

**The Economic Benefits of
Fisheries, Wildlife and Boating Resources
in the State of Louisiana**

Prepared by
Southwick Associates
(904) 277-9765

for the
Louisiana Department of Wildlife and Fisheries

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Executive Summary

The fish, wildlife and boating resources of Louisiana generate substantial benefits. Hundreds of thousands of people depend on the resources for recreation, work and as a source of nourishment. Actively managed by the Louisiana Department of Wildlife and Fisheries, these resources not only contribute to the standard of living and economic health of state residents, they also contribute significantly to the common good through state tax revenues. The major activities based on Louisiana's fish, wildlife and boating resources and their economic contributions in 2003 are:

	<u>Retail Sales or Harvest Sales</u>	<u>Total Economic Effect</u>	<u>Jobs Supported</u>	<u>Sales & Income Tax Revenues</u>
Hunting:	\$599 million	\$1,024 million	9,475	\$31 million
Recreational Fishing:	\$895 million	\$1,632 million	16,999	\$59 million
Non-Consumptive Fish and Wildlife Recreation:	\$175 million	\$317 million	3,324	\$12 million
Recreational Boating:	\$1,668 million	\$1,927 million	22,741	\$99 million
Commercial Fisheries:	\$1,956 million ¹	\$2,608 million	29,245	\$100 million
Alligator:	\$38 million ²	\$69 million	508	\$2 million
Reptile and Amphibian Collection:	\$0.9 million ²	\$1.2 million	14	\$0.05 million
Fur Harvest:	\$1.6 million ²	\$2.9 million	42	\$0.08 million
Net out Recreational Fishing/ Boating Duplicate Expend. ³	<u>(\$247 million)</u>	<u>(\$449 million)</u>	<u>(4,660)</u>	<u>(\$19 million)</u>
TOTAL:	\$5.1 billion	\$7.1 billion	77,688	\$284 million

Refer to the *RESULTS* section within this report for full details on the economic contributions of Louisiana's fish, wildlife and boating resources to the state economy, including greater details for hunting, sport and commercial fishing, and alligators.

¹ Retail sales for Commercial Fishing include dockside sales of \$294 million and value added at the processing, wholesale, retail, and restaurant levels.

² These values represent the sales proceeds received by the harvesters. Most processing, distribution, and retailing occur outside of Louisiana.

³ This adjustment removes duplicate expenditures (boating expenses by recreational anglers) that are included in both the recreational fishing and recreational boating impact estimates.

INTRODUCTION

This report estimates the 2003 economic contributions of fish and wildlife-related commerce and recreation managed by the Louisiana Department of Wildlife and Fisheries. Included in this report are specific economic estimates for the following activities:

- Hunting, including species-specific impacts
- Recreational fishing, including species-specific impacts
- Non-consumptive fish and wildlife recreation (bird watching, photography, etc.)
- Recreational boating
- Commercial fishing, with breakouts for major fisheries
- Alligator harvests, with details for major alligator-related activities
- Reptile and amphibian collection, and
- Fur harvesting

For each of the above activities, estimates are provided for the total revenues or retail sales generated in 2003 and the resulting jobs, income, sales and income tax revenues and total economic (multiplier) effects that are supported by each activity within the Louisiana economy. Some of the economic impacts reported herein were obtained from existing reports and updated to 2003. When existing data were not available, the economic impacts were estimated using the best available data sources and economic models. The specific methods used are described in the following sections.

ECONOMIC CONCEPTS AND DEFINITIONS

The economic benefits of outdoor recreation and resource harvests can be estimated by two types of economic measures: economic impacts and economic values. Economic impacts address the business and financial activity resulting from some activity. Economic value measures the intrinsic value received by the user through participation in the activity. Technically, economic value measures the difference between what an individual would be willing to pay and what they actually pay for a commodity or activity. The difference is known as “consumer surplus”. Only **economic impacts** are addressed in this report.

There are three types of economic impacts: direct, indirect and induced. A direct impact is created with the initial purchase made by the consumer. For example, when a person buys a shotgun for \$395 there is a *direct* impact to the retailer of \$395. (The direct impact is a gross impact and should not be confused with a net impact such as profit, etc.) Indirect impacts are secondary effects generated from a direct impact. For example, the retailer must purchase a replacement shotgun; the gun manufacturer must purchase additional metals, wood, etc. for production; metal producers must buy inputs, and so on. Therefore, the original expenditure of \$395 benefits other related industries. Induced impacts result from the wages and salaries paid by the directly and indirectly impacted industries. The employees of these industries spend their income on various goods and services. These expenditures in turn create a continual cycle of additional impacts.

The sum of the direct, indirect and induced impacts equals the total economic impact. As the dollars from the original retail purchase go through round after round of indirect and induced effects, the economic impact of the original purchase is multiplied, benefiting many industries and individuals. Likewise, the reverse is true. If a particular item or industry is removed from the economy, the economic loss is greater than the original lost retail sale. Once the original retail purchase is made, each successive round of spending is smaller than the previous round. When the economic benefits are no longer measurable, the economic impact ends.

Definitions:

Retail Sales: For hunting, recreational fishing, boating and non-consumptive recreation, retail sales equals the dollars spent by the participants to partake in their activity, including meals, lodging, travel and equipment.

Retail sales for commercial fishing include the dockside value received by the commercial fisherman and value added at the processing, wholesale, retail, and restaurant levels.

Retail sales for alligator and fur harvests and reptile/amphibian collection represent the sales proceeds received by the harvesters. Most processing, distribution, and retailing occur outside of Louisiana.

**Total Economic, or
Multiplier, Effect:**

The total multiplier (or ripple) effect in the economy created by successive rounds of retailer, manufacturer and others' expenditures. These successive rounds of spending generate additional economic benefits, with each round becoming smaller and smaller until they can no longer be measured.

Jobs:

The total number of jobs supported by the many rounds of spending described above. In this report, this figure represents the actual number of jobs, or people employed to some level, and not "full time equivalents."

**Income or
Earnings:**

The total wages and salaries paid to employees by all of the industries enhanced by the total rounds of spending, plus the profits and dividends earned by business owners. Income is sometimes referred to as earnings.

Tax Revenues:

The total sales and income tax revenues paid to government as a result of the retail sales, wages and salaries described above.

**Non-Consumptive
Recreation:**

The viewing of birds, wildlife and fish, including watching, photography and feeding activities, both around the home ("residential") and away from home ("non-residential").

METHODS

The methodology discussion is divided into several sections. First, the methodologies used to estimate the economic contributions of sport fishing, hunting and non-consumptive recreation are presented. The economic estimates for these three activities were generated using the same data source and analytical procedures. Next, the methodologies used to estimate the contributions from other fish and wildlife-related activities are presented. The results are presented in the following chapter.

Recreational Fishing, Hunting and Non-Consumptive Fish and Wildlife Recreation

The expenditure data used to estimate the economic impacts from recreational fishing, recreational hunting, and non-consumptive recreation were obtained from the U.S. Fish and Wildlife Service's 2001 National Survey of Fishing, Hunting and Wildlife-Associated Recreation (2001 National Survey).

The economic impacts from Louisiana sportfishing were obtained from Sportfishing in America: Values of Our Traditional Pastime, released by the American Sportfishing Association in 2003. The hunting impacts were obtained from The Economic Importance of Hunting in America, released by the International Association of Fish and Wildlife Agencies in 2003. Both of these reports were developed by Southwick Associates, Inc. using the same methods described below for non-consumptive recreation. Also, both are based on expenditure data from the 2001 National Survey. Besides adjusting the sportfishing and hunting impacts from 2001 levels to 2003, no other adjustments were made. Impact estimates specific to marine sport fishing are also available from NOAA Fisheries, but they do not provide impacts for freshwater fishing or hunting, nor do they provide reasonable comparisons to freshwater fishing, and therefore are not used here.²

The economic contributions of non-consumptive fish and wildlife recreation (bird watching, wildlife observation and photography, and feeding) were produced as part of this report. Based on the detailed data and economic modeling information available, accurate impact estimates were possible. The methods used to estimate the economic impacts of these activities are separated into six stages:

- 1) Tabulate recreationists' expenditures;
- 2) Calculate the expenditures attributable to Louisiana;
- 3) Disaggregate the expenditures into retail, wholesale, and manufacturer portions;

² Marine recreational fishing expenditures estimated by NOAA Fisheries are substantially higher than those estimated by the USFWS. NOAA Fisheries reports \$1.18 billion for marine recreational fishing annually in Louisiana in 1999/2000 and the USFWS estimates \$435 million in 2001. Differences may lie in the methodologies employed. NOAA uses a combination of surveys to estimate expenditures by coastal and inland residents and typically larger sample sizes while the USFWS utilizes the U.S. Census Bureau's established "Current Population Survey" sample. Recognizing the high values reported by NOAA, the USFWS estimates reported here can be considered the low end of a range.

