowl hunting, fresh & saltwater fishing, recreational shrimping and crabbing)

- A. Days per month for past 12 months (all activities)
- B. Total trips in past 12 months
- C. Trips by activity in past 12 months
- D. Average number of days per trip
- E. Primary access point
- F. Trips by access point and activity

II. Expenses:

A. Average Trip: (all sites)

1. Share expenses? With how many people.
2. Catch enhancement costs: ammunition, bait, tackle, guide fees, etc.
3. Transportation costs
4. Rental equipment
5. Boat costs
6. Lodging
7. Food
8. Type of day (lost wages)

B. Average Trip: (favorite site)

1. one-way miles by car
2. " " time
3. " " boat miles
4. " " boat time
5. time spent waiting to launch

III. Trip Quality:

- A. Average trip (all sites): average number of waterfowl per day, fresh or saltwater fish per day, pounds of shrimp or crabs per day
- B. Average trip (favorite site):
 1. Average bag/catch per day
 2. Congestion (non-recreational boats)
 3. Natural scenery, wildlife, pollution, isolation

IV. Willingness-to-Pay:

- A. Maintain current bag/catch levels - open & close-ended
 1. Allocate Maximum WTP to activities & favorite site
- B. Maintain current bag/catch levels except for freshwater fishing (only maintain catch at half the current rate)
 1. Number of trips taken given the reduced catch
- C. Maintain current bag/catch levels except for freshwater fishing (only maintain catch at a quarter the current rate)
 1. Number of trips taken given the reduced catch

V. Socioeconomic/Demographics:

- A. Household size**
- B. Age**
- C. Sex**
- D. Education**
- E. Recreational Budget per month**
- F. Days spent recreating per month (all recreational activities)**
- G. Income**
- H. Years of experience using wetland area, by activity**
- I. Skill by activity**
- J. Boat ownership**

DATABASE REVIEW:

INVESTIGATOR: Bockstael, Graefe, Strand, & Caldwell

PROJECT TITLE: Economic Analysis of Artificial Reefs: A Pilot Study of Selected Valuation Methodologies

POPULATION SAMPLED: South Carolina registered boat owners and on-site anglers

YEAR(S) SAMPLED: Summer 1985

SPECIES FOCUS: Artificial reefs: Bass Non-reefs: Mackerel

GEOGRAPHIC AREA: Artificial reefs of coast of South Carolina

MODE(S) SAMPLED: Private boat

SAMPLING APPROACH: Mail survey of registered boat owners and intercept survey of anglers

SAMPLING OBJECTIVE: Test a series of benefit estimation approaches and data collection techniques. Examine perceptions of fishing alternatives.

DATA CHECKLIST: Angler Benefit Estimation

	<u>Gathered</u>	<u>Not Gathered</u>
1) Dependent Variable:		
- Trips, days.....	X	
- Willingness-to-pay.....	X	
2) Independent Variables:		
- Price.....	X	
- Quality (individual catch).....	X	
- Substitutes (site).....	X	
- Socioeconomics (income).....	X	

DATA COLLECTED:

I. On-site Survey:

1. Perceptions and use patterns (including alternative sites)
2. Catch quality (expected catch, congestion, frequency of catching nothing)

3. Trip Specifics:
 - a. Areas used
 - b. Travel time
 - c. On-site time
 - d. Mode
 - e. Number of boats seen
 - f. Number and pounds of fish caught
 - g. Travel miles
4. Open-ended willingness-to-pay questions
5. Demographics:
 - a. Age
 - b. Employment status
 - c. Work schedule
 - d. Flexible wage
 - e. Income
 - f. Fishing experience

II. Mail Survey:

The mail survey closely paralleled the on-site questionnaire - instead of focusing on one-trip, the mail survey considered trips during the last six months.

1. Distribution of trips
2. Perceived quality (different between artificial reefs and natural bottoms)
3. Costs
4. Boat length, fuel consumption, equipment

DATABASE REVIEW:

INVESTIGATOR: B. Ditton

PROJECT TITLE: Characteristics, Behavior, Attitudes, Expenditures, Harvest and Management Preferences of Billfish Tournament Anglers in the Atlantic, Gulf of Mexico, and Caribbean Regions

POPULATION SAMPLED: Tournament anglers

YEAR(S) SAMPLED: 1989

SPECIES FOCUS: Billfish

GEOGRAPHIC AREA: Atlantic, Gulf of Mexico, and Caribbean

MODE(S) SAMPLED: Boat

SAMPLING APPROACH: Mail survey

SAMPLING OBJECTIVE: Provide the following:
- demographic and economic profile
- identify fishing behavior and attitudes, expenditures
- management implications

DATA CHECKLIST: Angler Benefit Estimation

	<u>Gathered</u>	<u>Not Gathered</u>
1) Dependent Variable:		
- Trips, days.....	X	
- Willingness-to-pay.....	X	
2) Independent Variables:		
- Price.....	X	
- Quality (individual catch).....	X	
- Substitutes (site).....		X
- Socioeconomics (income).....	X	

DATA COLLECTED: Relevant to Economics

DRAFT MAIL SURVEY:

A. General Fishing Activity:

1. Years of fishing experience, years targeting Billfish

2. Fishing days in past 12 months in total and by mode - is this a typical year
3. Top 3 target species
4. Expenditures in past year on rods, reels, tackle - is this typical
5. Boat ownership, size
6. Number of saltwater tournaments, # of saltwater trips
7. Typical size of fishing party
8. Questions relating to catch attitudes and fishing interest

B. Billfish Trips (past 12 months)

1. Average trip length
2. Number of trips landing Billfish, targeting Billfish
3. Average number of days needed to land Billfish
4. Number of hours fishing per day
5. Number of lines in the water per day
6. Total Billfish kept in the past 12 months
7. Number of trips where Billfish was caught as bycatch
8. If it took twice as long to catch a Billfish next year, how many trips would you take
9. Total cost per trip (including entry fee)
10. Travel distance
11. Costs pertaining exclusively to Billfish trip

C. Most Recent Billfish Tournament:

1. Number of days fished
2. Number of hours with lines in the water
3. Number of lines used
4. Billfish species targeted (Blue Marlin, White Marlin, Sailfish, Swordfish, Spearfish)
5. Number of fish brought to boat, number of fish kept
6. Were you affected by the recent size limit regulations

D. Billfish Management Program:

1. Open and closed-ended questions relating to the willingness -to-pay for Billfish stamps in order to maintain current Billfish population levels
2. Open and closed-ended questions relating to the willingness -to-pay for Billfish stamps in order to increase Billfish populations 25 percent
3. Open ended question regarding reasonable price for a stamp

E. Demographics:

1. Age and sex
2. Occupation
3. Education
4. Household income
5. Zip Code of permanent residence

DATABASE REVIEW:

INVESTIGATOR: B. Ditton, D. Gill (Texas A & M)

PROJECT TITLE: Developing Strategies to Enhance Charter and Headboat Fishing Operations in Texas, Louisiana, Mississippi, and Alabama

POPULATION SAMPLED: Chambers of Commerce. Anglers, and Charter & Headboat Operators

YEAR(S) SAMPLED: 1987

SPECIES FOCUS: None

GEOGRAPHIC AREA: TX, LA, MS, AL

MODE(S) SAMPLED: Charter and Headboats

SAMPLING APPROACH: Anglers: Mail & dockside surveys
Operators: Telephone or personal interviews
Chambers of Commerce: mail & telephone inquiry

SAMPLING OBJECTIVE: Assist charter and headboat operators to become better integrated with existing coastal tourism systems and to develop and implement marketing strategies to better manage fishing demand

DATA CHECKLIST: Angler Benefit Estimation

	<u>Gathered</u>	<u>Not Gathered</u>
1) Dependent Variable:		
- Trips, days.....	X	
- Willingness-to-pay.....	X	
2) Independent Variables:		
- Price.....	X	
- Quality (individual catch).....		X
- Substitutes (site).....		X
- Socioeconomics (income).....	X	

DATA COLLECTED: Relevant to Economics

I. Chamber of Commerce Inquiries & Operator Interviews - Minor economic data.

II. Angler Surveys: Mail Questionnaire:

A. Socioeconomics/Demographics:

1. Age and sex
2. Education level
3. Employment status
4. Household income before taxes
5. Zip code

B. General Fishing Information:

1. Years of experience fishing
2. Boat information
3. Days saltwater fishing in the past year
4. Number of charterboat and partyboat trips in past year
5. Top 3 target species
6. Dollars spent on equipment last year

C. Trip Data (Most recent trip):

1. Charter or headboat trip
2. How long ago
3. Launch point
4. Number of days in community
5. Fishing time
6. Party relationship
7. Expenditures in coastal community
8. Trip satisfaction

Intercept Questionnaire:

1. Number of days saltwater fishing
2. Number of headboat (charterboat) trips
3. Favorite target species
4. Party relationship
5. Trip length
6. Zip code of residence
7. Expenditures in coastal community
8. Eight willingness-to-pay (WTP) questions based on catching your favorite fish and something other than your favorite fish.

