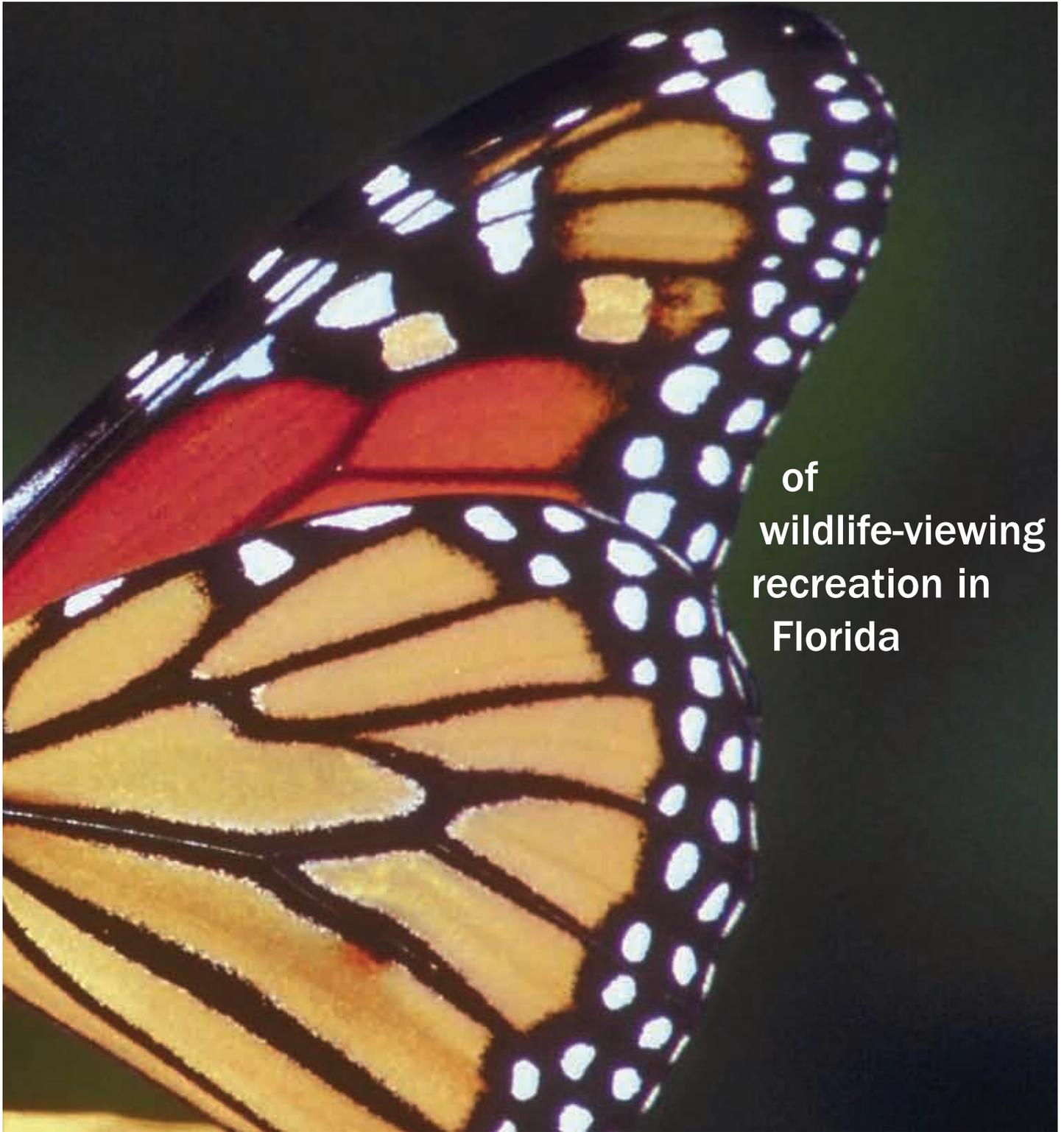


The 2006

economic benefits



of
wildlife-viewing
recreation in
Florida



Florida Fish and Wildlife
Conservation Commission

MyFWC.com

Acknowledgments

This report examines the contributions of wildlife viewing to the Florida economy. Rob Southwick and Thomas Allen are the authors. This project was funded by the Florida Fish and Wildlife Conservation Commission. The authors wish to thank Anne Glick for her assistance and guidance, and all others who contributed their input and suggestions regarding this report.

