



# The Economic Impact of Recreational Fishing in the Everglades Region

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# The Economic Impact of Recreational Fishing in the Everglades Region

## Introduction

The Everglades Region is widely known for its outstanding freshwater and saltwater fishing. It comprises a significant proportion of the economic impact of recreational fishing in the state of Florida. According to the U. S. Fish and Wildlife Service<sup>1</sup> (2007), resident and non-resident anglers spent an estimated \$4.4 billion on fishing related products and services in 2006. Further, these expenditures stimulated additional spending totaling \$7.5 billion in economic output and supported nearly 76,000 full-time equivalent jobs. Unfortunately, this data does not allow for breakdowns into smaller units like the Everglades Region (Figure 1) so an understanding of the economic impacts on the regional and state economies can be developed.

With all the research being undertaken in the Everglades restoration programs, it is surprising that the economic benefits associated with the Everglades natural resources have not been fully quantified. This project was designed to begin filling this gap in economic information by estimating the economic impact of recreational fishing in the Everglades Region.

The Everglades Region is defined in this study as including both the Northern and Southern Everglades as identified by the South Florida Water Management District (Figure 1). This region ranges from the Kissimmee chain of lakes in the North to Everglades National Park and Florida Bay in the South to the St. Lucie River on the East coast and Caloosahatchee River on the West coast. Recreational saltwater fishing activity was constrained to the nearshore area and Florida Bay on the northern side of the Florida Keys.

Fishermen traveling to the Everglades to fish contribute to the Florida economy by hiring independent guides and purchasing lodging, meals, equipment, supplies, transportation, and other items in the retail sector. Estimating the total economic impact of sport fishing in the Everglades entails quantifying the relevant direct expenditures by anglers and the “multiplier” or secondary effects related to these direct expenditures. Additionally, it is possible to estimate the income, jobs and state and federal tax revenues generated by the retail sales from recreational fishing in the Everglades.

Figure 1: Everglades Region



<sup>1</sup> U.S. Fish and Wildlife Service. 2007. National Survey of Fishing, Hunting and Wildlife Associated Recreation. Washington, DC: U.S. Fish and Wildlife Service.

The objectives of this project were three-fold:

1. To estimate the number of freshwater and saltwater recreational anglers fishing in the Everglades Region.
2. To estimate the economic impact of recreational fishing in the Everglades Region; including angler expenditures, total economic output, personal income, jobs, and state and federal tax revenues.
3. To estimate the economic impact of freshwater and saltwater recreational angling for specific species commonly targeted in the Everglades Region.

## **Methods**

### ***Angler Surveys***

The data used in this study were derived from two sources. The first source was a survey of Florida anglers fishing in the Everglades Region. An Internet survey was constructed and anglers throughout the South Florida region were directed to the Bonefish and Tarpon Trust website to access the survey or were given a direct link to the survey site through e-mails and printed articles describing the study and requesting anglers to logon to the website and complete the survey. The survey was publicized through local media outlets, angling and conservation organizations, and direct contact with anglers at fishing access sites throughout the region.

The objectives of the Internet survey were three-fold:

1. To estimate the percentage of angler saltwater and freshwater fishing days occurring within the Everglades Region.
2. To identify angler expenditures associated with fishing within the Everglades Region.
3. To estimate the percentage of fishing days targeting various freshwater and saltwater species within the region.

The second source of information used in this project was data from the 2006 National Survey of Fishing, Hunting and Wildlife Associated Recreation conducted by the U.S. Fish and Wildlife Service (2007). This survey, conducted every five years, collected data on freshwater and saltwater fishing in Florida, including the number of anglers, days fishing, and expenditures and limited information on fish species targeted.

