



The Economic Impact of Recreational Tarpon Fishing in the Caloosahatchee River and Charlotte Harbor Region of Florida



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Executive Summary

Southwest Florida is renowned throughout the fishing world as a place for truly memorable tarpon fishing experiences. Anglers travel from throughout Florida, the U.S. and the world seeking resident and migratory fish that can weigh upwards of 200 pounds. These anglers spend money in the local economy for guides, food, lodging, boats, fuel, tackle, bait and many other items. The extent of this economic activity has only been guessed at because no studies of its impact have been undertaken. To overcome this lack of information, the Everglades Foundation funded a study through the Bonefish and Tarpon Trust to estimate the economic impact of the tarpon fisher in Southwest Florida. The Everglades Foundation's specific interest was in the extent of tarpon fishing in the Caloosahatchee River and the greater Charlotte Harbor area and the economic impact associated with this fishing.

Florida saltwater fishing license buyers from the four counties surrounding the Caloosahatchee River and Charlotte Harbor area (Charlotte, Collier, Lee and Sarasota counties) were identified from a file of state fishing license buyers for 2009-2010. This group of anglers was selected because of the probability of encountering a tarpon angler and the low probability of encountering anglers that fished for tarpon in the region that resided elsewhere in Florida or throughout the U.S. A random sample of 4,000 saltwater fishing license buyers from the four-county area were selected to receive either an e-mail or postcard invitation to participate in an online survey designed to collect the fishing and expenditure data needed for the study. Slightly more than 43% of the anglers receiving a survey request completed the survey.

The survey showed there were 67,936 active licensed saltwater anglers residing in the four-county region. About 84% of these anglers fished in saltwater in the study region. Of these study area saltwater anglers, 26,899 or 47% targeted tarpon during at least one day during the year. Resident anglers were on the water 268,000 days targeting tarpon during the year, averaging about 10 days each. Tarpon anglers in the region spent about \$237 per day and \$2,362 annually while fishing for tarpon. Aggregating expenditures for all tarpon fishing in the region results in \$63,539,000 in direct expenditures for tarpon fishing being made for fishing-related goods and services in the local economy during the year. Further compounding these expenditures are the Indirect Impacts that fishing-related businesses and their employees spend in the local economy as a result of their involvement in the recreational fishing industry. These supplemental expenditures contribute an additional \$45,075,000 to the local economy which brings the total economic impact of tarpon fishing in the region by resident anglers to \$108,614,000. This total impact accounts for \$33,245,000 in local salaries, wages and business owner income and 1,094 full-time equivalent jobs in the local economy. Tarpon angler spending also contributes \$8,032,000 in taxes to the federal treasury and \$6,598,000 in taxes to state and local governments.

Tarpon fishing in the Caloosahatchee River system accounted for \$9,650,000 of the direct expenditures by local anglers in the region. The total economic effect of these expenditures was estimated to be \$16,496,000.

The economic impact estimates of tarpon fishing in this report should be considered very conservative. Because of the limitations of the study, important groups of tarpon anglers were not included. For example, many resident anglers from within the state travel to Southwest Florida to pursue tarpon during the spring and summer months. These anglers either trailer their boats to the area or utilize one of hundreds of local guides in pursuit of tarpon. A second group not included in the study was non-resident anglers. Anglers travel from throughout the United States, Canada and other foreign countries to specifically fish for tarpon in Southwest Florida. All these anglers spend money in the local economy on food, lodging, and other goods and services during their trips.

Tarpon fishing in the Caloosahatchee River was a relatively small portion of the total fishing days and expenditures of local anglers. However, the true value of the river to tarpon and other fisheries is not known. The freshwater flows are important for maintaining productive river and estuarine habitats that likely play a vital role in portions of the life-history of tarpon throughout the Southwest Florida region. Whether it is nursery or rearing areas for juvenile tarpon, habitat for prey species or other factors that cause migratory tarpon to linger in the bays and sounds within the region, the river is an important component of the Charlotte Harbor and Pine Island Sound ecosystems. Understanding how the river effects habitat for tarpon and other species is essential to the long-term health of the tarpon fishery and sustaining the economic benefits that the fishery brings to the economy of Southwest Florida.