DATABASE REVIEW:

INVESTIGATOR: B. Ditton & J. Stoll

PROJECT TITLE: Recreational Angler Participation in the Gulf of Mexico King Mackerel Fishery: Understanding the Value of the Resource and Socioeconomic Impacts of Management Options

POPULATION SAMPLED: King Mackerel tournament fishermen

YEAR(S) SAMPLED: 1987

SPECIES FOCUS: King Mackerel

GEOGRAPHIC AREA: Gulf of Mexico

MODE(S) SAMPLED: Boat

SAMPLING APPROACH: Mail survey

SAMPLING OBJECTIVE: Estimate the value of King Mackerel to tournament anglers

DATA CHECKLIST: Angler Benefit Estimation

	<u>Gathered</u>	<u>Not Gathered</u>
1) Dependent Variable:		
- Trips, days.....	X	
- Willingness-to-pay.....	X	
2) Independent Variables:		
- Price.....	X	
- Quality (individual catch).....	X	
- Substitutes (site).....		X
- Socioeconomics (income).....	X	

DATA COLLECTED: Relevant to Economics

A. Fishing Activity and Experience:

1. Number of years of saltwater fishing experience
2. Number of saltwater trips in 1986
3. Number of days saltwater fishing, # of days from boat, shore
4. Top three target species
5. Dollars spent on fishing equipment in 1986
6. Boat ownership, length
7. Number of tournaments participated in 1986

B. Trips Catching or Targeting King Mackerel:

1. Years of experience fishing for king mackerel
2. King mackerel trip length in days (typical trip)
3. Number of trips where you caught king mackerel, # trips targeting king mackerel
4. Number of king mackerel caught and kept on typical trip
5. Travel distance for a typical trip
6. Costs for king mackerel fishing portion of typical trip

C. Importance of Sport Fishing in the Gulf of Mexico:

Open and closed-ended willingness-to-pay questions were asked:

1. To maintain current fish population (all species)
2. " " for all species except king mackerel (eliminates king mackerel from sport fishing)
3. To maintain current fish populations and increase king mackerel by 25%

D. King Mackerel Stamp:

Open and closed-ended willingness-to-pay questions were asked:

1. Provide the option to fish for king mackerel at current king mackerel population levels
2. " " with king mackerel population expanded by 25%

E. Opinion Questions:

1. What price for king mackerel stamp
2. Opinions on regulations

F. Demographics:

1. Household size
2. Age and sex
3. Occupation
4. Level of education
5. Total household income
6. Zip code of permanent address

DATABASE REVIEW:

INVESTIGATOR: D. Gill (Mississippi State University)

PROJECT TITLE: Characteristics and Attitudes of Charter Boat Customers

POPULATION SAMPLED: Chambers of Commerce. Anglers, and Charter & Headboat Operators

YEAR(S) SAMPLED: 1989

SPECIES FOCUS: None

GEOGRAPHIC AREA: MS

MODE(S) SAMPLED: Charter boats

SAMPLING APPROACH: Anglers: Mail & dockside surveys
Operators: Telephone or personal interviews
Chambers of Commerce: mail & telephone inquiry

SAMPLING OBJECTIVE: Assist charter operators to become better integrated with existing coastal tourism systems and to develop and implement marketing strategies to better manage fishing demand

DATA CHECKLIST: Angler Benefit Estimation

	<u>Gathered</u>	<u>Not Gathered</u>
1) Dependent Variable:		
- Trips, days.....	X	
- Willingness-to-pay.....	X	
2) Independent Variables:		
- Price.....	X	
- Quality (individual catch).....		X
- Substitutes (site).....		X
- Socioeconomics (income).....	X	

DATA COLLECTED: Relevant to Economics

I. Chamber of Commerce Inquiries & Operator Interviews - Minor economic data.

II. Angler Surveys: Mail Questionnaire:

A. Socioeconomics/Demographics:

1. Age and sex
2. Education level
3. Employment status
4. Household income before taxes
5. Zip code

B. General Fishing Information:

1. Years of experience fishing
2. Boat information
3. Days saltwater fishing in the past year
4. Number of charterboat and partyboat trips in past year
5. Top 3 target species
6. Dollars spent on equipment last year

C. Trip Data (Most recent trip):

1. Charter or headboat trip
2. How long ago
3. Launch point
4. Number of days in community
5. Fishing time
6. Party relationship
7. Expenditures in coastal community
8. Trip satisfaction

Intercept Questionnaire:

1. Number of days saltwater fishing
2. Number of headboat (charterboat) trips
3. Favorite target species
4. Party relationship
5. Trip length
6. Zip code of residence
7. Expenditures in coastal community
8. Eight willingness-to-pay (WTP) questions based on catching your favorite fish and something other than your favorite fish.

DATABASE REVIEW:

INVESTIGATOR: S. Holland (Univ. of Florida)

PROJECT TITLE: Charter and Headboat Fishing as a Sector of the Tourism Industry in Florida: Guidelines for Greater Integration and Improved Economic Vitality

POPULATION SAMPLED: Chambers of Commerce. Charter and Headboat Anglers, and Charter & Headboat Operators.

YEAR(S) SAMPLED: 1987

SPECIES FOCUS: None

GEOGRAPHIC AREA: FL

MODE(S) SAMPLED: Charter and Headboats

SAMPLING APPROACH: Anglers: Mail & dockside surveys
Operators: Telephone or personal interviews
Chambers of Commerce: mail & telephone inquiry

SAMPLING OBJECTIVE: Assist charter and headboat operators to become better integrated with existing coastal tourism systems and to develop and implement marketing strategies to better manage fishing demand

DATA CHECKLIST: Angler Benefit Estimation

	<u>Gathered</u>	<u>Not Gathered</u>
1) Dependent Variable:		
- Trips, days.....	X	
- Willingness-to-pay.....	X	
2) Independent Variables:		
- Price.....	X	
- Quality (individual catch).....		X
- Substitutes (site).....		X
- Socioeconomics (income).....	X	

DATA COLLECTED: Relevant to Economics

I. Chamber of Commerce Inquiries & Operator Interviews - Minor economic data.

II. Angler Surveys: Mail Questionnaire:

A. Socioeconomics/Demographics:

1. Age and sex
2. Education level
3. Employment status
4. Household income before taxes
5. Zip code

B. General Fishing Information:

1. Years of experience fishing
2. Boat information
3. Days saltwater fishing in the past year
4. Number of charterboat and partyboat trips in past year
5. Top 3 target species
6. Dollars spent on equipment last year

C. Trip Data (Most recent trip):

1. Charter or headboat trip
2. How long ago
3. Launch point
4. Number of days in community
5. Fishing time
6. Party relationship
7. Expenditures in coastal community
8. Trip satisfaction

Intercept Questionnaire:

1. Number of days saltwater fishing
2. Number of headboat (charterboat) trips
3. Favorite target species
4. Party relationship
5. Trip length
6. Zip code of residence
7. Expenditures in coastal community
8. Eight willingness-to-pay (WTP) questions based on catching your favorite fish and something other than your favorite fish.

DATABASE REVIEW:

INVESTIGATOR: Johnson, Fricke, Hepburn, Sabella, Still, and Hayes

PROJECT TITLE: Recreational Fishing in the Sounds of North Carolina: A Socioeconomic Analysis

POPULATION SAMPLED: North Carolina anglers

YEAR(S) SAMPLED: 1981-2

SPECIES FOCUS: Striped Bass

GEOGRAPHIC AREA: Albemarle & Pamlico Sounds of North Carolina

MODE(S) SAMPLED: Boats and banks

SAMPLING APPROACH: Intercept survey

SAMPLING OBJECTIVE: To understand the socioeconomic characteristics of recreational anglers in the region, to understand social organization and cultural values of these anglers, and to examine the economic demand for and impact of recreational fishing in the region.