By using data from both surveys, it was possible to estimate the number of anglers and days fishing in the Everglades Region as well as the expenditures associated with this fishing activity. The baseline number of anglers and days fishing in the Everglades Region was estimated based on the number of anglers residing in 13 counties that closely follow the Everglades Region: Osceola, Highlands, Okeechobee, St. Lucie, Martin, Glades, Lee, Hendry, Palm Beach, Collier, Broward, Monroe and Miami-Dade. The number of anglers residing in these counties and their corresponding number of days fishing was calculated using the following four-step procedure involving data from the two surveys:

1. Calculate the total number of anglers in the 13 county South Florida region and their freshwater and saltwater fishing days in Florida from FWS survey data.
2. Compute the ratio of Everglades saltwater and freshwater fishing days to South Florida saltwater and freshwater fishing days from the Everglades Angler Survey.
3. Multiply the total number of Florida saltwater and freshwater fishing days by the Everglades fishing day ratios to produce estimates of Everglades fishing days for saltwater and freshwater.
4. Divide the number of Everglades fishing days by the average number of days fishing in the Everglades (from the Everglades Survey) to estimate the number of Everglades anglers.

### ***Economic Impact Analysis***

Effective planning for public- and private-sector projects and programs at the state and local levels requires a systematic analysis of the economic impacts of the projects and programs on affected regions. In turn, systematic analysis of economic impacts must account for the inter-industry relationships within regions because these relationships largely determine how regional economies are likely to respond to project and program changes. Thus, regional input-output (I-O) multipliers, which account for inter-industry relationships within regions, are useful tools for regional economic impact analysis.

The RIMS II methodology<sup>2</sup> is the Regional Input-Output Modeling System used in this study. This system was developed and published by the U.S. Department of Commerce and is one of the primary ways in which to conduct a systemic analysis of the economic impacts of projects and programs on affected regions. The conceptual framework of the RIMS II approach is well described by the Community Research Institute at Grand Valley State University, Department of Economics:

*Each economic transaction can be compared to the ripples in a pond. When an individual trades money for goods or services the value of that money passes to the recipient like a stone thrown into a pond. That merchant then uses the money to purchase other goods or services adding a ripple to the pond. This (ripple effect) process continues many times and the value of the original money continues to grow.*

*In economic terms, the use and reuse of funds in the economy produces a multiplying effect. As monetary transactions are conducted over and over again, the value of a dollar has the potential to be multiplied many times as it moves through the economy from transaction to transaction. This multiplying effect is generated both directly by organizations purchasing goods and services and at a degree of separation by the employees of those organizations spending their paychecks. An additional benefit of the multiplier effect is seen in job creation to provide the goods and services being purchased. This multiplier effect applies to all economic activity by all organizations and individuals, whether that activity*

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<sup>2</sup> Bureau of Economic Analysis. 2006. Regional Multipliers: A Handbook for the Regional Input-Output Modeling System (RIMS II). Washington, DC: U.S. Government Printing Office.

*takes place in the for-profit, nonprofit or governmental sectors. The U.S. Department of Commerce estimates the multiplication effect on both dollars and employment as part of the Regional Input-Output Modeling System (RIMS II).*

RIMS II was originally developed in the 1980s by the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce, based on the Department of Commerce's input-output table of the national economy. It breaks out almost 500 separate U.S. industries, many directly involved in providing goods and services to anglers. RIMS II is widely used in both the public and private sector. In the public sector, for example, the Department of Defense uses RIMS II to estimate the regional impacts of military base closings, and state departments of transportation use RIMS II to estimate the regional impacts of airport construction and expansion. In the private sector, analysts, consultants, and economic development practitioners use RIMS II to estimate the regional impacts of a variety of projects, such as the development of theme parks and shopping malls. RIMS II measures the economic impact of an industry by accounting for three elements of potential economic impacts:

**Direct impacts** include employment, payroll, and revenue generated by services and goods purchased by anglers.

**Indirect impacts** are what users and employees of the fishing-related businesses spend in the local and regional economy as a result of their involvement in the recreational fishing industry.

**Induced impacts** include the value of goods and services purchased by money generated by direct and indirect impacts throughout the regional economy -- goods and services not associated with fishing and which would otherwise not be available.