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The Economic Impact of Recreational Tarpon Fishing in the Caloosahatchee River and Charlotte Harbor Region of Florida

Tarpon. These ancient, exotic fish prowl the coastline of the southern U.S. and range seasonally from Texas to the mid-Atlantic states. Fascination with *Megalops atlanticus* by anglers from around the world has spawned dozens of books and articles on the allure of tarpon fishing (e.g. White and Brennen 2010) and how to catch them (e.g., Sargeant 1991, Cole 1997, Larmouth et. al. 2002). Further building the interest in tarpon fishing has been videos like Andy Mill and Tim Hoover's *Chasing Silver* that captures the excitement, drama and difficulties of tarpon fishing.

Anglers seek tarpon for their spectacular leaping ability, their gargantuan size and dogged fighting ability. When 200 pound fish mingle with their smaller 80 or 120 pound brothers and sisters, anglers become hopeful of going toe-to-tail with the Mohammad Ali of the shallow-water piscatorial world. Knowledgeable and successful tarpon guides build their businesses on these hopes and can charge a thousand dollars or more per day to help anglers fulfill their dreams of catching a trophy sized fish during the migratory season.

Nowhere are these magnificent fish pursued more vigorously than southern Florida with world-wide renown attached to places like the Florida Keys, the Everglades and Boca Grande Pass. The allure of tarpon in southern Florida permeates local anglers and draws adventurous anglers throughout North America, Europe, Asia and other continents. These anglers collectively spend millions of dollars on travel, equipment and services to stalk laid-up tarpon in the Florida Keys, enjoy the acrobatics of smaller fish in the backcountry waters of Everglades National Park, or battle the giants of Boca Grande Pass.

For years the popular press and local communities alike have extolled the economic benefits that saltwater fishing in Florida brings to shoreline communities. We know that saltwater fishing in Florida generates \$3 billion in angler expenditures each year and supports 52,000 jobs (Southwick Associates 2007). Yet, we do not know the value of one of the most visible and

revered species of fish in South Florida. This lack of economic information becomes critical when decisions on freshwater flows and habitat alterations that affect tarpon and other species are being made by water managers and governments as they are in South Florida.

The value of acquiring species-level economic impact data has been recognized by the Everglades Foundation through their funding of a grant to the Bonefish and Tarpon Trust. This grant focused on estimating the economic impact of tarpon fishing on the Caloosahatchee River and Charlotte Harbor area of southwest Florida. The Caloosahatchee River is the primary waterway flowing from Lake Okeechobee westward to the Gulf of Mexico. The river and its adjacent coastal waters are host to resident tarpon as well as large schools of migratory tarpon that provide the spectacular fishery in famed Boca Grande Pass.

Capturing the economic activity of this regional fishery involved several decisions related to the scope of the project. As mentioned above, tarpon fishing in Southwest Florida draws anglers from within the region as well as throughout the state, country and internationally. Contacting these diverse anglers to collect the needed data posed the greatest challenge to the project. The greater the distance from the region, the smaller the percentage of anglers traveling to the region to fish for tarpon. Further, many Florida resident and non-resident anglers are able to fish for tarpon without buying a saltwater fishing license if they fish with a licensed guide. This challenge of identifying tarpon anglers, coupled with the level of grant funding, necessitated restricting the scope of the study to resident saltwater anglers residing in a four-county study area adjacent to the Caloosahatchee River and Charlotte Harbor.

Study Objectives

- Estimate the number of study area anglers targeting tarpon during the 2009-2010 fishing year.
- Identify the number of days anglers spend targeting tarpon and other species within the study area.
- Obtain angler annual saltwater fishing-related expenditures within the study area.
- Estimate annual angler expenditures for tarpon fishing within the study area.
- Estimate annual angler expenditures for tarpon fishing within the Caloosahatchee River system.