DATA CHECKLIST: Angler Benefit Estimation

	<u>Gathered</u>	<u>Not Gathered</u>
1) Dependent Variable:		
- Trips, days.....	X	
- Willingness-to-pay.....	X	
2) Independent Variables:		
- Price.....	X	
- Quality (individual catch)....	X	
- Substitutes (site).....	X	
- Socioeconomics (income).....	X	

DATA COLLECTED:

- A. General:**
1. Date and time of survey
 2. Site
 3. County and state

B. Weather:

1. Sky conditions (% cloud cover)
2. Precipitation within past 12 hours
3. Wind speed and direction

C. Demographics/Socioeconomics:

1. Racial composition of party
2. Number and ages of males and females in the party
3. Number in party
4. Age and sex of respondent
5. State and county of residence
6. Sport fishing experience and Striped Bass experience
7. Relationship between fishing party
8. Occupation, education, income
9. Have a fresh water license

D. Boat Data:

1. Boat used?
2. Length, hull type, motor type, horsepower, age of boat

E. Trip Data:

1. Target species (If you couldn't catch your target what would you have done?)
2. Miles to residence
3. Trip length in days
4. Length of stay in the area
5. Gear
6. Area fished
7. Fishing and running time
8. Expenses: gas and oil (car and boat); lodging; bait and tackle; food; launching, storage, or marine fees; repairs to boat; boat charter, rental, or partyboat fees in county of site and up to two other counties
9. Catch: Number of fish kept and released (also for Striped Bass), disposition of catch
10. Trip satisfaction

F. Annual Data:

1. Number of trips in past 12 months (Striped Bass)
2. Number of trips expected to take this year: saltwater, from intercepted location
3. Dollars spent on gear, launching, storing, mooring, maintenance in the past 12 months
4. Cost of average fishing trip in past year (Striped Bass)
5. Iterative bid willingness-to-pay question on participation at higher average cost levels per trip

G. Creel Survey:

1. Number of fish caught and length (up to 5 species)

DATABASE REVIEW:

INVESTIGATOR: J. W. Milon

PROJECT TITLE: The Economic Benefits of Artificial Reefs:
An Analysis of Dade County, FL Reef Fish
System

POPULATION SAMPLED: Artificial reef users and nonusers

YEAR(S) SAMPLED: June and November 1985

SPECIES FOCUS: None specifically

GEOGRAPHIC AREA: Dade County (Miami), FL

MODE(S) SAMPLED: Boat

SAMPLING APPROACH: Mail survey of registered boat owners

SAMPLING OBJECTIVE: Estimate use and nonuse values of boat
owners to an average and new artificial reef
site

DATA CHECKLIST: Angler Benefit Estimation

	<u>Gathered</u>	<u>Not Gathered</u>
1) Dependent Variable:		
- Trips, days.....	X	
- Willingness-to-pay.....	X	
2) Independent Variables:		
- Price.....	X	
- Quality (catch).....	X	
- Substitutes (individual site)..	X	
- Socioeconomics (income).....	X	

DATA COLLECTED:

A. Boat Information:

1. Length
2. Type of engine & horsepower
3. Fuel capacity & usage per hour
4. Equipment
5. Days fishing, diving, skiing, cruising in past 6 months

B. Use of Boat for Saltwater Fishing (past 6 months):

1. Number of trips to Dade County area
2. Fish at any of the artificial reef sites
3. Number of trips to artificial reef sites & launch point
4. Last Artificial Reef Site Trip:
 - a. Date
 - b. Launch point
 - c. Travel distance and time to launch point
 - d. Total time in boat
 - e. Number of hours fishing by area and by reef site
 - f. Fishing methods used at reef sites
 - g. Fish kept and released: weight and number
 - h. Party size
5. Last Saltwater Fishing Trip from your Boat:
 - a. Similar to 4
 - b. Boat owner ever fished at artificial reef site?

C. Use of Boat for Skin and Scuba Diving:

1. Similar to B4
2. Names of wrecks dived on
3. Activities pursued: sightseeing/photography, spearfishing (# speared, weight, species)
4. Last diving trip from your boat:
 - a. Similar to B4
 - b. Location and depth of each dive, time at each spot
 - c. Have you ever dove over artificial reefs

D. Preferences for New Artificial Reef Site & Sources of Funds:

1. Opinion questions about artificial reefs
2. Preferred location of new site
3. Maximum willingness-to-pay (travel time) for new site
4. Closed-ended willingness-to-pay question

E. Demographics:

1. Age and sex
2. Education
3. Employment
4. Vacation time
5. Skip work to fish, dive
6. Hourly wage
7. Household income before taxes

DATABASE REVIEW:

INVESTIGATOR: NMFS via outside contractors

PROJECT TITLE: Marine Recreational Fishery Statistics Survey (MRFSS)

POPULATION SAMPLED: General population and angler population

YEAR(S) SAMPLED: 1979 to present

SPECIES FOCUS: None Specifically

GEOGRAPHIC AREA: Atlantic, Gulf, and Pacific Coasts of the US

MODE(S) SAMPLED: All

SAMPLING APPROACH: Telephone survey of general population and Intercept survey of anglers on-site

SAMPLING OBJECTIVE: Estimate catch, effort, and number of anglers by subregion

DATA CHECKLIST: Angler Benefit Estimation

	<u>Gathered</u>	<u>Not Gathered</u>
1) Dependent Variable:		
- Trips, days.....	X	
- Willingness-to-pay.....		X
2) Independent Variables:		
- Price.....	X	
- Quality (individual catch).....	X	
- Substitutes (site).....		X
- Socioeconomics (income).....		X

DATA COLLECTED: See attached

INTERCEPT SURVEY

Analysis of Variables in NRFSS (1979 - 1989)

Variable Number	Variable Description	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
(SCREENING SURVEY)											
1	Primary purpose of trip (recreation, income)	-	-	-	-	-	-	-	-	X	X
2	Saltwater fishing?	-	-	-	-	-	-	-	-	X	X
3	Finfish Fishing?	-	-	-	-	-	-	-	-	X	X
4	Catch anything?	-	-	-	-	-	-	-	-	X	X
5	Finished trip?	-	-	-	-	-	-	-	-	X	X
6	Going elsewhere to fish?	-	-	-	-	-	-	-	-	X	X
7	By same mode?	-	-	-	-	-	-	-	-	X	X
(TYPE I RECORD)											
1	Variation in Form Type (finfish, shrimp, spiny lobster)	X	X	X	-	-	-	-	-	-	-
2	Interviewer	X	X	X	X	X	X	X	X	X	X
3	Interview number	X	X	X	X	X	X	X	X	X	X
4	Time of interview	X	X	X	X	X	X	X	X	X	X
5	Date of interview	X	X	X	X	X	X	X	X	X	X
6	State	X	X	X	X	X	X	X	X	X	X
7	County	X	X	X	X	X	X	X	X	X	X
8	Site Code	X	X	X	X	X	X	X	X	X	X
9	Interview status	X	X	X	X	X	X	X	X	X	X
10	Respondent Language	X	X	X	-	-	-	-	-	-	-
11	Sex	X	X	X	-	-	-	-	X	X	X
12	Age	X	X	-	-	-	-	-	X	X	X

Variable Number	Variable Description	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1
-----------------	----------------------	------	------	------	------	------	------	------	------	------	------	---

(TYPE 5 RECORDS: Economics)

1	Primary purpose of trip is fishing?	-	-	-	-	-	-	-	-	X	-	
2	One way miles from residence for those with primary purpose of fishing	-	-	-	-	-	-	-	-	X	-	
3	One way miles from last night's lodging for those with nonfishing primary purpose	-	-	-	-	-	-	-	-	X	-	
4	Trip length in days	-	-	-	-	-	-	-	-	X	-	
5	Zip code of residence	-	-	-	-	-	-	-	-	X	-	

TELEPHONE SURVEY (composed of the screening and trip questionnaires)

Variable Number	Variable Description	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
(Screening Survey)												
1	County	X	X	X	X	X	X	X	X	X	X	X
2	Town	X	X	X	X	X	X	X	X	X	X	X
3	Permanent Residence	X	X	X	X	X	X	X	X	X	X	X
4	Anyone in household fished in state within the past 12 months?	X	X	X	X	X	X	X	X	X	X	X
5	Number of household anglers in past 12 months	X	X	X	X	X	X	X	X	X	X	X
6	who were shrimping	X	X	-	-	-	-	-	-	-	-	-
7	Number of household anglers in the past 2 months	X	X	X	X	X	X	X	X	X	X	X
(Trip Survey)												
1	Date of last trip	X	X	X	X	X	X	X	X	X	X	X
2	Finfishing/shrimping trip?	X	X	-	-	-	-	-	-	-	-	-
3	Mode of trip	X	X	X	X	X	X	X	X	X	X	X
4	Number of trips in the past two months if angler can't recall trip dates	X	X	X	X	X	X	X	X	X	X	X
5	Primary gear used	X	X	X	X	X	X	X	X	X	X	X
6	Area utilized (ocean, bay, river, etc.)	X	X	X	X	X	X	X	X	X	X	X
7	If ocean and boat mode, > 3 miles offshore?	X	X	X	X	X	X	X	X	X	X	X
8	For boat mode, state and county where you returned	X	X	X	X	X	X	X	X	X	X	X

Note: Ask questions for each trip in the past two months.