The summation of direct, indirect and induced impacts produces **total economic output** and is expressed as a multiplier that is applied to retail sales associated with an activity, program or project.

RIMS II multipliers are intended to show the total regional effects on industrial output, personal earning, and employment for any county or group of contiguous counties in the United States resulting from any industry activity. Industry descriptions are defined according to the BEA's 2005 national input-output tables. Induced impacts for fishing-related businesses can be estimated by applying the RIMS II multipliers to activities within the appropriate industrial sector. RIMS II multipliers are given in three tables.

The **output** multiplier measures the total economic output created by the original retail sale.

The **earnings** multiplier measures the total salaries and wages generated by the original retail sale.

The **employment** multiplier estimates the number of jobs supported by the original retail sale.

Each fishing-related business is assigned a Standard Industrial Classification (SIC) code. The fishing-related business is identified by a corresponding RIMS II code, which identifies the

multiplier factor to be applied to that business. Business activities that are most likely encountered in fishing-related economic studies are represented by the categories used to measure angler expenditures. To apply the RIMS II model, angler expenditures are each matched to the appropriate output, earnings and employment multipliers. For example, dollars attributed to gasoline purchases are multiplied separately by the earnings, output and employment multipliers specific to gasoline refinement. 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 anglers. This same process is repeated for all reported expenditures. Finally, the total output, income and jobs estimated for each expenditure type are summed to produce the total effect for each impact category.

Federal and state **tax revenues** are also included in this report and represent separate estimates from the RIMS II multipliers for state sales tax and federal income tax revenues. For fishing estimates, sales tax revenues are only associated with original retail sales as it is not possible to track the appropriate tax rates through the subsequent rounds of spending. Sales tax estimates also include fuel tax receipts. Federal income tax receipts are based on the total economic activity created by the original retail sale.

## **Results**

The results of this study are presented in five sections. First, responses to the Everglades Angler Survey are provided to show the breakdowns of South Florida anglers to Everglades anglers which were important elements in estimating both Everglades anglers and angling days. The second section is a comparison of angler daily and annual expenditures from the FWS and Everglades angler surveys. The third section details angler expenditures for 15 trip and 10 equipment related categories of products and services. The fourth section provides economic impact estimates in terms of retail sales, overall output, personal income, jobs, and federal and state tax revenues generated. The final section estimates the economic impacts of angling for various freshwater and saltwater species targeted by anglers.

### ***Everglades Angler Survey Responses***

Everglades Angler Survey respondents were pointed to the Internet survey site through a variety of methods. Some were contacted directly by e-mail through angling organizations or retail businesses. Others encountered the survey link on the website of supporting organizations or in magazine or newspaper articles. As shown in Table 1, there were 1,652 respondents to the survey, all of whom had fished in Florida within the previous 12 months. Of these respondents 84.8% resided in the 13 South Florida counties encompassing the Everglades Region and 96.7% had fished in South Florida within the past 12 months. Slightly more than 75% of all South Florida respondents had fished within the Everglades Region during the past 12 months with 43.8% fishing in saltwater and 42.7% in freshwater.

A two-tiered approach was used to estimate the number of angling days and anglers for the Everglades Region since it was not possible to calculate them from the Everglades Angler Survey alone. First, the total number of anglers and angler days was calculated from the FWS National Survey data for Florida freshwater and saltwater fishing (Table 2). Also from the FWS

National survey, the percentage of anglers residing the 13-county South Florida area was calculated (38.1%). To estimate the number of days fishing in the Everglades, the mean number of days fished in the South Florida area (from the Everglades Angler Survey) was multiplied by the number of anglers residing in the 13-county area. The average number of days fished overall in the South Florida area was 21.91, with 14.78 days for saltwater and 21.92 days for freshwater. These calculations produced an estimate of slightly more than 23 million angling days for the South Florida area or 48% of the total days fishing in Florida. This estimate is reasonable as 42% of the state’s population resides in the 13-county area and the fishing season occurs essentially all year due to the more temperate climate in South Florida.