- 4) Generate economic impact estimates by applying economic multipliers to the adjusted expenditures;
- 5) Calculate sales and income tax revenues; and
- 6) Adjust the 2001 results to reflect 2003 price and participation levels.

Expenditures

Outdoor recreation expenditures were obtained from the U. S. Fish and Wildlife Service's 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (2001 National Survey). The Survey contains data on trip-related expenditures (food, lodging, fuel, etc.) where the primary purpose of the purchase was for hunting, fishing or non-consumptive recreation activities, and equipment expenditures (guns, decoys, boats, fishing reels, guide books, binoculars, etc.). Both resident and non-resident expenditures are included in the hunting, recreational fishing and non-consumptive analyses.

Data specific to Louisiana were obtained from the 2001 National Survey for all angling, hunting and non-consumptive expenditures. Hunting expenditures were subdivided into big game, small game and migratory bird hunting files, and further separated into expenditure estimates made by hunters targeting specific species. Fishing data were separated by freshwater and saltwater and for anglers targeting individual species as well. Data for non-consumptive recreation were divided into residential and non-residential ("away from home") categories. Also obtained were the total days of participation for each type of activity. After the data were loaded, expenditures per day of activity were calculated by dividing total expenditures by total days.

For non-consumptive recreation expenditures, care was taken when assigning dollars to specific activities. Certain equipment expenditures were not allocated to non-residential activities, as they are typically used for wildlife-related activities around the home. These include bird houses, bird feeders and commercial bird seed. Likewise, other expenditures, such as camping equipment, travel costs, etc., were fully assigned to non-residential activities.

Margins

Retail sales (recreationist expenditures) were separated into manufacturing, wholesale and retail sub-categories, because economic impact analysis treats each segment as a separate industry. The portion of each retail sale attributed to each segment is known as a margin. For example, 70 percent of the final retail dollar value of a shotgun sale may be attributed to the manufacturer, 5 percent to the wholesaler and 25 percent to the retailer. This means the manufacturing industry received 70 percent of the final retail price, the wholesaler 5 percent, and the retailer received 25 percent. Service-related expenditures such as repairs, taxidermy and lodging are not subject to the above process because service industries "stand alone" with no "goods" progressing through marketing segments.

The margins represent the net receipts received by the retailer or wholesaler after costs of goods sold are subtracted. From the margin earned by the business, all other expenses are subtracted such as parts, overhead, taxes, labor, etc. Any net remaining

dollars would be profit. The expenses for items such as parts, overhead, taxes, labor, etc. create the indirect and induced impacts.

Data used to calculate margins came from the Census of Retail Trade: Measures of Values Produced and the Census of Wholesale Trade: Measures of Values Produced. These two Department of Commerce documents contain national sales figures for most retail and wholesale industry sectors as well as gross profits. Gross profit is the revenue remaining after the cost of the goods sold is subtracted from the sales price. To derive margins, each wholesale and retail industry's gross profit is divided by its total cost of goods sold. This produces the average mark-up for that industry. Next, two formulas are applied to estimate the margin for each sector:

Retail margin = $R/(1+R)$, where R = retail mark-up

Wholesale margin = $W/\{(1+W)(1+R)\}$, where W = wholesale mark-up.

These formulas estimate the percentage of a product's final selling price that accrue to each sector. The manufacturing margin is derived by summing the retail and wholesale margins and subtracting the total from 100 percent.

Economic Modeling

To estimate economic impacts, the adjusted expenditure data were analyzed using economic multipliers from the Regional Input-Output Modeling System (RIMS-II) developed by the U.S. Dept. of Commerce, Bureau of Economic Analysis. Input-output models describe how sales in one industry impact other industries. For example, once a sportsman makes a purchase, the retailer buys more merchandise from wholesalers, who buy more from manufacturers, who, in turn, purchase new inputs and supplies. In addition, the wages and salaries paid by these businesses stimulate more impacts. So, the initial purchase creates numerous rounds of purchasing. Input-output analysis tracks how the various rounds of purchasing benefit other industries and estimates the resulting economic impacts.

The relationships between industries are explained through multipliers. For example, an earnings multiplier of .09 for industry *X* would indicate that for every dollar received by the industry under study, nine cents would be paid to the employees and owners of industry *X*. The RIMS-II model provides multipliers for all major industries including direct, indirect and induced effects. The RIMS-II model includes output, earnings and employment multipliers. The output multiplier measures the total economic effects created by the original retail sale. The earnings multiplier measures the total salaries and wages generated by the original retail sale plus business profits and dividends paid to owners. The employment multiplier estimates the number of jobs (full and part-time) supported by the original retail sale.

To apply the RIMS-II model, recreationist expenditures are matched to the appropriate output, earnings and employment multipliers. For example, dollars expended for petroleum products are multiplied separately by the earnings, output and employment multipliers specific to petroleum refining. The resulting estimates describe the salaries and wages, total economic effects, and jobs supported by the refining industry as a result of fuel purchases made by recreationists. This same process is repeated for all reported

expenditures. After all expenditures and multipliers have been matched, the retail, wholesale and manufacturing results for each category are then summed.

Tax Revenues

State sales tax estimates were based on Louisiana's general and fuel sales tax rates. Sales tax revenues were calculated by multiplying all retail purchases subject to sales taxes by the 2001 state sales tax rate of 4 percent. Due to the widely differing rates for city and parish sales and use taxes, these taxes were not included in this study. The first step in estimating fuel taxes was to determine the gallons of fuel consumed by recreationists. This was done by dividing the total expenditures for fuel by the average price charged for a gallon of fuel as reported by the American Petroleum Institute for the summer of 2001. Then, the number of gallons purchased was multiplied by the tax charged per gallon of fuel in 2001 (typically 20 cents, as reported by the State of Louisiana) to generate an estimate of fuel taxes paid by recreationists. The results were then adjusted to 2003 levels using the Consumer Price Index (CPI-U).

State and federal income tax revenues were determined by first dividing the total earnings estimated per activity by the total number of jobs supported. This produced an estimate of the average income generated per job. Next, a standard deduction was subtracted (based on federal deduction rates) and the remaining amount was multiplied by the respective 2001 income tax rates. The results were then multiplied by the total number of jobs and adjusted for inflation to 2003 levels to arrive at the final income tax estimates.

Adjusting 2001 Results to 2003

Adjustments were made to convert the 2001 National Survey data to 2003 levels. The first modification involved adjusting the 2001 numbers to reflect 2003 participation levels. This was accomplished by multiplying the 2001 impacts by the net change in the number of anglers and hunters, respectively. The number of certified fishing license holders in Louisiana in 2001 was 613,843, according to the U.S. Fish and Wildlife Service, Division of Federal Aid. In 2003 there were 627,551 license holders, representing an increase of 2.2 percent. There were 270,907 certified hunting license holders in 2001 and 268,793 in 2003, representing a decrease of 0.8 percent. Since licenses are not sold for non-consumptive recreation (other than on wildlife management areas) and reliable data could not be located explaining statewide participation trends from 2001 to 2003, no adjustments were made to the non-consumptive recreation data.

The second adjustment entailed multiplying the 2001 monetary estimates by the increase in prices (inflation) experienced from 2001 to 2003. According to the U.S. Bureau of Labor Statistics, inflation from 2001 to 2003 was 4 percent. Jobs estimates were not adjusted for inflation since the average wage per job typically rises with inflation. Final results for hunting, sportfishing and non-consumptive recreation are presented in Tables 4-6 of the "Results" chapter.

Guides/Charterboat Impacts

Limited data are available regarding the economic effects of guides and charterboats. The amount spent by marine and freshwater anglers was estimated by the U.S. Fish and Wildlife Service's 2001 National Survey. The sample size was low, with 9 of 207 freshwater anglers reporting expenditures for such services, and 13 of 149 marine anglers reporting expenditures. NOAA Fisheries provided information on the percentage of marine anglers using guide and charterboat services. Results are presented in Table 5a. Economic impact estimates were not possible, due to a lack of reliable estimates regarding how much was spent by charter and guide boat customers on other items such as lodging, travel, etc.

Recreational Boating

There were no existing studies reporting the economic impacts of Louisiana boating. Therefore, impact estimates were generated as part of this project. The typical annual expenditures per boater were developed using data from the National Boater Panel Survey 2003, produced by the Recreational Marine Research Center (RMRC) at Michigan State University, funded by the National Marine Manufacturers Association. The dollar estimates developed from the RMRC data are presented in Tables 1 and 2, and are divided into two major categories: one for boats kept at marinas, and the other for trailered boats. The RMRC expenditure data were provided in detailed categories for boats based on length. To develop averages for the amounts spent for all trailered boats and all marina boats, data from the National Marine Manufacturers Association were used to develop weighted averages of the amounts spent for trailered and marina boats, respectively.