DATABASE REVIEW:

INVESTIGATOR: NMFS via outside contractors (KCA Research)
PROJECT TITLE: Socioeconomic Aspects of Marine Recreational Fishing
POPULATION SAMPLED: Anglers
YEAR(S) SAMPLED: 1981
SPECIES FOCUS: None specifically
GEOGRAPHIC AREA: Pacific, Gulf, and Atlantic Coasts
MODE(S) SAMPLED: None Specifically
SAMPLING APPROACH: On-site intercept & follow-up survey
Household survey
SAMPLING OBJECTIVE: To provide:
1) information about marine recreational fishermen
2) fishing patterns
3) expenditures per trip
4) disposition of fish
5) satisfaction

DATA CHECKLIST: Angler Benefit Estimation

	<u>Gathered</u>	<u>Not Gathered</u>
1) Dependent Variable:		
- Trips, days.....	X	
- Willingness-to-pay.....	X	
2) Independent Variables:		
- Price.....	X	
- Quality (individual catch).....	X	
- Substitutes (site).....		X
- Socioeconomics (income).....	X	

DATA COLLECTED:

I. On-site Intercept Survey:

1. Site
2. Age, sex
3. Mode

4. Party size and relationship
5. Number of trips in the past 12 months for mode and site
6. Travel miles from residence, from prior night's lodging, mode of transportation
7. Resident and trip purpose status
8. Target species
9. Catch by species (number, size, etc.)

II. Telephone Follow-up Survey: Subsample of intercept

1. Number of days fishing in the past 12 months
2. Number of years of fishing experience
3. Likelihood of species substitution
4. Disposition of fish kept
5. Costs of fishing equipment
6. Individual's costs for:
 - boat rental
 - boat fuel
 - tackle rental
 - other rental expenses
 - pier usage
 - fishing fees (party/charter)
 - launch fees
 - bait
 - fishing equipment for this trip
 - food, beverages, ice
 - mounting and shipping
 - lodging
 - parking fees, tolls, ferryboats
7. Willing-to-pay double
8. Employment status (part-time, full-time, unemployed - student, homemaker, retired, other)
9. Personal income

III. Household Survey: Separate sample from I & II

Household in general:

1. Household size
2. Number of anglers in the household in the past 12 months
3. Boat ownership:
 - number of boats
 - type of boat
 - length
 - number of engines, horsepower
 - number of days fishing via boat by area
4. Racial origin
5. Household income

For each angler:

1. Age and sex
2. Number of days saltwater fishing in the past 12 months
3. Number of years actively participating (≥ 3 trips per year)

DATABASE REVIEW:

INVESTIGATOR: R. Perdue (NC State Univ.)

PROJECT TITLE: Charter and Headboat Fishing as a Sector of the Tourism Industry in North Carolina, South Carolina, and Georgia: Guidelines for Greater Integration and Improved Economic Vitality

POPULATION SAMPLED: Chambers of Commerce. Anglers, and Charter & Headboat Operators

YEAR(S) SAMPLED: 1987

SPECIES FOCUS: None

GEOGRAPHIC AREA: GA, SC, NC

MODE(S) SAMPLED: Charter and Headboats

SAMPLING APPROACH: Anglers: Mail & dockside surveys
Operators: Telephone or personal interviews
Chambers of Commerce: mail & telephone inquiry

SAMPLING OBJECTIVE: Assist charter and headboat operators to become better integrated with existing coastal tourism systems and to develop and implement marketing strategies to better manage fishing demand

DATA CHECKLIST: Angler Benefit Estimation

	<u>Gathered</u>	<u>Not Gathered</u>
1) Dependent Variable:		
- Trips, days.....	X	
- Willingness-to-pay.....	X	
2) Independent Variables:		
- Price.....	X	
- Quality (individual catch).....		X
- Substitutes (site).....		X
- Socioeconomics (income).....	X	

DATA COLLECTED: Relevant to Economics

I. Chamber of Commerce Inquiries & Operator Interviews - Minor economic data.

II. Angler Surveys: Mail Questionnaire:

A. **Socioeconomics/Demographics:**

1. Age and sex
2. Education level
3. Employment status
4. Household income before taxes
5. Zip code

B. **General Fishing Information:**

1. Years of experience fishing
2. Boat information
3. Days saltwater fishing in the past year
4. Number of charterboat and partyboat trips in past year
5. Top 3 target species
6. Dollars spent on equipment last year

C. **Trip Data (Most recent trip):**

1. Charter or headboat trip
2. How long ago
3. Launch point
4. Number of days in community
5. Fishing time
6. Party relationship
7. Expenditures in coastal community
8. Trip satisfaction

Intercept Questionnaire:

1. Number of days saltwater fishing
2. Number of headboat (charterboat) trips
3. Favorite target species
4. Party relationship
5. Trip length
6. Zip code of residence
7. Expenditures in coastal community
8. Eight willingness-to-pay (WTP) questions based on catching your favorite fish and something other than your favorite fish.

DATABASE REVIEW:

INVESTIGATOR: D. Rockland

PROJECT TITLE: Undertake Additional Data Development & Analysis of Recreational Fisheries in the FL Keys

POPULATION SAMPLED: Shoreline anglers in the Keys, Boat owners in Dade & Broward Counties FL, Guide boat anglers in Keys, Business owners in the Keys

YEAR(S) SAMPLED: October 1986 to September 1987

SPECIES FOCUS: None specifically

GEOGRAPHIC AREA: Florida Keys, Dade and Broward Counties of Florida

MODE(S) SAMPLED: All

SAMPLING APPROACH: Intercept interviews: shoreline and bridge anglers
Mail Questionnaires: guide, party, and charter boat anglers; registered boat owners in Dade and Broward counties, local businesses in the Keys providing fishing services
Location counts: Number of anglers on bridges

SAMPLING OBJECTIVE: Develop an estimate of the economic value of sport fishing in the Keys

DATA CHECKLIST: Angler Benefit Estimation

	<u>Gathered</u>	<u>Not Gathered</u>
1) Dependent Variable:		
- Trips, days.....	X	
- Willingness-to-pay.....	X	
2) Independent Variables:		
- Price.....	X	
- Quality (individual catch).....	X	
- Substitutes (site).....		X
- Socioeconomics (income).....	X	

DATA COLLECTED:

I. Mail Survey: Guide, charter, and party boat anglers

A. General: Current trip

1. Date
2. Zip code of home address
3. Party size
4. Catch by species
5. Nights in region
6. Number of fishing days
7. Number of fishing trips
8. Participation level if catch doubles
9. Other trip activities
10. Trip costs (respondent)

B. Nonresidents:

1. Number of trips to keys in past year and next year
2. If catch rate doubles, effect on visitation
3. Still visit Keys if sportfishing prohibited?

C. Residents:

1. Average number of trips per year by mode
2. If catch doubled, number of trips by mode
3. If sportfishing prohibited, what % of trips would you take outside the Keys? If sportfishing legal but no fish, what % of trips would be made outside the Keys?
4. If no sportfishing, would you live here?

D. Demographics:

1. Age
2. Occupation
3. Education
4. Flexible work hours
5. Income

E. Willingness-to-Pay:

1. Would you still go fishing if you had to pay \$10 for a fishing license (closed-ended)
2. Open-ended willingness-to-accept not to go fishing on the day in question

II. Intercept Survey: Shoreline Anglers (Current trip)

A. General:

1. Date and time
2. Site
3. Zip code
4. Time started fishing and time expected to stop
5. Number of fish caught by species (so far)
6. Number of nights in the keys on this trip
7. Number of days fishing by mode

8. If catch doubled, would you go fishing longer on this trip?
If so, how many days longer?
9. Cost per angler

B. Nonresidents:

1. Still come to Keys if sportfishing was illegal or no fish?
2. Number of similar trips in the past 12 months
3. Party size (fishing and to the region)
4. Nonfishing members of the party: what are they doing today

C. Residents:

1. Still come to Keys if sportfishing was illegal or no fish?
What percent of the trips would be made outside the county?
2. Number of shoreline trips in the past 12 months in the Keys,
next 12 months?
3. Number of trips to Keys if doubled catch in next 12 months?
4. Party size
5. Would you still without the opportunity to go sportfishing?