Table 1: Characteristics of Everglades Angler Survey respondents

	Number	% of Respondents
Number of Respondents	1,652	100.0
Fished in Florida	1,652	100.0
Florida anglers that lived within 13 South Florida Counties	1,401	84.8
South Florida anglers that fished South Florida	1,597	96.7
South Florida anglers that fished Everglades Region	1,252	75.8
South Florida anglers that fished Everglades Saltwater	724	43.8
South Florida Anglers that fished Everglades Freshwater	705	42.7

Days fished in the Everglades Region was calculated by multiplying the number of South Florida days by the percentage of South Florida days spent fishing in the Everglades Region obtained from the Everglades Angler Survey (Table 2). These percentages were 43% of all South Florida days fishing days spent angling in the Everglades Region, 43.8% of saltwater days and 42.7% of freshwater days. Overall, anglers spent nearly 10 million days fishing in the Everglades Region, with about 5 million days spent on both freshwater and saltwater fishing. Based on the mean number of days fished in the Everglades Region (26.47 total, 18.86 saltwater and 26.47 freshwater), an estimated 376,936 anglers fished in the Everglades Region during a 12-month period during 2008 and 2009 (Table 2). About 69% of these anglers fished for saltwater species and 50% for freshwater species. Overall, the number of days fishing in the Everglades Region was 21% of the total days fished in Florida.

Table 2: Estimated number of angling days and number of anglers by location

Location	Total Days	Saltwater Days	Freshwater Days	Total Anglers	Saltwater Anglers	Freshwater Anglers
Florida <sup>1</sup>	47,589,000	23,077,000	24,512,000	2,767,000	2,002,000	1,417,000
South Florida <sup>1</sup>	23,076,000	11,261,000	11,815,000	1,053,000	762,000	539,000
Everglades Region	9,977,483	4,932,570	5,044,913	376,936	261,536	190,590

<sup>1</sup>Estimates from the FWS 2006 National Survey of Fishing, Hunting and Wildlife Associated Recreation

### ***Angler Expenditure Comparisons***

Angler trip and equipment expenditure categories in the Everglades Angler Survey were replicated from the 2006 FWS National Survey. This allowed a comparison of daily and annual expenditures between the two survey results. Expenditures from the FWS National Survey for Florida anglers were used in this comparison because it was not possible to identify expenditures for anglers residing only in the 13-county area. The comparisons, shown in Table 3, show a number of interesting points. First, average daily expenditures from the FWS survey are about double those from the Everglades Angler Survey. This occurrence resulted primarily from the equipment expenditures, a set of relatively fixed costs annually for an angler, being spread over more fishing days for Everglades' anglers and thus reducing their contribution to the overall daily average.

On the other hand, annual expenditures were higher for Everglades angling because of the greater average number of days these anglers spent fishing compared to the average Florida angler (Table 3). Everglades' anglers spent an average of \$104 more per year while freshwater fishing and \$479 more while fishing saltwater than the average Florida angler.

Table 3: Comparison of average daily and total angler expenditures from US Fish and Wildlife Service and Everglades Surveys

Location	Expenditures per Day		Annual Expenditures	
	FWS Survey	Everglades Survey	FWS Survey	Everglades Survey
Freshwater	\$72.18	\$40.81	\$976.43	\$1,080.19
Saltwater	\$218.59	\$104.79	\$1,497.25	\$1,976.33
Total	\$125.66	\$72.44	\$1,594.59	\$1,917.45

### ***Everglades Angler Fishing Expenditures***

To estimate angler expenditures associated with Everglades fishing, the average daily expenditure for each freshwater and saltwater trip and equipment category was multiplied by the number of days of fishing to produce a total expenditure for each category shown in Table 4. The greatest trip-related expenditures by freshwater anglers were for food, drinks and refreshments, transportation, and boat fuel. Expenditures in these three categories accounted for two-thirds of all trip-related expenditures. Overall, Everglades freshwater fishing trip-related expenditures totaled nearly \$111 million.