Study Methods

Data for this study was collected from Florida saltwater fishing license holders with licenses issued during 2009 and 2010. During 2009 and 2010, all saltwater anglers were required to possess a saltwater fishing license issued by the Florida Fish and Wildlife Conservation Commission (FWC). Following the BP Deepwater Horizon oil spill, the FWC suspended the license fee for saltwater licenses to stimulate fishing-related tourism but retained the requirement that all saltwater anglers possess a valid fishing license.

An electronic file of all saltwater license purchasers during 2009 and 2010 was obtained from the FWC Licensing Division. License buyers residing in the four counties (Charlotte, Collier, Lee and Sarasota) surrounding the Caloosahatchee River and Charlotte Harbor area were selected from the file. Anglers with licenses that permitted them to fish during the July 1, 2009 to June 30, 2010 study period were selected from the overall file of license buyers. From this group of license buyers, 4,000 were randomly selected to complete an Internet-based survey of their overall and tarpon fishing activities.

Data on each buyer in the FWC saltwater license file included name, address, date of birth, type of license purchased, date of license purchase, and e-mail address, if voluntarily provided by the buyer. The sample of 4,000 license buyers contained 1,876 anglers that provided an e-mail address. These sample members were sent an e-mail message describing the project and asking them to click on the embedded survey link to take the survey. Any e-mail sample member whose message was bounced back as undeliverable was then moved to the pool of sample members with no e-mail address. Sample members with no e-mail address were sent a postcard with a brief message about the project and a request to complete the Internet-based survey. The Internet address of the survey was provided on the postcard.

Two follow-up e-mails reminding recipients about the importance of the survey and encouraging them to complete the survey were sent at one week and two week intervals following the initial e-mail survey participation request. Likewise, follow-up postcards were sent to the postcard group, at one week and two week intervals, reminding them of the importance of the survey and asking them to complete the survey.

There were 72,648 licensed saltwater anglers in the four county study area identified in the FWC license file during the study period (Table 1). Slightly more than 31% of these license buyers had provided an e-mail address at the time of their license purchase. The random sample yielded 2,740 license buyers that would initially receive a postcard request to complete the online survey and 1,260 that would receive an e-mail request to complete the survey. The initial survey requests were sent out in two stages. The first stage consisted of sending the e-mail request to the 1,260 sample members with e-mail addresses. There were 139 e-mails that were bounced back as non-deliverable. These 139 license buyers were added to the postcard sample and received the postcard survey request along with the 2,740 original sample members. The result was 72% of the sample receiving a postcard request and 28% receiving an e-mail request.

Table 1: Saltwater angler population and sample numbers for the Southwest study area

Delivery Method	Total N	Percent	Sample n	Percent	Sample n after initial E-mail	Percent
Postcard	49,785	68.5	2,740	68.5	2,879	72.0
E-mail	22,863	31.5	1,260	31.5	1,121	28.0
Total	72,648	100.0	4,000	100.0	4,000	100.0

Each sample member received two follow-up requests to participate in the survey. E-mail recipients received two e-mail reminders. Similarly, the postcard recipients received two additional postcard reminders.

The survey questionnaire consisted of three sections. The first section asked about the angler's fishing activity during the past 12 months. This included the number of days fishing saltwater in Florida and within the study region, regions of the state that were fished during the past 12 months, and the percentage of days spent targeting various fish species. The second section focused on tarpon fishing activity throughout the state and within the study area, and specifically within the Caloosahatchee River area. The final section asked anglers to estimate their annual expenditures for ten trip-related and nine equipment-related categories.

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 is the Regional Input-Output Modeling System (Bureau of Economic Analysis 2006) 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 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 the survey are presented in four sections. First, survey responses are presented for postcard and e-mail survey request groups. This comparison was made to determine if the response rates differed, and if so, to conduct further analysis to ascertain if and how the two sample groups were different with regard to their fishing activity and expenditures. The second section presents angler fishing activity for Florida and within the Southwest study area. This information included calculations of the number of anglers, overall days fishing in Florida, the number of days fishing in the study area, and the percentage of days spent targeting different fish species. The third section focuses on tarpon fishing throughout the state and within the study

area. Here again the number of anglers and angler days are estimated. The final section estimates tarpon angler trip and equipment expenditures by tarpon anglers for their overall fishing and tarpon fishing. Additionally in this section, the indirect and induced impacts are also presented along with a breakdown of total output, earnings, employment and tax revenues generated for overall fishing in the study area, tarpon fishing within the study area, and tarpon fishing within the Caloosahatchee River system.