D. Demographics:

1. Age, sex
2. Occupation
3. Education
4. Flexible work hours
5. Income

E. Willingness-to-Pay:

1. Open-ended willingness-to-accept to stop fishing
2. Closed-ended willingness-to-pay for a fishing license

III. Mail Survey: Private & Rental Boaters use of Artificial Reefs

A. Private Boaters:

1. Number of fishing days by boat off Monroe county by season
2. Percent of trips you trailer your boat to the Keys
3. Daily expenditures on typical saltwater boating trip
4. Expenditure locations: home, enroute, Keys
5. Percent of time spend overnight in Keys
6. Type of accommodations

B. Rental Boats:

1. Level of rental boat participation: survey by intercept and telephone rental businesses - number of rental boats available, average number of boats rented per day, fees, percent of time boats used for fishing
2. Expenditures of participants: assumed similar to typical private boater, for tourist expenditures used information on partyboaters

DATABASE REVIEW:

INVESTIGATOR: I. Strand, N. Bockstael, K. McConnell
PROJECT TITLE: Economic Damages of Pollution to Marine Recreational Fishing
POPULATION SAMPLED: Anglers from New York to Florida
YEAR(S) SAMPLED: 1987
SPECIES FOCUS: None Specifically
GEOGRAPHIC AREA: New York to Florida (excluding the FL Keys)
MODE(S) SAMPLED: All
SAMPLING APPROACH: Supplementing MRFSS with an add-on telephone survey from the intercept population
SAMPLING OBJECTIVE: Develop models to estimate the regional demand for sportfishing and the impact of pollution abatement policies

DATA CHECKLIST: Angler Benefit Estimation

	<u>Gathered</u>	<u>Not Gathered</u>
1) Dependent Variable:		
- Trips, days.....	X	
- Willingness-to-pay.....	X	
2) Independent Variables:		
- Price.....	X	
- Quality (individual catch).....	X	(collected via MRFSS only)
- Substitutes (site).....	X	for intercepted day)
- Socioeconomics (income).....	X	

DATA COLLECTED:

A. Demographics:

1. Age, sex

B. Costs:

1. Zip Code, Travel Distance
2. Number of members of household in party
3. Travel time
4. Travel dollars
5. Fishing costs

C. Trip Data:

1. Local (single day trips):
 - a. Number of trips
 - b. Current trip: state/county, mode, water area, target species, number of similar trips
 - c. Obtain same information for dissimilar trips during the wave (up to five)

2. Nonlocal (multiple day trips):
 - a. Number of trips
 - b. Current trip: state/county where majority of fishing trips took place, number of household members, mode of travel, travel time, travel dollars, primary trip purpose, total trip length in days and number involved in fishing

 - c. Per Fishing Day: mode, area of water fished, target species, number of household members, miles from overnight lodging to launch site (access point), travel time from lodging, travel dollars from lodging, fishing costs, number of similar days, description as above for up to four dissimilar days

D. Willingness-to-Pay Questions:

1. Closed-ended willingness-to-pay questions to give up fishing for 2 months, 6 months, or one year in return for a check of a given amount (5 to 500 dollars).

E. General

1. Years of saltwater experience
2. Own second home? Miles to coast
3. Own boat used in saltwater fishing in the Atlantic? State and county boat is kept, annual costs of maintaining boat
4. Number of anglers in your household
5. Employment status: employed, hourly wage or salary, what is hourly wage, work hours per week, flexibility over working hours, paid vacation days
6. Total annual household income before taxes

DATABASE REVIEW:

INVESTIGATOR: Texas Parks and Wildlife Dept. and Texas A & M University

PROJECT TITLE: Texas Saltwater Fishermen Survey

POPULATION SAMPLED: Private boat, party and headboat anglers

YEAR(S) SAMPLED: Private boat anglers since May 1974
Party and Headboat anglers since May 1983

SPECIES FOCUS: None Specifically

GEOGRAPHIC AREA: Texas

MODE(S) SAMPLED: Private boat, Party (charter) & Headboat

SAMPLING APPROACH: Intercept surveys: headboats (during trip), party and private boats after trip (at dock).
Angler Mail Survey in cooperation with Texas A & M University.
Boat Counts.

SAMPLING OBJECTIVE: Estimate total fishing pressure: Number of man hours of fishing annually, landings by species, economic analysis

DATA CHECKLIST: Angler Benefit Estimation

	<u>Gathered</u>	<u>Not Gathered</u>
1) Dependent Variable:		
- Trips, days.....	X	
- Willingness-to-pay.....	X	
2) Independent Variables:		
- Price.....	X	
- Quality (individual catch).....		X (economic sample did not provide catch data)
- Substitutes (site).....	X	
- Socioeconomics (income).....	X	

DATA COLLECTED:

I. PRIVATE BOAT MODE: On-site Interviews/Observations:

A. Marine Resource Harvest Data: Interview

1. Site: major or minor bay system (see B2)
2. Date and time of interview
3. Type of day: holiday, day of week
4. Trip length in hours
5. Activities: shell or finfishing, sailing, diving, commercial
6. County or state of residence: list party members from
different state separately
7. Gear
8. Bait
9. Species caught and quantity
10. Estimated and measured weight
11. Lengths

**B. Meteorological/Hydrological Data Sheet: Weather Data at start
and end of day (Observation)**

1. Lightning conditions
2. Latitude and longitude of site
3. Wind speed and direction
4. Cloud cover
5. Barometric pressure
6. Precipitation, fog
7. Wave height
8. Tide
9. Water depth
10. Temperature
11. Dissolved oxygen
12. Salinity
13. Turbidity
14. Bottom type

C. Creel Sample Summary:

1. Day type
2. Major area
3. Number of anglers
4. Total man hours
5. Total species caught
6. Total number of fish caught

**D. Roving Counts: On "good" weather days. Counts of empty boat
trailers and/or empty boat slips (excluded non
-rented slips, slips with slings across) at
predetermined boat access sites. Observation.**

1. Major area, minor bay
2. Date, time
3. Day type
4. Count time
5. Total count

E. Sociological/Economic Survey: Pre and post trip interviews, mail survey

1. Pre-trip Intercept:

- Boat ID number
- Start time of interview
- After determining if party intends to fish, randomly select one individual and ask:
 - species target
 - trip motivation

2. Post-trip Intercept: Select person interviewed pre-trip

- Number of trips annually: saltwater in Texas
freshwater in Texas
from this state
- Trip grade (scale 0 to 10)
- Trip satisfaction

3. Post-trip Economic Intercept:

- Zip code
- Trip expenses
- Closed-ended willingness-to-pay question: If annual cost was \$___ more, would you stop fishing? (Range \$50 to \$20,000)

Mail Survey: Sociological/Economics (Cooperation with Texas A & M University)

- Years of experience in saltwater fishing
- Days fishing in past year: freshwater
saltwater bays (boat & shore)
saltwater gulf (boat & shore)
- Motivations for fishing
- Target species
- Boat ownership, size
- Impact of catch on satisfaction
- Tournament participation
- Party relationship
- If fished outside Texas: which states, # days, \$ spent
- Regulatory opinions
- Texas resident? How many years

- Expenditures in past year, percent of time equipment used in saltwater
- Age, sex
- Income
- Zip Code of residence

II. PARTY BOAT MODE & HEAD BOAT MODE:

- A. Party boats: Intercept survey after completion of trip, collected similar data to that of the private boat mode
- B. Head boat: Intercept survey during the trip

All fish kept were counted and identified. Up to 100 fish for each species were measured to the nearest millimeter. The number of anglers and angling time was also recorded. Total number of trips made by all head boat operators on each surveyed day was obtained by contacting all head boat operators either in person or by telephone.