Everglades freshwater fishing equipment-related expenditures totaled about \$94.9 million (Table 4). Expenditures associated with the purchase of boats, boat maintenance and tow vehicles accounted for 38% of all equipment-related expenditures. Overall, expenditures attributable to freshwater fishing in the Everglades Region were \$205.9 million. This was about 14% of all freshwater fishing expenditures made in Florida.

Table 4: Angler expenditures for Everglades Region fishing by type of fishing

Trip Expenditure Categories	Retail Sales		
	Everglades Freshwater	Everglades Saltwater	Everglades Total
Food, Drink & Refreshments	\$25,224,471	\$60,396,802	\$85,621,272
Lodging	\$9,257,809	\$49,169,610	\$58,427,420
Airline Transportation	\$4,842,574	\$17,133,379	\$21,975,953
Other Public Transportation	\$583,615	\$4,557,500	\$5,141,115
Private Vehicle Transportation	\$29,617,580	\$37,811,177	\$67,428,757
Guide Fees	\$1,416,499	\$35,533,283	\$36,949,782
Public Access Fees	\$1,233,374	\$1,225,557	\$2,458,931
Private Access Fees	\$497,621	\$2,205,472	\$2,703,093
Live and Cut Bait	\$8,999,092	\$17,747,053	\$26,746,145
Ice	\$3,446,739	\$6,481,200	\$9,927,939
Heating and Cooking Fuels	\$200,387	\$225,996	\$426,383
Equipment Rental	\$1,798,291	\$8,212,719	\$10,011,010
Boat Fuel	\$14,482,877	\$43,308,420	\$57,791,297
Boat Launch Fees	\$371,234	\$1,926,674	\$2,297,908
Boat Mooring, Maintenance and Insurance	\$8,987,008	\$26,943,543	\$35,930,551
Sub-Total	\$110,959,172	\$312,878,383	\$423,837,555
<b>Equipment Expenditure Categories</b>			
Rods and Reels	\$4,921,751	\$16,802,208	\$21,723,959
Lines and Leaders	\$1,641,101	\$3,620,867	\$5,261,968
Artificial Flies, Lures and Baits	\$2,854,262	\$4,421,425	\$7,275,688
Hooks, Swivels and Sinkers	\$909,736	\$2,192,758	\$3,102,495
Tackle Boxes	\$820,365	\$683,377	\$1,503,742
Creels, Stringers and Nets	\$95,647	\$838,948	\$934,594
Minnnow Traps, Seines and Containers	\$121,329	\$646,000	\$767,329
Electronic Devices	\$823,291	\$7,959,166	\$8,782,458
Scales, Knives and Misc. Equipment	\$2,870,241	\$3,784,145	\$6,654,386
Boats, Maintenance, Tow Vehicles	\$79,856,010	\$163,054,712	\$242,910,722
Sub-Total	\$94,913,733	\$204,003,607	\$298,917,340
Total Expenditures	\$205,872,905	\$516,881,990	\$722,754,895

Trip expenditures made by Everglades saltwater anglers were nearly three times greater than those made by freshwater anglers (Table 4). Saltwater trip-related expenditures exceeded \$312 million. Nearly 80% of these expenditures were for food and drink, lodging, transportation, guide fees, and boat fuel.

Equipment-related expenditures by Everglades saltwater anglers totaled \$205 million (Table 4). Similar to freshwater fishing, most of the equipment expenditures by saltwater anglers focused on purchases of boats, their maintenance and vehicles to tow them. Overall, saltwater

anglers spent \$516.9 million on fishing in the Everglades Region. This was about 17% of all saltwater-related expenditures made by anglers in Florida.

Combined, anglers accounted for \$722.8 million in retail sales throughout the region and state for their Everglades-related recreational fishing or about 15% of all fishing-related expenditures made in Florida (Table 4).