Survey Response

Southwest study area anglers were pointed to the Internet survey site by either an e-mail or postcard request. A total of 4,000 resident fishing license buyers were sent a request. Slightly more than half of the sample members receiving the e-mail request completed the online survey. After non-deliverable postcard requests were deducted from the postcard sample, the response rate for this sample was 38.7 percent.

Table 2: Survey response rates by survey request delivery method

Delivery Method	Sample n	Non-Deliverable	Net Sample	Respondents	Response Rate
Postcard	2,879	627	2,252	872	38.7
E-mail	1,121	0	1,121	578	51.6
Total	4,000	627	3,373	1,450	43.0

The difference in response rates between the e-mail and postcard samples prompted an analysis to determine if the two groups differed on overall fishing activity, tarpon fishing in the study area, and annual expenditures for fishing. This analysis did not result in any statistically significant differences between the two groups across the target variables. The percentage of tarpon anglers, number of saltwater fishing days, and number of tarpon fishing days were not statistically different. As a result, all responses were assigned the same weight for calculating total days fished and expenditures.

Saltwater Angling by Study Area Residents

There were 67,936 active saltwater anglers in the four county Southwest Florida study region. This was 93.5% of all license buyers during the 12-month study period (Table 3). Of

these active anglers, 83.5% fished in saltwater in the four-county study area. Active anglers spent an average of 39 days fishing saltwater during the 12-month study period with nearly 35 days of those days occurring in the study area.

Table 3: Number of anglers and days saltwater fishing by Southwest Region anglers

Fishing Location	Number of Anglers	Total Days of Fishing	Mean Days
Licensed saltwater anglers in Region	72,648	2,669,323	36.7
Active anglers fishing in past 12 months	67,936	2,669,323	39.3
Active anglers fishing in SW Study Area	56,752	1,979,167	34.9

Survey respondents were asked to indicate the number of saltwater fishing days they spent in each of eight regions of Florida (Figure 1). As shown in Table 4, anglers fished predominantly within Southwest Florida (Regions 3, 4 and 5). Less than five percent of the anglers fishing in any of the other five regions during the year.

The vast majority of the fishing days spent by anglers in the study area occurred in the Caloosahatchee River and Charlotte Harbor area (Table 4). About 90% of all days fishing occurred in Regions 3 and 4 surrounding the study area.