DATABASE REVIEW:

INVESTIGATOR: US Fish and Wildlife Service

PROJECT TITLE: 1985 National Survey of Fishing, Hunting, and Wildlife Associated Recreation

POPULATION SAMPLED: General population, angler population

YEAR(S) SAMPLED: Every 5 years since 1955

SPECIES FOCUS: Generally none specifically, 1985 focused somewhat on Salmon and Striped Bass

GEOGRAPHIC AREA: Nationwide

MODE(S) SAMPLED: All

SAMPLING APPROACH: Initial screening of households (mainly by telephone) with a subsequent follow-up intercept survey of households with participants

SAMPLING OBJECTIVE: Provide state level estimates of participation rates for hunting, fishing, and other forms of wildlife recreation (nonconsumptive uses: feeding, photographing, or observing fish and wildlife)

DATA CHECKLIST: Angler Benefit Estimation

	<u>Gathered</u>	<u>Not Gathered</u>
1) Dependent Variable:		
- Trips, days.....	X	
- Willingness-to-pay.....	X	(Large & Smallmouth Bass only)
2) Independent Variables:		
- Price.....	X	
- Quality (individual catch).....	X	(Large & Smallmouth Bass only)
- Substitutes (site).....	X	
- Socioeconomics (income).....		X

DATA COLLECTED:

I. Screening Questionnaire: Number of anglers \geq age 6

A. General:

1. Mailing address (includes zip code)
2. Telephone number

B. Section 1: Demographics

1. Age, sex
2. Marital status
3. Education
4. Population of town the individual was raised
5. Employment status
6. Race

C. Section 4: Fishing

1. Anyone in the household fish in 1985
2. For each angler: Days fished & total expenses in 1985
(\geq age 6) Age when first fished
3. Anyone who didn't fish in 1985 but did in 1984
4. Determining if fishing was exclusively saltwater or freshwater

D. Section 6: Household Characteristics

1. Income

II. Household Interview: For each household angler \geq 16 years

A. Section 2: Saltwater Portion

Part A: Participation

1. Did you do any recreational saltwater fishing in 1985
2. Which states
3. Indicate launch point or shoreline site (by region, see map)
For each region noted indicate (up to 5 regions):
 - a. number of trips
 - b. number of single vs multiple day trips
 - c. number of days fishing
 - d. number of days fishing mainly in saltwater
 - e. average hours per day fishing
 - f. number of shellfish days
 - g. number of finfish days
 - h. areas fished (deep sea $>$ 3 miles, offshore .2 to 3 miles, surf and shore $<$.2 miles, sounds & bays, tidal rivers & streams)
 - i. mode (party or charterboat, private or rental boat, surf or shore, manmade structures, other)
 - j. target species (shad, salmon, striped bass), number of days targeting each
 - k. one way travel distance to normal fishing spot in the area
 - l. number of trips where primary purpose was saltwater fishing
4. Take any trips from other countries? Number of trips & days

Part B: Saltwater Fishing Methods

1. Fly fishing
2. Spearing
3. Net

Part C: Catch and Release (Large and smallmouth bass & trout)

1. number caught, number released, reason for release

Part D: Total 1985 Expenditures (Great Lakes, Other Freshwater, Saltwater)

1. Food, drink, refreshments
2. Lodging
3. Transportation (public and private)
4. Boat fuel
5. Total
6. How much of total spent in state of residence
7. " " each of the other states
8. Guide, party, or charterboat fees
9. Access fees
10. Boat fees: launch, mooring, storage, maintenance
11. Equipment rental
12. Bait & ice

Part E: Economic Evaluation: Large & smallmouth bass (freshwater)

1. Iterative bid willingness-to-pay procedure

Part F: Fishing Equipment

1. Asked questions relating to whether the equipment was purchased new or used, cost, primarily used in saltwater for the following: rods, reels, lines, lures, bait, flies, tackle boxes, net traps, depth finders, spearfishing

B. Section 3: Other Expenditures

Part A: Fishing and Hunting Equipment:

1. Asked questions relating to whether the equipment was purchased new or used, cost, primarily used in saltwater for the following: boats, motors, boat accessories

Part B: Licenses and Tags

1. Brought licenses in which states
2. Cost
3. Saltwater license?
4. Special tags, stamps, or permits necessary?
5. Total cost

Part C: Land Lease/Ownership

1. Own property in the US on which you fished, was the fishing the primary purpose for purchasing the property, share to total costs, state of property, wetland acreage
2. Lease property to fish on, same as above

SECTION III: DATABASES FOR MARKET BASED ANALYSES

The previous section listed databases applicable to estimation of nonmarket based recreational benefit estimation models (travel cost and contingent valuation). This section looks into the use of recreational market based information, available for the charter and party/head boat industry, for development of hedonic models (angler value) and profitability studies (industry value).

Hedonic analyses attempt to place a dollar value on the characteristics of a good, in our case, the characteristics of a for-hire recreational fishing trip. For fishery management purposes, the angler value associated with the fish caught/kept could be of considerable interest.

Although the hedonic data provided in these studies may not be comprehensive enough for modelling, it may prove useful if linked with other data sources (eg. NMFS charter and party/head boat surveys).

To supplement the estimates of value provided by the recreational experience as obtained by anglers (consumer surplus), economic analyses should also include the value received in providing that experience as obtained by the for-hire industry (producer surplus of charter and party boats owners). Given the presence of a working market, these values can be measured through use of traditional economic profitability analyses. Profitability analysis requires information to be gathered on the revenues and costs of the individual charter and party boat businesses.

The following databases have been categorized in terms of their economic usefulness from the perspective of both hedonic and profitability analyses.

DATABASE REVIEW:

INVESTIGATOR: B. Ditton, J. Stoll, D. Gill (Texas A & M)

PROJECT TITLE: The Social Structure and Economics of the Charter and Party Boat Fishing Fleets in Alabama, Mississippi, Louisiana, and Texas

POPULATION SAMPLED: Charter and Party Boat Operators

YEAR(S) SAMPLED: 1987

SPECIES FOCUS: None Specifically

GEOGRAPHIC AREA: Alabama, Mississippi, Louisiana, & Texas

MODE(S) SAMPLED: Charter and Party Boats

SAMPLING APPROACH: Personal Interviews of Captains

SAMPLING OBJECTIVE: Provide baseline social and economic data, profitability analysis

DATA COLLECTED: Relevant to Economics

I. Data potentially useful for Hedonic Analyses:

A. Captain's Experience:

1. Number of years the captain has been charter/party boating
2. 1st, 2nd, 3rd generation operator
3. Number of years at port (other ports used)
4. Captain's demographics

B. Dock & Catch Data:

1. Rate the quality of service and facilities at your dock
2. " " fishing in your area
3. Species fished for by month
4. Percent of time targeting species

C. Boat Characteristics:

1. Length of boat
2. Engine horsepower
3. Hull type
4. Carrying capacity
5. Boat equipment
6. Crew size

D. Trip Data:

1. Percent bay trips
2. Miles traveled offshore
3. Target species by month
4. Number of trips per season
5. Fees
6. Services offered
7. Trip length

II. Cost and Revenue Data

A. Cost Data:

1. Initial investment in hull, superstructure, engines, electronics, gear
2. Maintenance and repairs on elements listed above
3. Insurance costs
4. Advertising costs
5. Fuel cost per trip
6. Labor costs

B. Revenue Data:

1. Base fees for full and half day trips
2. Percent of trips in full and half day categories
3. Estimated annual gross revenues for businesses
4. Number of boats per business

DATABASE REVIEW:

INVESTIGATOR: D. Gill (Mississippi State University)

PROJECT TITLE: "Social and Economic Characteristics of the Mississippi Charter Boat Industry"

POPULATION SAMPLED: Charter Operators

YEAR(S) SAMPLED: 1988

SPECIES FOCUS: None Specifically

GEOGRAPHIC AREA: Mississippi

MODE(S) SAMPLED: Charter Boats

SAMPLING APPROACH: Personal Interviews of Captains

SAMPLING OBJECTIVE: Provide baseline social and economic data, profitability analysis

DATA COLLECTED: Relevant to Economics

I. Data potentially useful for Hedonic Analyses:

A. Captain's Experience:

1. Number of years the captain has been charter/party boating
2. 1st, 2nd, 3rd generation operator
3. Number of years at port (other ports used)
4. Captain's demographics

B. Dock & Catch Data:

1. Rate the quality of service and facilities at your dock
2. " " fishing in your area
3. Species fished for by month
4. Percent of time targeting species

C. Boat Characteristics:

1. Length of boat
2. Engine horsepower
3. Hull type
4. Carrying capacity
5. Boat equipment
6. Crew size

D. Trip Data:

1. Percent bay trips
2. Miles traveled offshore
3. Target species by month
4. Number of trips per season
5. Fees
6. Services offered
7. Trip length

II. Cost and Revenue Data

A. Cost Data:

1. Initial investment in hull, superstructure, engines, electronics, gear
2. Maintenance and repairs on elements listed above
3. Insurance costs
4. Advertising costs
5. Fuel cost per trip
6. Labor costs

B. Revenue Data:

1. Base fees for full and half day trips
2. Percent of trips in full and half day categories
3. Estimated annual gross revenues for businesses
4. Number of boats per business

DATABASE REVIEW:

INVESTIGATOR: S. Holland & W. Milon (Univ. of FL)
PROJECT TITLE: The Structure and Economics of the Charter and Party Boat Fishing Fleet of the Gulf Coast of Florida.
POPULATION SAMPLED: Charter and Party Boat Operators
YEAR(S) SAMPLED: 1988
SPECIES FOCUS: None Specifically
GEOGRAPHIC AREA: Gulf Coast of Florida.
MODE(S) SAMPLED: Charter and Party Boats
SAMPLING APPROACH: Personal Interviews of Captains
SAMPLING OBJECTIVE: Provide baseline social and economic data, profitability analysis, species targeted