Table 1. Per-Trip Expenditures (per boat per day)		
Category	Trailered Boats:	Marina Boats:
Boat fuel	\$21.18	\$30.69
Temp dockage	\$2.18	\$3.17
Pumpout/launch	\$1.07	\$0.98
Repair/maint	\$9.62	\$8.95
Marine supplies	\$6.72	\$8.95
Restaurant	\$18.12	\$22.88
Groceries	\$13.75	\$15.51
Auto gas	\$12.65	\$11.34
Souvenirs & misc.	\$2.80	\$2.93
Recreation	\$3.65	\$3.34
<u>Other (lodging)</u>	<u>\$10.74</u>	<u>\$13.07</u>
Total	\$102.47	\$121.80
Avg Annual Days of Boating in Louisiana:	31.5	35.6

Table 2. Annual Craft Expenditures (per boat)		
Category	Trailered Boats:	Marina Boats:
Slip	\$8.05	\$1,203.85
Yacht dues	\$38.32	\$161.21
Off seas storage	\$44.05	\$184.83
Put in haul out	\$67.76	\$121.08
Insurance	\$241.60	\$350.62
Repairs	\$489.84	\$760.91
Equipment	\$636.80	\$714.09
<u>Taxes</u>	<u>\$62.19</u>	<u>\$69.48</u>
Total	\$1,589	\$3,566
Annual loan payments:	\$546.27	\$850.59

The next step was to expand the per-trip and annual per-boater expenditures to represent the total expenditures made by Louisiana boaters annually. To do so, the following information was needed:

1. The total number of boating days annually in Louisiana, and
2. The total number of trailered boats and boats kept in marinas.

Research conducted by the RMRC indicates that boater expenditures vary little based on a boater's state of residence. Therefore no adjustments were made to adjust the national boating expenditures to reflect Louisiana only.

The number of state-registered boats was provided by the Louisiana Department of Wildlife and Fisheries. This number does not include USCG-documented vessels. State records do not record where boats are stored. Therefore, the following steps were taken to estimate the number of trailered boats and the number kept in marinas:

1. The number of leased or rented boat slips in Louisiana (6,919) was calculated using data from the 2002 Louisiana Marina Directory produced by the Louisiana Sea Grant Program (Marks et al, 2003). Data regarding the number of private boat slips in Louisiana are not available.
2. The percentage of occupied slips (90 percent) was estimated by contacting officials with the Louisiana Marina and Boatyard Association, yielding an estimate of 6,227 boats kept at marinas in Louisiana in 2002.
3. The number of boats in marinas was then subtracted from the total number of registered boats (307,051), yielding the estimated number of trailered boats (300,824). No data was available to adjust the 2002 estimate to 2003. The assumption was made that the total number of boats remained stable into 2003.

Total boating days were projected by multiplying the total number of boats by the average number of user days per boat. Based on data from the RMRC, it was estimated that the average trailered boat was used 31.5 days per year. With 300,824 trailered boats, this translates to 9.476 million days of boating for 2003. For marina boats, the RMRC reported 35.6 days of use per year, for an estimated 221,681 total days of boating by marina-kept boats in Louisiana in 2003.

Total travel-related expenditures for boating were derived by multiplying the total spent per trip (Table 1) by the total days of boating for trailered and marina boats respectively. Annual craft expenditures were derived by multiplying the annual expense per boat (Table 2) by the total number of trailered and marina boats, respectively. Appendix B presents detailed estimates of annual Louisiana boating expenditures.

Just as in the hunting, sportfishing and non-consumptive recreation studies, expenditures were divided into retail, wholesale and manufacturer categories and processed accordingly. Adjustments were also made for dollars leaving the state, which cease to have an impact on Louisiana's economy. The economic impacts from Louisiana boating were then estimated by multiplying the adjusted expenditures by multipliers provided by the RMRC. These multipliers are based on the IMPLAN® economic modeling system developed by the Minnesota IMPLAN Group, Inc. (MIG,

Inc.). These multipliers, which are specific to Louisiana, estimate the jobs, earnings and multiplier effects created by boater's retail dollars. The final economic impacts are presented in Table 7.

State sales tax estimates were based on state general and fuel sales tax rates. Sales tax revenues were calculated by multiplying all retail purchases subject to sales tax by the 2003 state sales tax rates (4 percent for consumer goods, and an average of 20 cents/gallon for fuel). Due to the widely varying rates, local and city-specific taxes were excluded, as were any wholesaler/manufacturer and special-use taxes. State and federal income tax revenues were calculated using the same methods described for the sportfishing, hunting and non-consumptive recreation impacts.

Notes:

1) The boating expenditures made as part of a boater's *fishing* activities are also included in the sport fishing impacts presented in this report. To some degree, this represents a double-counting of boater's fishing-related expenditures and economic impacts. To adjust for this issue, boating-related expenditures reported by resident anglers were removed from the sportfishing analysis when tabulating the total economic impact from all fish, wildlife and boating resources. Non-resident angler boating expenditures were left in as non-residents are not included in the boating impacts analysis. This adjustment is not made in the recreational fishing impacts reported in Table 5.

2) Based on a lack of data, the recreational boating figures calculated here do not include impacts for non-resident boaters nor larger craft documented with the U.S. Coast Guard.

Commercial Fisheries

The economic contributions of Louisiana's commercial fisheries were calculated using existing data sources. Landings data were obtained from the NOAA Fisheries website (personal communication from the National Marine Fisheries Service, Fisheries Statistics and Economics Division). Landings values, which report the dollar value paid to the harvester, were obtained for all species individually. Species were then grouped into larger categories, as shown in Table 3. Appendix B provides landings values by individual species.

Table 3: 2003 Commercial Fisheries Landings

	Value of <u>Landings</u>
Freshwater Finfish	\$3,326,997
Marine Finfish	\$83,913,848
Freshwater Shellfish	\$4,844,448
Marine Shellfish	
Shrimp	\$134,966,339
Crab	\$ 33,647,878
Oyster	\$ 33,375,501
Unclassified	\$ <u>50,604</u>
	<u>\$202,040,322</u>
All Commercial Fisheries	\$294,125,615

Economic impacts from commercial fisheries were estimated using multipliers from an earlier version of this document (1997) (newer multipliers for fisheries specific to Louisiana could not be obtained). Multipliers were derived from the Economic Impact of the Commercial Fishing Industry in the Gulf of Mexico and South Atlantic Regions (1984) by Kearney/Centaur for the Gulf and South Atlantic Fisheries Development Foundation, Inc. (exhibit 6-14, p. 187-9). This study quantified the economic contributions of commercial landings as they moved through the processing and wholesale sectors to the final retail and restaurant consumers. This study also estimated the extra value added to fishery products as they moved through each sector (processing, wholesale, etc.), and the total jobs and economic activity supported by each sector. By comparing the “value added” produced at each sector to the initial ex-vessel value, ratios were obtained. These ratios were then used to estimate the total value added, the number of jobs supported by the trade, and the total economic activity resulting from Louisiana commercial fishery landings.

Some adjustments had to be made. First, the ratios described in the paragraph above estimate the economic impacts of Louisiana commercial landings on the *national* economy. No economic models could be located that modeled only the state economy. The scope of this project, however, is to estimate economic contributions at the *state* level only. National economic analyses typically report larger impacts than state-level analyses for every dollar handled by a specific industry. This is due to the fact that as an industry spends its revenues (and therefore creates economic impacts), the money spent leaves the state economy sooner than it leaves the national economy. For example, if a Louisiana shrimp processor sells his product to a Texas wholesaler, the economic effects on the Louisiana economy end, while the effects on the national economy continue. Not until the shrimp are sold to the final consumer or exported does the impact cease on the national economy. Recognizing this, the national commercial fishery multipliers derived from the Kearney report had to be reduced. These adjustments were made by comparing the state and national impacts of various industries for which data were available (hunting and fishing studies, specifically). The average difference between the state and national multipliers was then used to adjust the economic contributions of Louisiana’s commercial fisheries to reflect state-level impacts versus national-level impacts.

Sales and income tax revenues were estimated by first averaging the ratios of tax revenues to retail sales for both sportfishing and hunting (the only two wildlife-based resource uses for which Louisiana sales and income tax revenue estimates were available), and then matching the average ratio to commercial fishery retail sales to derive the tax dollars from commercial fisheries and related activities. Table 8 presents the final economic impact estimates for Louisiana's commercial fisheries.