### ***Impacts of Everglades Angler Expenditures***

The RIMS multipliers for Florida freshwater and saltwater fishing expenditures were used to calculate the economic effects of Everglades angler freshwater and saltwater expenditures. These effects are shown in Table 5. The total economic output of Everglades Region freshwater fishing was estimated to be \$352.5 million. Angler expenditures generated \$108.4 million in salaries, wages and business owner income and 3,495 full-time equivalent jobs. Further, Everglades freshwater fishing expenditures accounted for \$25.5 million in federal income tax revenues and \$19.2 million in Florida sales tax revenues.

Everglades saltwater fishing economic impacts were substantially higher than those for freshwater fishing (Table 5). Saltwater angler expenditures expanded to \$883.6 million in total economic output. Angler retail sales generated \$270.4 million in salaries, wages and business owner income and 8,896 full-time equivalent jobs.

Table 5: Economic impacts of angler expenditures for Everglades Region by type of fishing

Type of Fishing	Retail Sales	Total Multiplier Effect (Economic Output)	Salaries, Wages and Business Owner Income	Jobs	Federal Tax Revenues	State and Local Tax Revenues
Freshwater	\$205,872,905	\$352,535,509	\$108,471,262	3,495	\$25,537,121	\$19,257,563
Saltwater	\$516,881,990	\$883,569,315	\$270,449,468	8,896	\$65,337,121	\$53,673,865
Total	\$722,754,895	\$1,236,104,824	\$378,920,730	12,391	\$90,874,242	\$72,931,428

Recreational fishing in the Everglades Region is responsible for over \$1.2 billion in economic activity (Table 5). It generates over \$378 million in wages, salaries and business income and 12,391 full-time equivalent jobs. The \$90 million in federal income tax revenues and \$72 million in state and local sales tax revenues provides significant support to government agencies as well.

### ***Economic Impacts of Targeted Species***

The final objective of this study was to estimate the economic impact of angling for specific species in the Everglades Region. Respondents to the Everglades Angler Survey were asked to estimate the proportion of days they spent fishing for specific freshwater and saltwater species found in the Everglades Region. Based on these percentages (shown in Tables 6 and 7), the number of angler days was calculated by multiplying total angler days by the target percentage.

Likewise, angler expenditures were allocated based on the target percentage as well. This procedure assumes that the daily trip and equipment related expenditures anglers make while targeting each fish species were similar. Testing this assumption with data from the Everglades Angler Survey resulted in daily expenditures varying by only a few dollars across the saltwater and freshwater species targeted. These differences were not significantly different at the .05 level of probability.

As seen in Table 6, saltwater anglers primarily targeted four fish species in the Everglades Region. Redfish were the most frequently targeted species followed by snook, tarpon and bonefish. Spotted seatrout and a variety of other species accounted for less than 20% of angler effort.

Table 6: Estimated angling days and economic impact of Everglades Region angler expenditures by saltwater species targeted

Species	% Days Targeting	Angler Days	Retail Sales	Total Multiplier Effect	Salaries, Wages and Business Owner's Income	Jobs	Federal Tax Revenues	State and Local Tax Revenues
Redfish	24.1%	1,188,749	\$124,568,560	\$212,940,205	\$65,178,322	2,144	\$15,746,246	\$12,935,401
Snook	20.2%	996,379	\$104,410,162	\$178,481,002	\$54,630,793	1,797	\$13,198,098	\$10,842,121
Bonefish	17.5%	863,200	\$90,454,348	\$154,624,630	\$47,328,657	1,557	\$11,433,996	\$9,392,926
Tarpon	19.7%	971,716	\$101,825,752	\$174,063,155	\$53,278,545	1,752	\$12,871,413	\$10,573,751
Seatrout	7.1%	350,212	\$36,698,621	\$62,733,421	\$19,201,912	632	\$4,638,936	\$3,810,844
Other	11.4%	562,313	\$58,924,547	\$100,726,902	\$30,831,239	1,014	\$7,448,432	\$6,118,821
Total	100.0%	4,932,570	\$516,881,990	\$883,569,315	\$270,449,468	8,896	\$65,337,121	\$53,673,865

Retail sales associated with each of the target species exceeded \$100 million each for redfish, snook and tarpon, and over \$90 million for bonefish (Table 6). Likewise, over 80% of the economic benefits from Everglades Region saltwater fishing accrued to the top four targeted species with redfish accounting for the greatest proportion of the value added (multiplier effect), income, jobs and tax benefits.