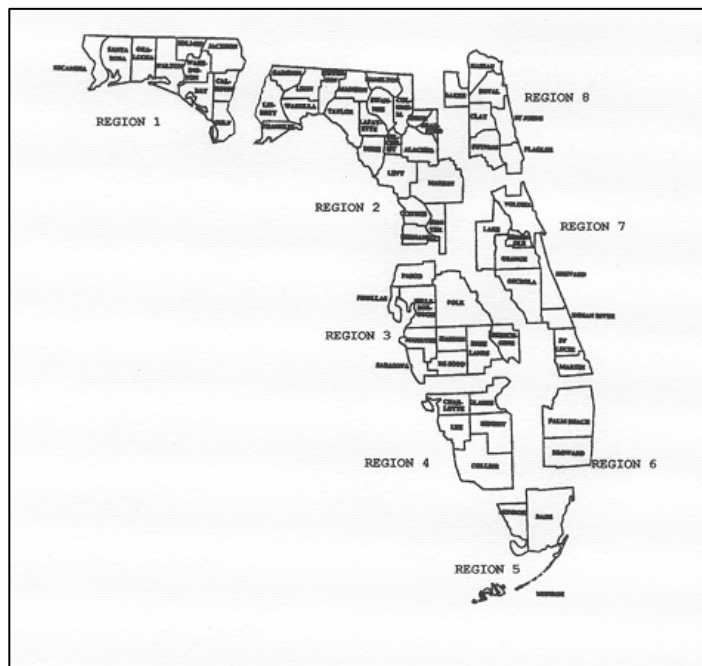


Figure 1: Map of eight Florida regions

Table 4: Number of anglers and days fishing in each of eight Florida regions

Florida Region	Total Number of Anglers	Florida Saltwater		Percentage of Days Fishing
		Days Fishing	Mean Days Fishing	
Region 1	784	4,227	<0.1	0.2%
Region 2	2,749	38,447	0.6	1.4%
Region 3	23,365	695,662	10.2	26.1%
Region 4	49,087	1,727,884	25.4	64.7%
Region 5	18,457	173,916	2.6	6.5%
Region 6	2,752	12,077	0.2	0.5%
Region 7	1,767	14,292	0.2	0.5%
Region 8	589	2,818	<0.1	0.1%
Anglers fishing in past 12 months	67,936	2,669,323	39.3	100.0%

Tarpon and non-tarpon anglers were asked to estimate the percentage of days they spent targeting various inshore and offshore fish species (Table 5). Differences between the two groups fell principally on fishing for various snapper species and offshore species. Overall, tarpon anglers targeted tarpon during 15% of their fishing days with another 55% of their days spent targeting redfish, spotted seatrout and snook. Non-tarpon anglers spent 52% of their days targeting redfish, spotted seatrout and snook and 17% seeking offshore species.

Table 5: Percentage of days spent targeting various species

Species	Tarpon Anglers	Non-Tarpon Anglers
Redfish	20.4	19.7
Seatrout	14.5	15.2
Snook	20.6	17.6
Tarpon	15.0	0.0
Permit	1.5	0.9
Jacks	1.4	2.0
Cobia	2.4	1.9
Sharks	3.0	2.3
Snapper	7.9	14.2
Sheepshead	2.0	3.7
Other Inshore Species	2.7	5.1
Offshore Species	8.6	17.4
Total	100.0	100.0

Tarpon Angling

About 44% of the 67,936 active saltwater anglers residing in the four-county study area targeted tarpon at least one day each year (Table 6) and 40% targeted tarpon within the study area. Tarpon anglers spent over 1.6 million days saltwater fishing and averaged 55.5 days of saltwater fishing in Florida annually. Further, tarpon anglers spent 1.4 million days fishing in the study area and averaged 47.2 days of saltwater fishing.

Ninety percent of all tarpon anglers residing in the study area fished for tarpon in the study area (Table 6). The remaining 10% only fished for tarpon outside the study area. Tarpon anglers fishing within the study area averaged 57.8 days of saltwater fishing overall and nearly 50.9 days fishing in the study area. Anglers only fishing tarpon outside the study area averaged slightly more days of total saltwater fishing days annually (62.0) than those fishing tarpon within the study area, but averaged 15 days less fishing within the study area. Overall, anglers fishing tarpon in the study area spent 88% of their fishing days within the study area, while tarpon anglers not fishing tarpon in the study area spent 56% of their days fishing in the study area.

About one-fourth of the tarpon anglers fishing within the study area did some of their fishing within the Caloosahatchee River system. These anglers spent 91% of their saltwater fishing days in the SW Florida study area.

Table 6: Number of tarpon anglers in Southwest Florida study area and days saltwater fishing

Angler Type and Location	Anglers	All Florida Saltwater Fishing		Saltwater Fishing in Study Area	
		Total Days	Mean Days	Total Days	Mean Days
Tarpon anglers	29,845	1,655,785	55.5	1,408,782	47.2
Non-Tarpon anglers	42,803	1,013,538	39.7	570,385	18.1
Tarpon anglers fishing in SW Study Area	26,899	1,554,078	57.8	1,370,298	50.9
Tarpon anglers fishing outside SW Study Area	7,657	474,568	62.0	269,583	35.2
Tarpon anglers fishing in Caloosahatchee River	6,872	404,669	58.9	370,308	53.9

Tarpon anglers residing within the study area spent about 10 days each year on their overall tarpon fishing (Table 7). Tarpon anglers fishing for tarpon in the study area also averaged 10 days of tarpon angling. Tarpon anglers residing in the study area but not fishing for tarpon in the study area only averaged six days of tarpon fishing. Tarpon anglers averaged 5.5 days of tarpon fishing the Caloosahatchee River system.