Alligator Harvest

The economic contributions of the alligator harvest were obtained from Alligator Use in the Louisiana Economy: Marsh to Market, prepared by the Louisiana Sea Grant Marine Extension Program (Roberts, 2001). This document examined the economic contribution of both wild and farm harvests, and egg collections. Wild and farm harvests included hide and meat revenues. The Roberts study also included economic impacts created from alligator-related swamp tours, which were excluded here because such impacts are theoretically included as part of the non-consumptive fish and wildlife-related recreation. Using estimates from the Sea Grant report, ratios were developed by comparing sales (revenues) to total output (multiplier effect) and jobs. These ratios were matched with actual revenues from all farm, wild and egg sales from the 2003 season as reported by the LDWF. The results were the total estimated economic contributions of the Louisiana alligator trade. The jobs multiplier was adjusted for inflation, recognizing that a greater number of dollars are needed each year to support a job due to inflation's eroding effects. The Roberts 2001 report did not estimate earnings (salaries, wages and profits), nor state sales and income tax revenues. Earnings were estimated by applying the ratio of retail sales-to-earnings from the commercial fishing results to alligator's retail sales (revenue). For lack of a better estimate, tax revenues were estimated by applying the average ratio of tax revenues-to-retail sales for sportfishing and hunting to the sales revenues from the alligator trade. Table 9 lists the economic impact results.

Reptile and Amphibian Collection

The Louisiana economy also benefits from the collection of other reptiles and amphibians for human consumption, laboratory research and the pet trade. Only exports from Louisiana are recorded. A one percent excise tax is collected on all reptile and amphibian exports. In 2003, the Department of Wildlife and Fisheries collected \$9,276.52, translating into total exports of \$927,520. The value of shipments within the state is unknown and therefore excluded from this analysis.

The economic contributions of these shipments were estimated by using economic multipliers from the commercial fishing portion of this report, since both activities represent the harvest of a wild resource for commercial sale. Recognizing that commercial harvesting employs a processing sector and most reptile amphibian exports are shipped whole and/or live, better multipliers are needed, but could not be located. Economic multipliers for the reptile and amphibian trade were not available, and generating customized multipliers was beyond the scope of this study. Ratios were

developed by comparing commercial fishery sales (industry revenues) to total output (multiplier effect), income and jobs. These ratios were used with the 2003 reptile and amphibian export values reported above. The results were the total estimated economic contributions of the Louisiana reptile and amphibian trade. State sales and income tax revenues were also estimated using the multiplier ratios applied in the commercial fisheries portion of this study. See Table 10 for the results.

Fur Harvest

The value of the annual state fur harvest is estimated by the LDWF. To estimate the economic impacts of fur harvesting, multipliers were borrowed from a national economic study of trapping conducted in 1993 titled *An Economic Profile of the U.S. Fur Industry* (Southwick et al.). Ratios were developed by comparing sales (industry revenues) to total output (multiplier effect), income and jobs in the Southwick fur industry study, and adjusting to reflect state-level impacts only (versus national-level impacts). Differences in the impacts from available hunting data were used to make this adjustment. These ratios were then utilized with 2002/2003 fur harvest value data as reported by the LDWF. The results were the total estimated economic contributions of the Louisiana fur trade. State sales and income tax revenues were estimated by first averaging the ratios of tax revenues to retail sales for both sportfishing and hunting (the only two wildlife based resource uses for which Louisiana tax revenue estimates are available), and matching the average ratio to fur harvesting revenues. Table 11 provides the final impact estimates.

The Economic Contributions of Louisiana's Fisheries, Wildlife and Boating Resources

The economic contributions of all fishery, wildlife and boating related activities are estimated by summing the results for all activities described in this report, and are reported in Table 12. Adjustments were made to the total to eliminate any double counting of angler's boating expenditures. These expenditures are including in the individual recreational fishing and boating results (Tables 5 and 7), but have been adjusted in Table 12. Table 12 does not include non-resident boater impacts nor impacts created by larger recreational craft documented with the U.S. Coast Guard and operating in Louisiana waters, but not registered with the State.

RESULTS

The 2003 economic contributions of Louisiana's fisheries, wildlife and boating resources to the state economy are presented below. The combined contributions of all activities are presented last.

Table 4: Recreational Hunting³

	<u>Retail Sales</u>	<u>Total Economic Effect</u>	<u>Earnings</u>	<u>Jobs Supported</u>	<u>Sales Tax Revenues</u>	<u>State Income Tax Revenues</u>	<u>Fed. Income Tax Rev.</u>
All Hunting:	\$599,474,791	\$1,023,913,412	\$218,569,876	9,475	\$26,127,852	\$5,331,739	\$33,339,398
Residents Only:	\$572,027,589	\$973,153,155	\$206,016,190	8,929	\$24,856,579	\$5,024,398	\$31,417,595
Non-Residents Only:	\$27,447,201	\$50,760,258	\$12,553,686	546	\$1,271,273	\$307,341	\$1,921,802
Deer Hunting:	\$190,979,878	\$331,124,731	\$75,120,615	3,456	\$9,024,338	\$1,760,704	\$10,895,278
Residents Only:	\$186,302,529	\$322,465,429	\$73,160,824	3,373	\$8,819,434	\$1,718,722	\$10,635,495
Non-Residents Only:	\$4,677,349	\$8,659,302	\$1,959,790	82	\$204,905	\$41,982	\$259,783
Migratory Game Birds (duck, geese, dove, other):	\$108,990,803	\$198,146,038	\$46,047,725	2,111	\$4,897,682	\$1,081,787	\$6,698,275
Residents Only:	\$96,169,054	\$174,109,892	\$40,235,837	1,866	\$4,315,442	\$956,185	\$5,920,570
Non-Residents Only:	\$12,821,749	\$24,036,146	\$5,811,888	245	\$582,240	\$125,601	\$777,705
Ducks:	\$89,142,867	\$164,058,027	\$37,624,712	1,731	\$4,138,061	\$881,859	\$5,643,707
Residents Only:	\$82,036,284	\$150,400,588	\$34,510,803	1,596	\$3,784,428	\$813,158	\$5,204,030
Non-Residents Only:	\$7,106,583	\$13,657,439	\$3,113,909	135	\$353,633	\$68,702	\$439,676
Rabbit:	\$14,533,261	\$26,721,834	\$5,625,352	255	\$684,933	\$133,196	\$843,803
Residents Only:	\$14,533,261	\$26,721,834	\$5,625,352	255	\$684,933	\$133,196	\$843,803
Non-Residents Only:	\$0	\$0	\$0	0	\$0	\$0	\$0
Squirrel:	\$16,731,796	\$30,451,201	\$6,824,164	307	\$854,152	\$162,525	\$1,023,625
Residents Only:	\$16,017,507	\$29,103,555	\$6,577,873	296	\$773,913	\$157,072	\$989,285
Non-Residents Only:	\$714,289	\$1,347,646	\$246,291	10	\$80,240	\$5,452	\$34,340

³ Some categories in this table contain species also included in other categories, such as "Migratory Game Birds," which includes "Ducks". Therefore, do not sum the categories above. The total hunting impacts from all forms of hunting are presented in the first category, "All Hunting."