Largemouth bass were the most predominant species targeted by Everglades Region anglers (Table 7). Twice as many anglers targeted largemouth bass than any other single species. As would be expected, the economic benefits of Everglades freshwater fishing are driven by anglers targeting largemouth bass. These benefits totaled \$82 million in retail expenditures and \$141 million in total economic output.

Panfish were the next most common species targeted. Angling for panfish generated the second greatest amount of economic benefits at \$42 million in retail sales and \$73 million in total output. Fishing for catfish, white bass and other species accounted for the remaining 40% of angling effort and associated economic benefits.

Table 7: Estimated angling days and economic impact of Everglades Region angler expenditures by freshwater species targeted

Freshwater Species	% Days Targeting	Angler Days	Expenditures	Total Multiplier Effect	Salaries, Wages and Business Owner's Income	Jobs	Federal Tax Revenues	State and Local Tax Revenues
Largemouth Bass	40.1%	2,021,433	\$82,490,690	\$141,256,556	\$43,463,074	1,401	\$10,232,404	\$7,716,264
Catfish	15.4%	778,956	\$31,787,671	\$54,433,014	\$16,748,434	540	\$3,943,042	\$2,973,451
Panfish	20.7%	1,045,261	\$42,655,010	\$73,042,180	\$22,474,268	724	\$5,291,061	\$3,989,993
White Bass	10.1%	511,001	\$20,852,937	\$35,708,442	\$10,987,091	354	\$2,586,664	\$1,950,605
Other	13.6%	688,262	\$28,086,597	\$48,095,318	\$14,798,395	477	\$3,483,950	\$2,627,249
Total	100.0%	5,044,913	\$205,872,905	\$352,535,509	\$108,471,262	3,495	\$25,537,121	\$19,257,563

### **Summary and Conclusions**

The Everglades Region comprises a large proportion of the land area of South Florida. Within this region, extensive freshwater and saltwater recreational fisheries support a wide array of businesses providing products and services to anglers from Kissimmee to Key West and Stuart to Fort Myers. Retail sales for these business and others throughout the state of Florida were estimated to annually total \$722 million and comprise about 16% of the \$4.4 billion fishing-related expenditures made annually by anglers in Florida. The value added or multiplier effects of these expenditures increases the contribution of fishing activity in the Everglades Region to \$1.2 billion annually.

Saltwater fishing accounted for 71% of Everglades Region angler expenditures. Although the number of angler days fishing freshwater was slightly higher than for saltwater, the average daily expenditure for saltwater fishing was two and one-half times greater. Saltwater fishing expenditures were estimated to be \$516.9 million with a total output of \$883.6 million. Retail sales for freshwater angling goods and services were estimated to be \$205.8 million with a total output of \$352.5 million.

Recreational angling in the Everglades Region generated personal income of \$378.9 million from retail sales and an estimated 12,391 full-time equivalent jobs. The economic effects were based on retail sales only. They would be much greater if income and job impacts for total output could have been included. However, the limitations of the RIMS economic model used in this study precluded their inclusion. Thus, these effects are a very conservative estimate of benefits derived from Everglades Region angling.

Similarly, the federal and state tax benefits should be viewed as conservative as well. The \$90.8 million in federal income tax and \$72.9 million in state sales and fuel taxes would be much greater if these effects were calculated from the overall economic output. Identifying these effects, again, were beyond the scope of this project.