Table of contents

List of tables	iv
Executive summary	v
Introduction	1
I. Data sources and methods	1
II. Demographics and participation	
Demographics.....	2
Participation	2
III. Economic impacts	
Three forms of retail sales and economic impact.....	7
Retail sales	8
Total economic effect (output)	13
Earnings	13
Employment.....	13
Tax revenues.....	13
Trends since 1991	15
Appendix A	
Definitions	17
Appendix B	
Methods.....	19
Appendix C	
Economic impact tables for wildlife viewing	21
Appendix D	
More fun facts	24



red-shouldered hawk
Buteo lineatus

Florida ranks as the second highest state (after California) in the number of people participating in wildlife-viewing recreation.

(U.S. Fish and Wildlife Service's 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation)

Photo by David Moynahan

List of tables

Table E-1.	The 2006 economic impacts of wildlife viewing in Florida.....	v
Table 1.	Demographic background of wildlife viewers in Florida in 2006	2
Table 2.	Participation in non-residential wildlife viewing in Florida in 2006.....	3
Table 3.	Participation in non-residential wildlife viewing by site visited and wildlife observed, fed or photographed in Florida in 2006.....	4
Table 4.	Participation in residential wildlife viewing in Florida in 2006.....	5
Table 5.	Participation in residential wildlife viewing by wildlife observed in Florida in 2006	6
Table 6.	Expenditures made by residents and nonresidents participating in wildlife viewing in Florida in 2006.....	10
Table 7.	Average expenditures for wildlife viewers in Florida in 2006.....	12
Table 8.	Economic impacts of wildlife viewing in Florida in 2006	14
Table 9.	Retail sales from wildlife viewing in Florida in 2006.....	15

In 2006, the nonresident wildlife viewers in Florida (746,000) equaled the population of South Dakota and brought \$653 million into the state economy.

(U.S. Fish and Wildlife Service's 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation; U.S. Census Bureau)

black butterflies: Palamedes swallowtail
Papilio palamedes

yellow butterfly: eastern tiger swallowtail
Papilio glaucus



Photo by Kristen Wood

Executive summary

This project was conducted by Southwick Associates for the Florida Fish and Wildlife Conservation Commission. The purpose of this project was to quantify the 2006 economic benefits of wildlife viewing in Florida. The data used in this project were obtained from the 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (Survey). The Survey is conducted by the U.S. Fish and Wildlife Service and the U.S. Census Bureau. The Survey consists of a wide range of hunting, fishing and wildlife viewing participation, expenditure and demographic information. The data were analyzed using the IMPLAN economic model to generate economic impact estimates for each activity.

In 2006, there were 1.6 million wildlife viewers (residents and nonresidents) participating in non-residential activities in Florida. In addition, there were nearly 3.3 million residents participating in residential activities in Florida. Nonresidential activities are those performed at least one mile from an individual's home. Conversely, residential activities are those performed within one mile of an individual's home. The nonresidential activity cited most often by recreators was observing wildlife, whereas the primary residential activity was feeding wildlife. Overall, 4.2 million people participated in some form of residential or nonresidential wildlife viewing in Florida in 2006.

The total retail sales from 2006 wildlife viewing in Florida was estimated at \$3.1 billion (\$2.4 billion by residents and \$653.3 million by nonresidents). Since 2001, expenditures in Florida for wildlife viewing have almost doubled (\$1.575 billion in 2001). These numbers show a reversal from the previous five-year period in which expenditures had decreased slightly (\$1.677 billion in 1996). These 2006 expenditures support a total economic effect to the Florida economy of \$5.248 billion. The 2006 economic impact of wildlife viewing in Florida is summarized below.