Table 5: Recreational Fishing⁴

	<u>Retail Sales</u>	<u>Total Economic Effect</u>	<u>Earnings</u>	<u>Jobs Supported</u>	<u>Sales Tax Revenues</u>	<u>State Income Tax Revenues</u>	<u>Fed. Income Tax Rev.</u>
All Fishing:	\$895,330,569	\$1,631,816,196	\$395,247,350	16,999	\$49,713,013	\$9,690,254	\$60,670,849
Residents Only:	\$807,716,796	\$1,464,823,549	\$354,565,762	15,225	\$44,611,184	\$8,679,051	\$54,339,688
Non-Residents Only:	\$87,613,773	\$166,992,646	\$40,681,588	1,774	\$5,101,829	\$1,011,203	\$6,331,161
Freshwater Fishing:	\$444,590,117	\$806,828,401	\$196,831,680	8,419	\$25,357,736	\$4,842,357	\$30,344,487
Residents Only:	\$415,362,842	\$751,396,310	\$184,501,796	7,890	\$22,700,579	\$4,538,183	\$28,438,386
Non-Residents Only:	\$29,227,275	\$55,432,091	\$12,329,884	529	\$2,657,157	\$304,175	\$1,906,101
Saltwater Fishing:	\$435,324,520	\$792,578,882	\$190,687,663	8,276	\$24,355,277	\$4,648,248	\$29,060,206
Residents Only:	\$383,475,477	\$694,762,015	\$165,613,185	7,160	\$21,910,605	\$4,021,376	\$25,141,087
Non-Residents Only:	\$51,849,044	\$97,816,866	\$25,074,478	1,116	\$2,444,672	\$626,872	\$3,919,119
Largemouth Bass	\$137,317,586	\$253,189,152	\$65,297,361	2,727	\$7,891,921	\$1,630,286	\$10,253,872
Residents Only:	\$128,577,991	\$236,567,112	\$61,790,348	2,576	\$7,000,283	\$1,540,141	\$9,686,897
Non-Residents Only:	\$8,739,595	\$16,622,040	\$3,507,013	151	\$891,637	\$90,145	\$566,975
Crappie	\$55,692,991	\$102,205,856	\$24,291,489	1,061	\$3,551,104	\$589,736	\$3,683,119
Residents Only:	\$53,292,134	\$97,663,083	\$23,296,131	1,017	\$3,330,876	\$565,325	\$3,530,665
Non-Residents Only:	\$2,400,857	\$4,542,773	\$995,357	44	\$220,229	\$24,411	\$152,454
Panfish⁵	\$42,953,114	\$80,332,195	\$19,997,197	900	\$2,629,450	\$475,730	\$2,999,580
Residents Only:	\$37,152,050	\$69,543,911	\$17,239,742	788	\$2,240,071	\$416,553	\$2,626,456
Non-Residents Only:	\$5,801,063	\$10,788,283	\$2,757,455	112	\$389,378	\$59,177	\$373,123
White Bass	\$17,494,053	\$33,081,795	\$7,919,852	358	\$1,259,381	\$187,965	\$1,171,743
Residents Only:	\$14,804,885	\$27,943,428	\$6,829,640	310	\$998,157	\$163,063	\$1,030,592
Non-Residents Only:	\$2,689,168	\$5,138,367	\$1,090,212	47	\$261,224	\$24,902	\$157,386
Catfish (freshwater)	\$65,183,408	\$117,889,461	\$27,138,959	1,193	\$4,039,091	\$655,919	\$4,091,736
Residents Only:	\$57,807,042	\$103,793,768	\$24,075,058	1,059	\$3,365,616	\$581,957	\$3,630,352
Non-Residents Only:	\$7,376,365	\$14,095,693	\$3,063,901	135	\$673,476	\$73,961	\$461,384
Flounder	\$28,648,137	\$53,223,863	\$14,175,311	607	\$1,346,749	\$348,360	\$2,182,396
Residents Only:	\$22,374,589	\$41,478,490	\$11,157,991	470	\$1,122,156	\$269,532	\$1,688,555
Non-Residents Only:	\$6,273,548	\$11,745,373	\$3,017,320	137	\$224,593	\$78,828	\$493,842
Red Drum	\$149,366,609	\$274,843,229	\$69,492,281	3,054	\$7,532,871	\$1,680,341	\$10,483,530
Residents Only:	\$125,986,277	\$231,282,444	\$58,365,807	2,581	\$6,476,549	\$1,420,435	\$8,861,993
Non-Residents Only:	\$23,380,332	\$43,560,784	\$11,126,474	472	\$1,056,322	\$259,906	\$1,621,537
Saltwater Trout⁶	\$87,103,568	\$161,573,565	\$41,956,928	1,848	\$4,253,190	\$1,013,166	\$6,318,878
Residents Only:	\$71,474,175	\$132,326,156	\$34,255,057	1,506	\$3,601,569	\$825,999	\$5,151,563
Non-Residents Only:	\$15,629,392	\$29,247,409	\$7,701,871	341	\$651,621	\$187,167	\$1,167,315

⁴ Some categories in this table contain species also included in other categories. Do not sum the categories. The total impacts from all forms of fishing are presented in the first category, "All Fishing."

⁵ Panfish include bream/bluegill, shellcracker, longear and similar species. Crappie are not included.

⁶ Survey respondents were asked if they fished for "Seatrout (weakfish)." It is likely many Louisiana anglers included expenditures for sand and white trout along with spotted seatrout in their responses.

Table 5a: Guide and Charterboat Data

Angler Expenditures for Guides and Charterboats:

Freshwater fishing: expenditures)	\$3.5 million (2.0% of all freshwater expenditures)
Saltwater fishing:	\$28.2 million (12.8% of all marine expenditures)

Percent of Marine Anglers Using Charterboat and Guide Services:

All Anglers:	8.6 percent
Resident Anglers:	3.5 percent
Non-Resident Anglers:	24.3 percent

Table 6: Non-Consumptive Fish and Wildlife Recreation

	<u>Retail Sales</u>	<u>Total Economic Effect</u>	<u>Earnings</u>	<u>Jobs Supported</u>	<u>Sales Tax Revenues</u>	<u>State Income Tax Revenues</u>	<u>Fed. Income Tax Rev.</u>
All Wildlife							
Watching Activities:	\$175,157,058	\$317,435,573	\$74,632,685	3,324	\$8,931,085	\$2,772,971	\$11,194,903
Residents Only:	\$139,865,142	\$251,280,675	\$58,927,150	2,632	\$6,769,728	\$2,195,571	\$8,863,851
Non-Residents Only:	\$35,291,916	\$66,154,899	\$15,705,535	692	\$2,161,357	\$577,400	\$2,331,052

Table 7: Recreational Boating

	<u>Retail Sales</u>	<u>Total Economic Effect</u>	<u>Earnings</u>	<u>Jobs Supported</u>	<u>Sales Tax Revenues</u>	<u>State Income Tax Revenues</u>	<u>Fed. Income Tax Rev.</u>
	\$1,667,872,172	\$1,927,223,430	608,668,091	22,741	\$82,650,846	\$16,442,817	\$102,889,345

Table 8: Commercial Fisheries

	<u>Landings</u>	<u>Retail Sales</u>	<u>Total Economic Effect</u>	<u>Earnings</u>	<u>Jobs Supported</u>	<u>Sales Tax Revenues</u>	<u>State Income Tax Revenues</u>	<u>Fed. Income Tax Rev.</u>
Freshwater								
Finfish	\$3,326,997	\$22,123,793	\$29,498,390	\$4,742,920	331	\$909,183	\$218,077	\$1,364,794
Marine								
Finfish	\$83,913,848	\$558,008,489	\$744,011,319	\$119,626,391	8,344	\$22,931,492	\$5,500,369	\$34,422,978
Freshwater								
Shellfish	\$4,844,448	\$32,214,505	\$42,952,674	\$6,906,176	482	\$1,323,863	\$317,543	\$1,987,280
Marine								
Shellfish	<u>\$202,040,322</u>	<u>\$1,343,523,357</u>	<u>\$1,791,364,476</u>	<u>\$288,025,817</u>	<u>20,089</u>	<u>\$55,212,412</u>	<u>\$13,243,302</u>	<u>\$82,880,595</u>
TOTAL:	\$294,125,615	\$1,955,870,144	\$2,607,826,859	\$419,301,304	29,245	\$80,376,949	\$19,279,291	\$120,655,648

Table 8a: Species-Specific Results (included in the totals presented in Table 8)

	<u>Landings</u>	<u>Retail Sales</u>	<u>Total Economic Effect</u>	<u>Earnings</u>	<u>Jobs Supported</u>	<u>Sales Tax Revenues</u>	<u>State Income Tax Revenues</u>	<u>Fed. Income Tax Rev.</u>
Menhaden	\$58,443,314	\$388,635,084	\$518,180,111	\$83,315,959	5,811	\$15,971,051	\$3,830,832	\$23,974,505
Shrimp	\$134,966,339	\$897,496,238	\$1,196,661,650	\$192,406,098	13,420	\$36,882,822	\$8,846,749	\$55,365,634
Oysters	\$33,375,501	\$221,939,684	\$295,919,578	\$47,579,641	3,319	\$9,120,664	\$2,187,691	\$13,691,234
Blue crab	\$33,604,768	\$223,464,258	\$297,952,345	\$47,906,481	3,341	\$9,183,317	\$2,202,719	\$13,785,284
Catfish, freshwater	\$1,797,739	\$11,954,566	\$15,939,421	\$2,562,831	179	\$491,276	\$117,838	\$737,465
Crawfish	\$4,808,841	\$31,977,727	\$42,636,969	\$6,855,416	478	\$1,314,132	\$315,209	\$1,972,674

Table 9: Alligator Harvest

	<u>Retail Sales</u>	<u>Total Economic Effect</u>	<u>Earnings</u>	<u>Jobs Supported</u>	<u>Sales Tax Revenues</u>	<u>State Income Tax Revenues</u>	<u>Fed. Income Tax Rev.</u>
Wild Harvest	\$6,146,000	\$11,293,932	\$1,317,585	82	\$304,563	\$60,591	\$379,141
Farm Harvest	\$28,522,272	\$52,180,281	\$6,114,632	384	\$1,413,412	\$281,189	\$1,759,510
<u>Egg Collection</u>	<u>\$3,264,806</u>	<u>\$5,925,018</u>	<u>\$699,912</u>	<u>42</u>	<u>\$161,786</u>	<u>\$32,186</u>	<u>\$201,403</u>
TOTAL:	\$37,933,078	\$69,399,231	\$8,132,129	508	\$1,879,761	\$373,966	\$2,340,054