The economic impact estimates for the Everglades Region are conservative from several standpoints. First, Everglades fishing days were calculated from a base comprised of residents in the 13 South Florida counties encompassing the North and South Everglades sub-regions. Many anglers residing in other counties throughout Florida also fish in the Everglades Region. These additional days likely represented a smaller proportion of overall fishing days for the out-of-region anglers. However, they likely represent hundreds of thousands of additional angler days.

Second, fishing in the Everglades Region by non-resident anglers is not represented. This occurred because the calculation of Everglades Region fishing days was based on total fishing days in South Florida by resident anglers only. Since the location of fishing trips was not included in the FWS National Survey data, it was not possible to identify where non-resident fishing took place and, thus, non-resident trips were excluded. The FWS National Survey showed that 716,000 non-resident saltwater anglers spent 3.5 million days fishing in Florida waters. Likewise, 262,000 non-resident freshwater anglers spent 1.5 million days fishing in Florida. It is quite likely that the majority of these days occur in South Florida and many of these within the Everglades Region. The primary reasoning supporting this assumption is the large influx of non-residents to South Florida during the winter months adding a disproportionate share of non-residents to this region for longer periods of time than other areas of Florida and thus a greater proportion of fishing activity as well. If 20% of the non-resident fishing days in Florida occurred in the Everglades Region and assuming that their average daily expenditures for fishing were the same as for residents, expenditures in Florida by non-residents for freshwater fishing would amount to \$12.1 million and \$73.9 million for saltwater fishing.

Third, the amount of days fishing in Florida may be under-estimated by the FWS National Survey. The annual Marine Recreational Fisheries Statistics Survey (MRFSS), conducted by the National Marine Fisheries Service<sup>3</sup> since the early 1980's, estimated 38.4 million saltwater fishing days in Florida during 2006 and 36.8 million during 2008. This is 65% more saltwater fishing days in 2006 than the FWS National Survey estimate of 23.1 million. Further, the MRFSS data also shows that the number of days of saltwater fishing in Florida was very stable from 2006 to 2008 as fishing days declined by about four percent, which was a statistically non-significant decline. The difference between MRFSS and FWS fishing day estimates is due to the different methodologies use for estimating anglers and fishing days. The MRFSS has consistently yielded higher angler and effort totals annually during comparable years (e.g., 2001 and 2006). As a result, the estimates of angling days, and economic benefits used in this study, may substantially under-estimate their true magnitude.

Finally, the economic benefits of personal income, jobs and state and federal tax revenues were based on the initial \$722 million in angler expenditures (retail sales) and did not include these benefits associated with the additional \$513 million in economic output. The income, jobs and tax benefits associated with the total economic output would be substantially more than those from retail sales alone and should be recognized accordingly.

The economic benefits associated with the freshwater and saltwater species was based on the percentage of days anglers reported they spent targeting each species. The application of the

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<sup>3</sup> National Marine Fisheries Service. 2009. Marine Recreational Fisheries of the United State. Silver Spring, MD: National Marine Fisheries Service.

average daily expenditure for all freshwater and saltwater fishing, respectively, may detract from the accuracy of these benefits because the daily trip costs may not be the same for each species. It was not possible to segment out expenditures for each species in the Everglades Angler Survey. Thus, the economic benefits associated with each species should be viewed as illustrative rather definitive. This should not detract from the conclusion that the major recreational fish species targeted by anglers in the Everglades Region are vital components of the recreational fishery and could cause serious impacts on the local economy if fish populations decline or angling regulations reduce angler effort.

The economic benefits of recreational fisheries associated with the Everglades Region extend outside the region as well. These benefits accrue to saltwater angling outside the region from fish species, such as tarpon, that use the Everglades during parts of their lifecycle and migrate to other areas where they are available to anglers. Further, some gamefish species outside the Everglades Region rely on forage species that spend a significant portion of their lifecycles within the Everglades. Again, quantifying these benefits is very difficult, but they should be recognized as economic benefits also produced by the Everglades ecosystem.