DATA COLLECTED: Relevant to Economics

I. Potential Hedonic Information:

A. Captain's Experience:

1. Number of years the captain has been charter/party boating
2. 1st, 2nd, 3rd generation operator
3. Number of years at port (other ports used)
4. Captain's demographics

B. Dock & Catch Data:

1. Rate the quality of service and facilities at your dock
2. " " fishing in your area
3. Species fished for by month
4. Percent of time targeting species

C. Boat Characteristics:

1. Length of boat
2. Engine horsepower
3. Hull type
4. Carrying capacity
5. Boat equipment
6. Crew size

D. Trip Data:

1. Percent bay trips
2. Miles traveled offshore
3. Target species by month
4. Number of trips per season
5. Fees
6. Services offered
7. Trip length

II. Cost and Revenue Data

A. Cost Data:

1. Initial investment in hull, superstructure, engines, electronics, gear
2. Maintenance and repairs on elements listed above
3. Insurance costs
4. Advertising costs
5. Fuel cost per trip
6. Labor costs

B. Revenue Data:

1. Base fees for full and half day trips
2. Percent of trips in full and half day categories
3. Estimated annual gross revenues for businesses
4. Number of boats per business

DATABASE REVIEW:

INVESTIGATOR(S): J. Johnson and R. Perdue

PROJECT TITLE: Marine Recreational Fishing, Marina Manufacturers and Marinas in North Carolina: An Economic Characterization

POPULATION SAMPLED: Owner/managers of marinas and marine manufacturing companies.

YEAR(S) SAMPLED: 1984

SPECIES FOCUS: None

GEOGRAPHIC AREA: North Carolina

MODE(S) SAMPLED: Private, charter, and headboat

SAMPLING APPROACH: Mail-out/telephone interview technique: Respondents were asked to fill out a worksheet prior to the telephone interview. They then had the option of mailing in the worksheet or being interviewed by telephone.

SAMPLING OBJECTIVE: Develop a descriptive profile of North Carolina marinas and manufacturers. Examine the economic and employment impacts of recreational fishing and boating on marinas and marine manufacturers.

DATA COLLECTED: Relevant to Economics

I. Marinas:

- A. Size (acres, slips, dry stacks, moorings)
- B. Number of commercial, charter, head, and recreational boats
- C. Marina services and facilities
- D. Business structure: sole proprietorship, partnership, corporation
- E. Number of employees
- F. Rate structure and revenues by category: space rentals; fuel, repair, sales; boat rentals; bait and tackle; lodging and restaurant facilities
- G. Expenses by category: wages, operating costs, cost of goods sold
- H. Net Income
- I. Current and fixed assets
- J. Current and long-term liabilities
- K. Taxes

II. Marine Manufacturers:

- A. Type of business: boat manufacturing, trailer manufacturing, accessory manufacturing, tackle manufacturing, etc.
- B. Business structure: sole proprietorship, partnership, corporation
- C. Years of experience in the boating industry in North Carolina
- D. Percent of product used by recreational boaters
- E. Number of employees
- F. North Carolina revenues by category (boating/fishing related)
- G. " " expenses "
- H. Net Income (boating/fishing related)
- I. Current and fixed assets (boating/fishing related)
- J. Current and long-term liabilities (boating/fishing related)
- K. Taxes (boating/fishing related)

REFERENCES:

Arndorfer, David J. and Nancy E. Bockstael. Estimating the Effects of King Mackerel Bag Limits on Charterboat Captains and Anglers. Prepared under contract to National Marine Fisheries Service, Southeast Fisheries Center, by Environmental Resources Management-North Central, 1986.

Bell, Frederick W., Philip E. Sorensen, and Vernon R. Leeworthy. The Economic Impact and Valuation of Saltwater Recreational Fisheries in Florida. Prepared under Florida Seagrant contract NA80AA-D-0038, August 1982.

Bergstrom, John C., J. R. Stoll, J. P. Titre, and V. Wright. "Economic Value of Wetlands-Based Recreation." Ecological Economics, Vol. 2, No. 2, 3/90.

Bockstael, Nancy, Alan Graefe, Ivar Strand, and Linda Caldwell. Economic Analysis of Artificial Reefs: A Pilot Study of Selected Valuation Methodologies. Prepared for Sport Fishing Institute's Artificial Reef Development Center, Technical Report Series, Report #6, May 1986.

Ditton, Robert B. and Duane A. Gill. Developing Strategies to Enhance Charter and Headboat Fishing Operations in Texas, Louisiana, Mississippi, and Alabama. Prepared for National Marine Fisheries Service, Southeast Regional Office, under contract NA86WC-H-06107, April 1988.

Ditton, Robert B. and John R. Stoll. Recreational Angler Participation in the Gulf of Mexico King Mackerel Fishery: Understanding the Value of the Resource and Socio-Economic Impacts of Management Options. Prepared for National Marine Fisheries Service, Southeast Regional Office, under MARFIN contract NA86-WC-H-MF132, November 1989.

Ditton, Robert B., John R. Stoll, and Duane A Gill. The Social Structure and Economics of the Charter and Party Boat Fishing Fleets in Alabama, Mississippi, Louisiana, and Texas. Prepared for National Marine Fisheries Service under MARFIN contract NA86-WC-H-06133, January 1989.

Holland, Stephen M. Charter and Headboat Fishing as a Sector of the Tourism Industry in Florida: Guidelines for Greater Integration and Improved Economic Vitality. Prepared for National Marine Fisheries Service, Southeast Regional Office, under contract NA86WC-H-06107, August 1988.

Holland, Stephen M. and J. Walter Milon. The Structure and Economics of the Charter and Party Boat Fishing Fleet of the Gulf Coast of Florida. Prepared for National Marine Fisheries Service under MARFIN contract NA87WC-H-06141, June 1989.

Johnson, Jeffrey C., Peter Fricke, Marcus Hepburn, James Sabella, William Still, and Carl R. Hayes. Recreational Fishing in the Sounds of North Carolina: A Socioeconomic Analysis, Vol. 1. Prepared under North Carolina Seagrant contract UNC-SG-86-12, September 1986.

Johnson, Jeffrey C. and Richard R. Perdue. Marine Recreational Fishing, Marine Manufacturers and Marinas in North Carolina: An Economic Characterization. Prepared under North Carolina Seagrant contract UNC-SG-WP-86-3, July 1986.

KCA Research, Inc. Socioeconomic Aspects of Marine Recreational Fishing. Prepared for National Marine Fisheries Service under contract 80-ABC-00152, May 1983.

Milon, J. Walter. The Economic Benefits of Artificial Reefs: An Analysis of Dade County, Florida Reef System. Prepared under Florida Seagrant contract NA85AA-D-SG059, December 1987.

Perdue, Richard R. Charter and Head Boat Fishing as a Sector of the Tourism Industry in North Carolina, South Carolina, and Georgia: Guidelines for Greater Integration and Improved Economic Vitality. Prepared for National Marine Fisheries Service, Southeast Regional Office, under contract NA86WC-H-06107, 3/88.

Smith, V. Kerry and Raymond B. Palmquist. The Value of Recreational Fishing on the Albemarle and Pamlico Estuaries. Prepared under EPA Cooperative Agreement CX814569-01-0, undated.

U. S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. September 1987. Marine Recreational Fishery Statistics Survey, Atlantic and Gulf Coasts, 1986. Current Fishery Statistics Number 8392, Washington, D. C.

U. S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. June 1986. Marine Recreational Fishery Statistics Survey, Atlantic and Gulf Coasts, 1985. Current Fishery Statistics Number 8327, Washington, D. C.

U. S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. August 1985. Marine Recreational Fishery Statistics Survey, Atlantic and Gulf Coasts, 1983-1984. Current Fishery Statistics Number 8326, Washington, D. C.

U. S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. April 1985. Marine Recreational Fishery Statistics Survey, Atlantic and Gulf Coasts, 1981-1982. Current Fishery Statistics Number 8324, Washington, D. C.

U. S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. September 1984. Marine Recreational Fishery Statistics Survey, Atlantic and Gulf Coasts, 1979(Revised)-1980. Current Fishery Statistics Number 8322, Washington, D. C.

U. S. Department of the Interior, Fish and Wildlife Service. November 1988. 1985 National Survey of Fishing, Hunting, and Wildlife Associated Recreation. Washington, D. C.