Table 10: Reptile and Amphibian Collection

	<u>Retail Sales</u>	<u>Total Economic Effect</u>	<u>Earnings</u>	<u>Jobs Supported</u>	<u>Sales Tax Revenues</u>	<u>State Income Tax Revenue</u>	<u>Fed. Income Tax Rev.</u>
	\$927,652	\$1,236,869	\$198,871	14	\$38,122	\$9,144	\$57,226

Table 11: Fur Harvest

	<u>Retail Sales</u>	<u>Total Economic Effect</u>	<u>Earnings</u>	<u>Jobs Supported</u>	<u>Sales Tax Revenues</u>	<u>State Income Tax Revenue</u>	<u>Fed. Income Tax Rev.</u>
	\$1,581,211	\$2,907,049	\$784,775	42	\$67,400	\$15,626	\$97,543

Table 12: Total Economic Impacts from Activities Associated with Louisiana's Fisheries, Wildlife and Boating Resources

Please note that the sum of the economic contributions for all fish, wildlife and boating related activities is an estimate developed by summing the impacts for each activity listed above, with an adjustment made to eliminate double-counting of expenditures made by anglers for boating-related activities. Different methods were used to develop the estimates for the different types of activities reported. This summation is presented to help the reader gain a better understanding of the overall benefits these activities provide to the state economy.

<u>Retail Sales</u>	<u>Total Economic Effect</u>	<u>Earnings</u>	<u>Jobs Supported</u>	<u>Sales Tax Revenues</u>	<u>State Income Tax Revenue</u>	<u>Fed. Income Tax Rev.</u>
\$5,086,983,000	\$7,132,569,000	\$1,608,534,000	77,690	\$233,461,000	\$50,913,000	\$312,233,000

CONCLUSION

The fisheries, wildlife and boating resources of Louisiana provide the state economy with important sources of jobs, income, tax revenues and other benefits. These benefits are particularly important in rural or remote areas where other sources of income may be limited. Outdoor sportsmen and recreationists spend millions which benefit many other industries. Consumers spends millions more purchasing food and other products harvested from Louisiana's waters. By supporting \$5.1 billion in retail sales, 78,000 jobs, \$1.6 billion in salaries and wages, and almost \$300 million in state tax revenues, these activities are of great value not only to industry and local businesses, but to every resident and community in Louisiana.

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APPENDIX A:

Facts About Louisiana's Fisheries and Wildlife-Related Commerce

- 1) All forms of wildlife-related recreation in Louisiana support enough jobs to employ the residents of the City of Lake Charles or Ascension Parish. (*Louisiana census*)
- 2) The total number of jobs supported by Louisiana recreational fishing is greater than the student body of Southeastern Louisiana University. (*Infolease data source – Peterson's Undergraduate data base*)
- 3) Louisiana wildlife-related recreation generates more jobs than the Port of New Orleans' industry, tenant and user employees. (*The Port of New Orleans*)
- 4) The annual sales tax revenues generated in Louisiana from recreational fishing could pay the yearly tuition for 75 percent of in-state undergraduates at LSU. (*LSU Office of Academic Affairs, Information Please Almanac*)
- 5) Commercial fisheries support nearly 6 times more jobs than AT&T's Consumer Products facility in Shreveport (Louisiana's largest manufacturer). (*Louisiana Almanac 2002-3*)
- 6) Non-consumptive wildlife recreation in Louisiana was enjoyed by more U.S residents than reside in the State of Montana. (*US Census Bureau 2000*)
- 7) The number of Louisiana residents who travel away from home to participate in wildlife watching, photography and feeding is equal to the population of Shreveport, the third largest city in Louisiana. (*US Census Bureau 2000*)
- 8) One of every five Louisiana residents participates in some form of wildlife-watching activities. (*US Census Bureau 2000*)
- 9) Tiger stadium would be filled nearly nine times with Louisiana residents who enjoy wildlife watching, photography and feeding. (*Louisiana State University*)
- 10) Louisiana residents who enjoy wildlife watching, photography and feeding would fill the Superdome (the largest dome structure in the country) over 11 times. (*The Louisiana Superdome and Louisiana Almanac 2002-3*)
- 11) United States residents who enjoy wildlife watching, photography and feeding would fill the Superdome (the largest dome structure in the country) over 13 times. (*The Louisiana Superdome and Louisiana Almanac 2002-3*)

- 12) The total economic effect of the alligator industry in Louisiana is greater than the national box office revenue of the movie “Ray”- filmed entirely in Louisiana. (*Movie times.com*)
- 13) Seventeen times more was spent in Louisiana for wildlife-related recreation than was spent at box offices nationally for “Shrek 2” – the top grossing film in the US in 2004. (*Movie times.com*)
- 14) The total sales tax revenue generated from wildlife-related recreation in Louisiana could pay the salaries of 12% of the public school teachers in the state. (*Louisiana Department of Education*)
- 15) The state sales tax revenue generated from wildlife-related recreation in Louisiana would pay 1.4 times for the Superdome remodeling project proposed to keep the Saints in New Orleans. (*Nola.com*)
- 16) The state income tax revenues generated from wildlife-related activities is enough to pay the annual salary and benefits of 1,454 New Orleans police officers. (*New Orleans Police Department*)
- 17) The overall economic impact of recreational boating is more than eight times the gambling revenue of Harrah’s New Orleans, the number one revenue-generating casino in Louisiana and Gulf Coast Mississippi. (*New Orleans City Business Book of Lists 2003-4: rank based on gaming revenue*)
- 18) If the jobs supported by hunting in Louisiana were to be eliminated, the state unemployment rate would jump from 5.6% to 6.1%. (*U.S. Bureau of Labor and Statistics*)
- 19) More Louisiana jobs are supported by recreational boating than are employed in either department stores or building construction. (*Louisiana Department of Labor*)
- 20) More Louisiana jobs are supported by the commercial fishing industry than are employed in either the accommodation or gambling industries. (*Louisiana Department of Labor*)
- 21) A nearly equal number of Louisiana residents are employed due to recreational hunting as are employed in oil and gas extraction. (*Louisiana Department of Labor*)
- 22) Freshwater fishing attracts enough visitors to Louisiana to fill Tiger Stadium 1.3 times or the Superdome 1.8 times. (*LSU, The Superdome, Participation Data*)
- 23) Saltwater fishing attracts enough people to Louisiana to fill Tiger Stadium 1.3 times or the Superdome 1.7 times. (*LSU, The Superdome, Participation Data*)

- 24) There are 27% more Louisianans who hunt than reside in Baton Rouge. (*US Census, Participation Data*)
- 25) There are 10% more Louisianans who freshwater fish than reside in the City of New Orleans. (*US Census, Participation Data*)

Appendix B:

Detailed Annual Expenditure Estimates for Hunting, Sportfishing, Non-Consumptive Wildlife-Related Recreation and Boating.

The following pages present the expenditures obtained from the U.S. Fish and Wildlife Service's 2001 National Survey of Fishing, Hunting and Wildlife-Associated Recreation. These data have not been adjusted to 2003 levels. Please note that the sample sizes for less-frequently purchased products such as vehicles and land are smaller than more-commonly purchased items such as food and other travel expenses. The variation presented by the seldomly-purchased items is minimized when the many items are summed. Please use the estimates presented here for less-frequently purchased items with caution.