Table 7: Tarpon fishing activity by tarpon anglers and location

Angler Type and Location	Tarpon Anglers	Total Days Tarpon Fishing	Mean Days Tarpon Fishing
Tarpon anglers	29,845	316,706	10.6
Tarpon anglers fishing in SW Study Area	26,899	268,405	10.0
Tarpon anglers not fishing in SW Study Area	7,657	48,301	6.3
Tarpon anglers in Caloosahatchee River	6,872	37,502	5.5

Angler Expenditures for Tarpon Fishing

Survey respondents were asked to estimate their trip and equipment expenditures for the previous 12 months. Study area tarpon anglers were selected and their expenditures presented from three perspectives: 1) Annual fishing expenditures; 2) Annual expenditures for tarpon fishing; and 3) Annual expenditures for tarpon fishing in the Caloosahatchee River. As shown in Table 8, anglers spent \$194 million fishing for all species and over \$65 million fishing for tarpon in the study area. Boat-related expenses accounted for 53% of all expenditures tarpon anglers made for their overall saltwater fishing. Food, drink, refreshments and ice, and rods, reels and their components were the next two expenditure categories with the greatest dollar volumes. Tarpon anglers spent an average of \$7,226 per year or \$237 per day on their saltwater fishing annually.

Expenditures for tarpon fishing in the study area were calculated by multiplying the average daily fishing expenditure for an expenditure category by the number of days of tarpon fishing within the study area. These calculations resulted in an estimated \$63 million being spent for tarpon fishing in the study area by resident tarpon anglers. This averaged \$2,362 per angler each year.

Table 8: Annual saltwater and tarpon fishing expenditures made by study area tarpon anglers

Expenditure Category	Annual Saltwater Fishing Expenditures		
	All Fishing	Tarpon Fishing	Caloosahatchee River Tarpon
Food, drink, refreshments, ice	16,866,117	5,512,960	837,275
Lodging, including campgrounds	7,006,605	2,290,221	347,825
Public transportation by airplane, car rental	873,739	285,596	43,375
Private vehicle transportation	7,284,435	2,381,034	361,617
Guide or charter fees	5,324,902	1,740,529	264,341
Fishing licenses and tags	1,329,851	434,683	66,017
Live and dead bait	4,643,778	1,517,893	230,528
Boat and equipment rental	2,896,103	946,638	143,770
Boat moorage, maintenance, insurance, etc.	34,080,159	11,139,645	1,691,822
Boat fuel	33,848,078	11,063,786	1,680,300
Rods, reels and components	10,673,366	3,488,760	529,852
Lines and leaders	2,287,627	747,747	113,563
Hooks, swivels and sinkers	1,761,419	575,748	87,441
Artificial lures, baits and flies	3,318,246	1,084,622	164,726
Tackle boxes, landing nets	1,299,810	424,864	64,526
Minnow traps, cast nets, bait containers	1,565,859	511,826	77,733
Electronic devices and trolling motors	6,760,191	2,209,677	335,592
Boat payments	24,599,202	8,040,643	1,221,164
Tournament fees	4,577,806	1,496,329	227,253
Total Expenditure	194,387,442	63,538,646	9,649,863
Average Expenditure per year	7,226	2,362	1,404
Expenditure per day	237	237	257

Expenditures made by anglers for tarpon fishing in the Caloosahatchee River totaled nearly \$10 million. Anglers that fished the Caloosahatchee River averaged \$1,404 per year in expenditures for their tarpon fishing in the river system (Table 8).