U. S. Water Resources Council, Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. Sup. of Doc., U.S. Govt. Printing Office, Washington D.C., 1983.

APPENDIX A:

RECREATIONAL ECONOMIC DATABASES IN THE SOUTHEAST

LIST OF RECREATIONAL DATABASES IN THE SOUTHEAST REGION

DATE: August 1990

DATA COLLECTION SOURCE or PRINCIPAL INVESTIGATOR(S)	TOPIC and/or "Research Paper Titles" (For citation, see references in main document)	FUNDING SOURCE	SURVEY DATE	SPECIES FOCUS	DATA COLLECTION OBJECTIVE	GEOGRAPHIC AREA	STATUS (8/90)	Data Contact
Arndorfer, Bockstael (Env. Resources Mgt., University of MD)	"Estimating the Effects of King Mackerel Bag Limits on Charterboat Captains and Anglers"	NMFS (Contract)	1985	King Mackerel	Economics: Benefit Estimation King Mackerel Charterboat Anglers	Panama City/Destin, FL	Completed	NMFS, SERO, Economics Dept.
Bell, Sorensen, Leeworthy (Florida State University)	"The Economic Impact and Valuation of Saltwater Recreational Fisheries in Florida"	SEAGRANT	1981	none	Economics: Benefit Estimation and Regional Impact (expenditures) for Florida Residents and Nonresidents	Florida	Completed	Researcher
Bell (Florida State University)	"Florida Tourist Resource Scarcity Study"	SEAGRANT	1990	none	Economics: Benefit Estimation and Regional Impact of Florida Tourists	Florida	In-progress	Researcher
Bergston, Stoll, Titre, and Wright (University of GA, etc.)	"Economic Value fo Wetlands-Based Recreation"	COE	1986	none	Economics: Benefit Estimation of Waterfowl Hunting, Fresh & Saltwater Fishing, Recreational Shrimping & Crabbing	Louisiana	Completed	Researcher
Bockstael, Graefe, Strand, & Caldwell (University of MD)	"Economic Analysis of Artificial Reefs: A Pilot Study of Selected Valuation Methodologies"	SPORT FISHING INSTITUTE	1985	Bass & Mackerel	Economics: Benefit Estimation of Artificial Reefs	South Carolina	Completed	Researcher
Ditton (Texas A & M)	"Characteristics, Behavior, Attitudes, Expenditures, Harvest and Management Preferences of Billfish Tournament Anglers in the Atlantic, Gulf of Mexico, and Caribbean Regions"	BILLFISH FOUNDATION	1989	Billfish	Sociological Analysis, Economics: Benefit Estimation & Regional Impacts	Atlantic, Gulf of Mexico, Caribbean	In-progress	Researcher
Ditton, Gill (Texas A & M)	** "Developing Strategies to Enhance Charter and Headboat Fishing Operations in TX, LA, MS, and AL"	NMFS (SK)	1987	none	Marketing of the Charter and Headboat Industry	TX, LA, MS, and AL	Completed	NMFS, SERO, Economics Dept.
Ditton & Stoll (Texas A & M)	"Recreational Angler Participation in the Gulf of Mexico King Mackerel Fishery: Understanding the Value of the Resource & Socioeconomic Impacts of Management Options"	NMFS (MARFIN)	1987	King Mackerel	Economics: Benefit Estimation King Mackerel Tournament Anglers	Gulf of Mexico	Completed	NMFS, SERO, Economics Dept.
Ditton, Stoll, Gill (Texas A & M)	*** "The Social Structure & Economics of the Charter and Party Boat Fishing Fleets in TX, MS, LA, and TX"	NMFS (MARFIN)	1987	none	Sociological Analysis, Economics: Profitability Analysis and Regional Impacts	AL, MS, LA, TX	Completed	NMFS, SERO, Economics Dept.
Gill (MS State University)	*** "Social and Economic Characteristics of the Mississippi Charter Boat Industry"	MAFES	1988	none	Sociological Analysis, Economics: Profitability Analysis and Regional Impacts	Mississippi	In-progress	Researcher
Gill (MS State University)	** "Characteristics and Attitudes of Mississippi Charter Boat Customers"	MAFES	1989	none	Marketing of the Charter Boat Industry	Mississippi	In-progress	Researcher

DATA COLLECTION SOURCE or PRINCIPAL INVESTIGATOR(S)	TOPIC and/or "Research Paper Titles" (For citation, see references in main document)	FUNDING SOURCE	SURVEY DATE	SPECIES FOCUS	DATA COLLECTION OBJECTIVE	GEOGRAPHIC AREA	STATUS (8/90)	Data Contact
Holland (University of FL)	** "Charter and Headboat Fishing as a Sector of the Tourism Industry in Florida: Guidelines for Greater Integration and Improved Economic Vitality"	NMFS (SK)	1987	none	Charter/Head Boat Passenger Survey, Captain Survey	Florida	Completed	NMFS, SERO, Economics Dept.
Holland, Milon (University of FL)	*** "The Structure & Economics of the Charter and Party Boat Fishing Fleet of the Gulf Coast of Florida"	NMFS (MARFIN)	1988	none	Sociological Analysis, Economics: Profitability Analysis and Regional Impacts (expenditures)	Florida: Gulf Coast	Completed	NMFS, SERO, Economics Dept.
Johnson & Perdue (E. Carolina & NC State)	"Marine Recreational Fishing, Marine Manufacturers and Marinas in North Carolina: An Economic Characterization"	SEAGRANT	1984	none	Economics: Profitability Analysis and Regional Impacts	North Carolina	Completed	Researcher
Johnson, et al. (1986) (East Carolina University)	* "Recreational Fishing in the Sounds of North Carolina: A Socioeconomic Analysis"	SEAGRANT	1981 & 2	Striped Bass	Sociological Analysis, Economics: Regional Impacts	Albemarle & Pamlico Estuaries of North Carolina	Completed	Researcher
Milon (University of FL)	"The Economic Benefits of Artificial Reefs: An Analysis of Dade County, FL Reef Fish System"	SEAGRANT	1985	none	Economics: Benefit Estimation for Artificial Reefs	Dade County, FL	Completed	Researcher
NMFS (KCA Research)	Socioeconomic Aspects of Marine Recreational Fishing	NMFS	1981	none	Sociological Analysis, Economics: Benefit Estimation and Regional Impacts	Pacific, Gulf, and Atlantic	Completed	NMFS, SERO, Economics Dept.
NMFS	Marine Recreational Fishery Statistics Survey (MRFSS)	NMFS	annually	none	Catch & Effort	Pacific, Gulf, Atlantic	On-going	NMFS, SERO, Economics Dept.
Perdue (NC State University)	** "Charter and Headboat Fishing as a Sector of the Tourism Industry in NC, SC, and GA: Guidelines for Greater Integration and Improved Economic Vitality"	NMFS (SK)	1987	none	Marketing of the Charter and Headboat Industry	GA, SC, and NC	Completed	NMFS, SERO, Economics Dept.
Rockland (Sport Fishing Institute)	"Undertake Additional Data Development and Analysis of Recreational Fisheries in the FL Keys"	NMFS (MARFIN)	1986 & 7	none	Economics: Benefit Estimation and Regional Impact	Florida Keys	Completed	NMFS, SERO, Economics Dept.
Strand, Bockstael, McConnell (University of MD)	"Economic Damages of Pollution to Marine Recreational Fishing"	EPA, NMFS (Contract)	1988	Flatfish	Economics: Benefit Estimation of Impacts of Pollution	Atlantic Coast: NY to FL	In-progress	NMFS, SERO, Economics Dept.
Texas Parks and Wildlife Department	Texas Saltwater Recreational Angler Survey	TEXAS	annually	none	Catch and Effort, Sociological Analysis, Economic Benefit Estimation and Regional Impact	Texas	On-going	Texas Parks & Wildlife Dept.
US Fish & Wildlife Service	1985 National Survey of Fishing, Hunting, and Wildlife Associated Recreation	USF&W	1985 (every 5 years)	Salmon, Striped Bass	Recreational Participation & Effort, Economics: Regional Impacts	Nationwide	On-going	USF&W

*, **, *** - Studies funded under the same grant or utilized the same (similar) survey instruments

Abbreviation Key: (Funding sources, data contacts)

NMFS, SERO - National Marine Fisheries Service, Southeast Regional Office
EPA - Environmental Protection Agency
USF&W - US Fish and Wildlife Service
COE - US Army Corps of Engineers

MARFIN - NMFS Grant Program in the Gulf of Mexico
SK - Saltonstall-Kennedy Grant Program
SEAGRANT - Nationwide Coastal University Grant Program