HUNTING

Category:	All Hunting:	Deer:	Migratory Bird:
Food	\$47,257,317	\$22,438,027	\$17,312,451
Lodging	\$15,482,016	\$7,138,515	\$5,396,230
Public Transportation	\$4,371,609	\$1,266,446	\$2,239,698
Private Transportation	\$32,150,608	\$18,697,278	\$8,832,072
Guides	\$919,610	\$63,895	\$383,017
Public Land Use Fees	\$3,382,699	\$1,056,318	\$2,012,090
Private Land Use Fees	\$5,928,422	\$4,333,221	\$93,941
Heating & cooking fuel	\$1,047,272	\$635,746	\$287,269
Equipment Rental	\$485,360	\$15,974	\$468,638
Boat Fuel	\$5,403,171	\$46,193	\$2,816,084
Boat Launching	\$758,703	n/a	\$361,704
Boat Mooring	\$3,480,818	n/a	\$3,355,102
Rifle	\$17,054,088	\$10,600,642	\$1,257,832
Shotgun	\$19,208,032	\$2,385,471	\$13,685,840
Muzzle Loaders	\$3,642,603	\$1,764,768	n/a
Pistol/Handgun	\$4,605,187	\$1,668,786	\$1,219,473
Bow Expenditures	\$7,816,100	\$3,213,939	\$47,800
Scopes	\$4,288,270	\$3,112,719	n/a
Decoys	\$3,038,211	\$335,958	\$1,808,024
Ammunition	\$16,302,433	\$3,425,657	\$9,140,863
Hand Loading Equipment	\$1,025,368	\$729,999	\$93,802
Dog Expenditures	\$22,527,421	\$8,198,483	\$10,821,689
Other Hunting Equipment	\$2,797,718	\$1,685,272	\$658,859
Camping Gear	\$2,128,776	n/a	\$426,027
Binoculars	\$1,022,279	\$726,234	n/a
Clothing	\$13,622,100	\$4,600,119	\$4,409,225
Taxidermy	\$5,681,007	\$4,551,786	\$914,310
Books/Magazines	\$1,778,089	\$429,026	\$571,395
Dues	\$3,888,771	\$386,911	\$1,024,624
Oth. Hunt Related Expenditures	\$439,697	\$67,836	\$371,861
Bass boat	n/a	n/a	n/a
Other Motorboat Expenditures	n/a	n/a	n/a
Canoe Expenditures	\$766,351	n/a	\$662,891
Boat Accessories	n/a	n/a	n/a
Van/Camper	\$223,732,022	n/a	n/a
Cabin	n/a	n/a	n/a
Off-road Vehicle	\$59,413,358	\$57,588,537	\$459,853
Other Equipment	\$1,752,212	\$23,097	\$92,074
Licenses and Fees	\$10,694,145	\$4,661,960	\$5,208,981
Land Purchase	\$3,924,019	\$1,976,755	\$300,442
Land Lease	<u>\$29,250,738</u>	<u>\$17,289,852</u>	<u>\$8,909,841</u>
TOTAL:	\$581,066,601	\$185,115,421	\$105,644,001

SPORTFISHING

Category:	All Fishing:	Freshwater:	Saltwater:
Food	\$112,845,207	\$55,277,485	\$57,567,722
Lodging	\$25,979,996	\$8,236,438	\$17,743,558
Public Transportation	\$5,353,273	\$38,499	\$5,314,774
Private Transportation	\$77,799,288	\$44,452,080	\$33,347,208
Boat Fuel	\$56,208,524	\$21,037,059	\$35,171,466
Guides	\$31,765,123	\$3,531,230	\$28,233,893
Public Land Use Fees	\$1,331,775	\$973,175	\$358,601
Private Land Use Fees	\$3,855,933	\$2,355,477	\$1,500,456
Boat Launching	\$8,869,579	\$2,579,252	\$6,290,328
Boat Mooring	\$16,569,891	\$10,757,164	\$5,812,727
Equipment Rental	\$1,811,196	\$438,193	\$1,373,003
Bait (live, cut, prepared)	\$42,225,086	\$19,367,194	\$22,857,892
Ice	\$12,568,051	\$6,738,118	\$5,829,933
Heating & Cooking Fuel	\$1,567,751	\$862,014	\$705,737
Rods, Reels, & Components	\$41,963,335	\$19,371,532	\$22,591,803
Lines and Leaders	\$10,164,620	\$4,963,705	\$5,200,915
Lures, Flies, & Artificial Baits	\$14,985,432	\$8,591,230	\$6,394,202
Hooks, Sinkers, other Terminal Tackle	\$8,819,194	\$5,047,896	\$3,771,297
Tackle Boxes	\$2,947,029	\$1,520,232	\$1,426,797
Creels, Stringers, Landing Nets, etc	\$2,448,333	\$1,296,703	\$1,151,630
Bait Buckets, Minnow Traps, Other Bait Containers	\$1,467,433	\$850,801	\$616,632
Depth Finders, Fish Finders and Other Electronics	\$3,914,046	\$1,869,956	\$2,044,089
Ice Fishing Equipment	n/a	n/a	n/a
Other Fishing Equipment (knives, downriggers, etc.)	\$1,779,822	\$578,877	\$1,200,945
Camping Gear	\$4,657,977	\$2,755,536	\$1,902,441
Binoculars	\$455,516	\$217,856	\$237,660
Clothing	\$7,089,341	\$4,042,824	\$3,046,517
Bass Boats	\$64,125,416	\$64,125,416	n/a
Other Motorized Boats	\$52,115,135	\$16,689,255	\$35,425,881
Canoes / Non-Motorized Boats	n/a	n/a	n/a
Boat Motors, Trailers, Hitches, and Accessories	\$43,936,689	\$28,490,604	\$15,446,085
Pick-ups, Campers, Tent Trailers, Motor Homes, etc.	\$141,116,629	\$67,820,965	\$73,295,664
Cabins	n/a	n/a	n/a
4x4 and Off-road Vehicles, Snowmobiles	\$3,448,508	\$1,724,254	\$1,724,254
Other Special Equipment	\$4,095,879	\$977,603	\$3,118,275
Taxidermy & Processing	\$1,095,604	\$988,149	\$107,455
Books and Magazines Devoted to Fishing	\$2,548,476	\$1,476,383	\$1,072,093
Dues and Contributions to Organizations	\$3,645,831	\$1,396,498	\$2,249,333
Other Fishing Related Expenditures	\$1,011,370	\$572,738	\$438,632
Fishing Licenses	\$13,373,849	n/a	n/a
Tags, Permits and Other Specialized Licenses	\$1,130,075	n/a	n/a
Land Owned Primarily for Fishing, 2001 expense only	\$5,329,813	\$3,905,282	\$1,424,532
Land Leased Primarily for Fishing, 2001 expense only	<u>\$5,946,765</u>	<u>\$2,370,482</u>	<u>\$3,576,284</u>
TOTAL:	\$842,362,796	\$418,288,158	\$409,570,714

NON-CONSUMPTIVE WILDLIFE-RELATED RECREATION

Category:	\$
Food	\$17,704,707
Lodging	\$11,036,481
Public transportation	\$588,794
Private transportation	\$19,913,194
Guide fees	\$726,791
Public land access fees	\$64,849
Private land access fees	\$89,428
Equipment rental	\$21,394
Boat fuel	\$2,940,201
Other boat costs	\$2,338,434
Heating & cooking fuel	n/a
Cameras	\$13,621,423
Film & developing	\$8,287,080
Commercial bird food	\$19,993,987
Other bird food	\$4,472,101
Food for other wildlife	\$8,005,163
Nest boxes, feeders	\$12,644,659
Other special equipment	\$739,206
Tents, tarps	\$3,130,566
Backpacking equipment	n/a
Other camping equipment	\$787,643
Day packs	\$1,777,210
Magazines & books	\$1,773,541
Binoculars & spotting scopes	\$785,627
Membership dues, contributions	\$4,977,318
Other equipment	n/a
Off-road vehicles	\$22,956,421
Pickup, camper, motor home	n/a
Boat	n/a
Trailer, boat accessories	\$137,740
Cabin	n/a
Other equipment	n/a
Land purchases and leases	\$4,111,830
Plantings	<u>\$4,794,462</u>
TOTAL:	\$168,420,248

RECREATIONAL BOATING

Category	Trailerred Boats	Marina Boats
Boat fuel	\$ 200,708,461	\$ 6,806,344
Temp. dockage	\$ 20,633,255	\$ 703,086
Pumpout/launch	\$ 10,099,798	\$ 218,477
Repair/maint	\$ 91,129,755	\$ 1,984,638
Marine supplies	\$ 63,698,732	\$ 1,985,935
Restaurant	\$ 171,753,870	\$ 5,074,718
Groceries	\$ 130,330,853	\$ 3,439,608
Auto gas	\$ 119,871,746	\$ 2,515,305
Souvenirs & misc.	\$ 26,521,826	\$ 649,845
Recreation	\$ 34,611,820	\$ 739,935
Lodging	\$ 101,774,090	\$ 2,899,395
Slip	\$ 2,421,842	\$ 7,496,785
Yacht dues	\$ 11,527,040	\$ 1,003,881
Offseason storage	\$ 13,250,071	\$ 1,151,024
Put in haul out	\$ 20,383,706	\$ 753,982
Insurance	\$ 72,678,271	\$ 2,183,455
Repairs	\$ 147,353,990	\$ 4,738,476
Equipment	\$ 191,564,131	\$ 4,446,920
Taxes	\$ 18,707,019	\$ 432,694
Loan payments	\$ 164,330,462	\$ 5,296,929
	<u>Subtotals: \$1,613,350,738</u>	<u>\$54,521,433</u>
Total:		\$1,667,872,172