The RIMS II multipliers for Florida saltwater fishing expenditures were used to calculate the economic effects of angler tarpon fishing expenditures. These effects are shown in Table 9. The total economic output of tarpon fishing in the study area was estimated to be \$108.6 million. Angler expenditures generated \$33.2 million in salaries, wages and business owner income and 1,094 full-time equivalent jobs. Further, tarpon fishing expenditures accounted for \$8 million in federal income tax revenues and another \$6.5 million in state and local tax revenues.

Tarpon fishing in the Caloosahatchee River generated nearly \$16.5 million in economic output and \$5.0 million in salaries, wages and business owner income. This income accounted for 166 full-time equivalent jobs. Tarpon fishing in the river system contributed \$1.2 million in Federal tax revenues and an additional \$1.0 million in state and local taxes. It should be noted that the impacts from the study area and the Caloosahatchee River are not additive as Caloosahatchee River tarpon fishing is a subset of tarpon fishing within the study area.

Table 9: Economic impacts of angler expenditures for tarpon fishing in SW Florida study area and the Caloosahatchee River

Area of Tarpon Fishing	Retail Sales	Total Multiplier Effect (Economic Output)	Salaries, Wages and Business Owner Income	Jobs	Federal Tax Revenues	State and Local Tax Revenues
Study Area	\$63,538,646	\$108,614,343	\$33,245,486	1,094	\$8,031,683	\$6,597,956
Caloosahatchee River	\$9,649,863	\$16,495,686	\$5,049,122	166	\$1,219,803	\$1,002,057

Discussion and Conclusions

Southeast Florida is recognized as one of the premier tarpon fishing areas in the Gulf and Caribbean region, if not in the world. Over 26,000 local anglers pursue resident and migratory tarpon throughout the Charlotte Harbor and Caloosahatchee River area. These anglers spend 90% of their fishing days within the region which is a testament to the quality of fishing for tarpon and other species that reside in or migrate through Southwest Florida waters. Tarpon anglers spend about 10% of their fishing days targeting tarpon with the remainder focusing on redfish, spotted seatrout and snook.

The average tarpon angler spends \$2,300 per year on trip and equipment related products and services while pursuing tarpon. This is a very significant portion of their annual fishing expenditures of \$7,200. Slightly more than half of these expenditures are encompassed by boat purchases, maintenance, insurance, fuel and equipment which total \$102 million overall and \$33 million for tarpon fishing. Clearly, the boating industry within the region benefits greatly from tarpon anglers.

Overall, tarpon anglers spend \$194 million for their local saltwater fishing. Of this amount, \$63 million can be attributed directly to tarpon fishing. The impact of angler expenditures for tarpon fishing is enhanced by the additional spending providers of goods and services make to purchase products and services that support their businesses. This supplemental spending, or indirect expenditures, adds another \$43 million to the effects of angler expenditures for tarpon fishing to yield an overall economic effect of \$108 million from tarpon fishing.

Part of these economic impacts from tarpon fishing can be attributed to the Caloosahatchee River. Over 6,800 anglers annually fish for tarpon in the Caloosahatchee River system. Collectively they are on the water about 37,000 days chasing tarpon in the river and spend \$9.6 million doing so. These direct expenditures reverberate in the regional economy to produce an overall economic effect of \$16.5 million.

Expenditures for tarpon fishing in the region also supports many jobs in the local economy. An estimated 1,094 full-time equivalent jobs are attributable to tarpon fishing in the region, with 166 accruing to tarpon fishing in the Caloosahatchee River.

All this economic activity associated with tarpon fishing generates substantial tax revenues for federal, state and local governments. Sales and fuel taxes resulting from tarpon fishing were estimated to be \$14 million. More than \$2 million in tax revenues was collected as a result of tarpon fishing in the Caloosahatchee River.

The economic impact estimates of tarpon fishing in this report should be considered very conservative. Because of the limitations of the study, important groups of tarpon anglers were not included. For example, many resident anglers from within the state travel to Southwest Florida to pursue tarpon during the spring and summer months. These anglers either trailer their boats to the area or utilize one of hundreds of local guides in pursuit of tarpon. All these anglers spend money in the local economy on food, lodging, and other goods and services during their trips.

A second group not included in the study was non-resident anglers. Anglers travel from throughout the United States, Canada and other foreign countries to specifically fish for tarpon in Southwest Florida. The U.S. Fish and Wildlife Service (2007) estimated that over 800,000 non-resident U.S. anglers travel to Florida each year to fish for saltwater species. The number of U.S. and foreign anglers who fish in Southwest Florida is not known as no studies have been undertaken to identify the number and origin of these anglers in Florida, where they do their fishing, and which species they target.

Tarpon fishing in the Caloosahatchee River was a relatively small portion of the total fishing days and expenditures of local anglers. However, the true value of the river to tarpon and other fisheries is not known. The freshwater flows are important for maintaining productive river and estuarine habitats that likely play a vital role in portions of the life-history of tarpon in the Southwest Florida region. Whether it is nursery or rearing areas for juvenile tarpon, habitat for prey species or other factors that cause migratory tarpon to linger in the bays and sounds within the region, the river is an important component of the Charlotte Harbor and Pine Island Sound ecosystems. Understanding how the river effects habitat for tarpon and other species is essential to the long-term health of the tarpon fishery and sustaining the economic benefits that the fishery brings to the economy of Southwest Florida.

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Appendix A: Online Survey Questionnaire

Southwest Florida Tarpon Fishing Survey

The purpose of this survey is to collect information on Tarpon fishing in the Southwest Florida Region. This survey concerns your fishing activities in the Region ranging from Gasparilla Sound on the North to Bonita Springs on the South. It also includes the Caloosahatchee River. The Southwest Florida Region is shown on the map below. (Map courtesy of the Florida Department of Transportation)

The following questions are about your Saltwater recreational fishing in Southwest Florida Study Region that ranges from Gasparilla Sound in the North to Bonita Springs in the South. (Please see map below)



1. On the average, how many DAYS do you spend Saltwater recreational fishing in Florida each year?
 - Number of days saltwater fishing in Florida
2. Did you fish in the SW Florida Study Region in Saltwater during the past 12 months?
 - Yes
 - No
3. How many days did you fish saltwater in the SW Florida Study Region during the past 12 months?
 - Days fishing in Study Area
4. How many days did you target Tarpon within and outside the Study Area during the past 12 months?
 - Days targeting Tarpon WITHIN the Study Region
 - Days targeting Tarpon OUTSIDE the Study Region

5. During the past 12 months, did you participate in any Tarpon tagging programs?

- No
- Yes, I had tags but did not tag a tarpon
- Yes, I tagged at least one Tarpon

The following questions ask about the fishing trip and equipment expenditures you make annually for saltwater fishing in Florida. Please estimate your TOTAL EXPENDITURES for each item in the list. We will use the days fishing information you provided previously to calculate the proportion of your fishing expenditures for Tarpon fishing in the Study Region. (If you also provide guide or charter services, only include those expenditures for recreational fishing not included as operating expenses for your business.)

6. For each item listed below, please estimate your TOTAL EXPENDITURE for saltwater fishing in Florida during the past 12 months.

- Food, drink, refreshments and ice
- Lodging, including campgrounds
- Public transportation by airplane, car rental
- Private vehicle transportation
- Guide or charter fees
- Fishing licenses and tags
- Live and dead bait
- Boat and equipment rental
- Boat moorage, maintenance, storage, insurance, etc.
- Boat fuel

7. For each item listed below, please estimate your TOTAL EXPENDITURE on equipment for saltwater fishing in Florida during the past 12 months.

- Rods, reels and components
- Lines and leaders
- Hooks, sinkers and swivels
- Artificial lures, baits and flies
- Tackle boxes, creels, landing nets, stringers, gaffs, etc.
- Minnow traps, cast nets, bait containers
- Electronic devices such as fish finders, depth finders and GPS and trolling motors
- Boat payments

Thank you for taking the time to complete this survey. The results will help ensure that Tarpon fishing in the SW Florida will be recognized as a valuable asset to the region and state of Florida as decisions about the fishery are made in the future.