APPENDIX C:

2003 Louisiana Commercial Fisheries Landings

FRESHWATER FISH:			
<u>Species</u>	<u>Metric Tons</u>	<u>Pounds</u>	<u>\$</u>
BOWFIN	92.4	203,607	\$128,157
BUFFALOFISHES	1,510.3	3,329,577	\$524,934
CARP, COMMON	70.8	155,990	\$12,286
CARP, GRASS	18.3	40,400	\$8,573
CARPS AND MINNOWS	16.4	36,048	\$183,587
CATFISH, BLUE	1,245.5	2,745,832	\$1,229,718
CATFISH, CHANNEL	397.9	877,240	\$443,237
CATFISH, FLATHEAD	103.9	229,119	\$109,476
CATFISHES & BULLHEADS	24.9	54,875	\$15,308
DRUM, FRESHWATER	284.5	627,183	\$89,268
FROGS	0.2	509	\$856
GARS	350.9	773,552	\$515,863
SHAD, GIZZARD	577.6	1,273,294	\$155,002
Sub-Total:	4,409.1	9,720,043	\$3,326,997
SALTWATER FISH:			
<u>Species</u>	<u>Metric Tons</u>	<u>Pounds</u>	<u>\$</u>
AMBERJACK, GREATER	145.2	320,082	\$267,344
AMBERJACK, LESSER	20.7	45,678	\$43,704
BARRACUDAS	2.8	6,073	\$3,024
BASS, LONGTAIL	0.3	743	\$719
BIGEYE	1.0	2,154	\$1,187
BLACK DRIFTFISH	3.9	8,550	\$12,466
BLUEFISH	1.1	2,446	\$633
BROTULA, BEARDED	0.4	819	\$836
COBIA	10.9	24,035	\$41,191
CREOLE-FISH	2.4	5,259	\$3,499
CROAKER, ATLANTIC	4.7	10,343	\$24,045
DOLPHINFISH	30.8	67,863	\$64,713
DRUM, BLACK	1,595.2	3,516,737	\$1,938,076
ESCOLAR	69.4	153,082	\$97,846
FINFISHES, UNC FOR FOOD	0.7	1,433	\$1,183
FINFISHES, UNC GENERAL	0.8	1,857	\$2,168
FLOUNDER, FLUKES	28.9	63,650	\$68,432
GAG	9.6	21,126	\$48,877
GROUPEL, BLACK	5.2	11,496	\$26,966
GROUPEL, MARBLED	1.3	2,833	\$5,613
GROUPEL, RED	0.4	773	\$1,543
GROUPEL, SNOWY	6.9	15,131	\$31,662
GROUPEL, WARSAW	44.6	98,373	\$179,673
GROUPEL, YELLOWEDGE	45.8	100,913	\$254,920

<u>Species</u>	<u>Metric Tons</u>	<u>Pounds</u>	<u>\$</u>
GROUPER, YELLOWFIN	1.4	3,145	\$6,227
GRUNTS	0.7	1,561	\$480
HAKE, ATLANTIC, RED/WHITE	1.5	3,275	\$3,223
HERRINGS	314.4	693,146	\$95,397
HIND, RED	0.6	1,299	\$2,099
HIND, ROCK	0.1	180	\$345
HIND, SPECKLED	0.5	1,004	\$1,884
JACK, ALMACO	8.2	18,115	\$12,546
JACK, BAR	9.9	21,836	\$20,056
KING WHITING	19.3	42,480	\$14,081
MACKEREL, KING	413.0	910,550	\$990,115
MACKEREL, SPANISH	3.8	8,357	\$5,037
MENHADEN, ATLANTIC	436,449.4	962,196,400	\$58,443,314
MULLET, STRIPED (LIZA)	2,048.6	4,516,399	\$2,587,363
OILFISH	14.5	31,903	\$19,367
POMPANO, AFRICAN	0.0	52	\$25
POMPANO, FLORIDA	32.4	71,378	\$253,979
PORGY, RED	7.1	15,596	\$15,346
PORGY, WHITEBONE	1.4	3,114	\$1,609
RUDDERFISH, BANDED	0.1	183	\$72
RUNNER, BLUE	94.5	208,378	\$81,189
RUNNER, RAINBOW	0.6	1,280	\$664
SCAMP	25.7	56,710	\$139,293
SCORPIONFISH, SPINYCHEEK	0.4	963	\$996
SEA CHUBS	0.5	1,024	\$509
SEATROUT, SAND	10.4	22,863	\$25,324
SEATROUT, SPOTTED	8.8	19,401	\$37,900
SHARK, BLACKTIP	560.3	1,235,325	\$202,351
SHARK, LONGFIN MAKO	1.0	2,189	\$1,610
SHARK, SHORTFIN MAKO	4.5	9,964	\$6,980
SHARKS	9.5	20,962	\$455,379
SHEEPSHEAD	750.3	1,654,198	\$415,396
SNAPPER, BLACK	1.0	2,300	\$3,430
SNAPPER, BLACKFIN	0.5	1,042	\$1,760
SNAPPER, CUBERA	0.4	810	\$1,397
SNAPPER, GRAY	19.4	42,833	\$79,132
SNAPPER, LANE	14.3	31,559	\$51,613
SNAPPER, MAHOGANY	0.0	32	\$56
SNAPPER, MUTTON	0.2	475	\$818
SNAPPER, QUEEN	1.3	2,922	\$4,939
SNAPPER, RED	781.8	1,723,636	\$3,956,212
SNAPPER, SILK	3.0	6,654	\$11,771
SNAPPER, VERMILION	477.6	1,052,991	\$1,895,682
SNAPPER, YELLOWTAIL	1.0	2,115	\$4,660
SPADEFISHES	5.2	11,392	\$4,539

<u>Species</u>	<u>Metric Tons</u>	<u>Pounds</u>	<u>\$</u>
SQUIRRELFISHES	0.1	160	\$75
SWORDFISH	277.1	610,855	\$1,169,544
TILEFISH	3.6	7,834	\$13,207
TILEFISH, GOLDFACE	17.2	37,984	\$54,590
TRIGGERFISH, GRAY	28.2	62,246	\$70,875
TRIPLETAIL	0.9	2,027	\$1,410
TUNA, ALBACORE	3.8	8,391	\$4,037
TUNA, BIGEYE	15.1	33,299	\$102,050
TUNA, BLACKFIN	6.2	13,631	\$4,517
TUNA, BLUEFIN	37.0	81,489	\$390,681
TUNA, LITTLE TUNNY	8.5	18,707	\$6,535
TUNA, YELLOWFIN	1,366.0	3,011,429	\$8,946,719
WAHOO	40.1	88,298	\$83,721
WENCHMAN	0.1	198	\$134
Sub-Total:	446,220.5	983,737,171	\$83,913,848
FRESHWATER SHELLFISH:			
<u>Species</u>	<u>Metric Tons</u>	<u>Pounds</u>	<u>\$</u>
CRAWFISH, WILD-CAUGHT	3,749.9	8,266,980	\$4,808,841
TURTLE, SLIDERS	1.3	2,850	\$2,069
TURTLE, SNAPPING	7.7	16,971	\$22,763
TURTLE, SOFT-SHELL	5.9	12,902	\$10,775
SUB-TOTAL:	3,764.8	8,299,703	\$4,844,448
SALTWATER SHELLFISH:			
<u>Species</u>	<u>Metric Tons</u>	<u>Pounds</u>	<u>\$</u>
CRAB, BLUE	21,628.3	47,681,787	\$32,578,359
CRAB, BLUE, PEELER	153.1	337,493	\$767,364
CRAB, BLUE, SOFT	21.2	46,653	\$259,045
CRAB, FLORIDA STONE CLAWS	5.6	12,278	\$43,110
OYSTER, EASTERN	6,173.4	13,609,820	\$33,375,501
SHELLFISH	286.7	632,057	\$50,604
SHRIMP, BROWN	26,553.2	58,539,255	\$51,903,290
SHRIMP, PINK	42.5	93,701	\$134,505
<u>Species</u>	<u>Metric Tons</u>	<u>Pounds</u>	<u>\$</u>
SHRIMP, ROCK	18.8	41,512	\$112,248
SHRIMP, SEABOB	1,411.8	3,112,375	\$908,691
SHRIMP, WHITE	28,946.6	63,815,644	\$81,907,245
SHRIMP, ATLANTIC & GULF, ROUGHNECK	0.3	600	\$360
Sub-Total:	85,241.5	187,923,175	\$202,040,322
GRAND TOTAL:	539,635.3	1,189,680,092	\$294,125,615

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