Table E-1. 2006 Economic impacts of wildlife viewing in Florida

	Resident	Nonresident	Total
Retail sales	\$2.428 billion	\$653.3 million	\$3.081 billion
Salaries & wages	\$1.204 billion	\$391.8 million	\$1.595 billion
Full & part-time jobs	38,069	13,298	51,367
Tax revenues:			
State sales tax	\$243.1 million	\$69.7 million	\$312.8 million
Federal income tax	\$292.5 million	\$92.8 million	\$385.3 million
Total economic effect	\$4.078 billion	\$1.170 billion	\$5.248 billion



Since 2001, the number of people who visited Florida to view wildlife increased 50 percent.

(U.S. Fish and Wildlife Service's 2001 and 2006 National Surveys of Fishing, Hunting and Wildlife-Associated Recreation)

black bear
Ursus americanus



Introduction

Wildlife viewing activities, popular among residents and nonresidents alike, produce significant economic benefits for many individuals and businesses in Florida. Unlike manufacturing industries which are easily identified by large factories, the wildlife viewing industry is comprised of widely scattered retailers, manufacturers, and wholesalers and support services that, when considered together, form an important industry. Given that wildlife viewing dollars are often spent in rural or lightly populated areas, the economic contributions of wildlife viewing can be especially important to the rural economic base.



snail kite
Rostrhamus sociabilis

Photo by David Moynahan

This project assesses the 2006 economic benefits of wildlife viewing in Florida. The project was designed to provide resource managers with the economic information necessary to better conserve and manage wildlife and other natural resources. Only the economic benefits of wildlife viewing activities occurring within Florida are considered. This report measures the impact of wildlife viewing expenditures on Florida industries and individuals (in dollar terms) to produce estimates of the total economic benefits created in 2006.

This report is divided into several sections to provide a better understanding of the activities undertaken by wildlife viewers and the economic effects of their activities. The first section briefly describes data sources and methodology. The second section, participation, is divided into two subsections. The first subsection explores nonresidential participation by residents and nonresidents. Nonresidential activities are those that occur more than one mile from home. The second subsection examines residential participation. Given the definitions, nonresidential recreation is enjoyed by both Florida residents and tourists visiting the state, while residential recreation only includes residents. The next section presents the economic impacts of wildlife viewing in Florida. Definitions of several terms used in this report are provided in Appendix A. Appendix B provides methodological descriptions. Appendix C presents tables detailing the economic impacts of wildlife viewing.

I. Data sources & methods

Data on recreators' demographics, participation and expenditures were obtained from the 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (Survey), which is conducted approximately every five years by the U.S. Fish and Wildlife Service and the U.S. Bureau of the Census. The Survey provides data required by natural resource management agencies, industry and private organizations at the state and national levels to assist in optimally managing natural resources. The Survey is funded through excise taxes on hunting and fishing equipment through the Federal Aid in Sport Fish and Wildlife Restoration acts. The expenditure data was analyzed using economic models to quantify the economic impacts. A more detailed description of the methods used to generate the economic estimates is presented in Appendix B.

II. Demographics and participation

Characteristics of recreators

Demographics

Participants in wildlife viewing in Florida are near 50 years of age, are likely to be married, and are split fairly evenly between male and female, though more nonresidents are female. Only a small percentage of wildlife viewers in Florida, both nonresidential and residential, report they are non-white (Table 1).

Table 1. Demographic background of wildlife viewers in Florida in 2006 (*participants 16 years old and older*)

	Nonresidential activity		Residential activity
	Resident	Nonresident	
Race (non-white)	7%	5%	5%
Average age	49 years	51 years	51 years
Gender (male)	47%	34%	48%
Marital status (married)	56%	80%	62%
Average household income	\$62,816	\$73,862	\$60,641
Education			
8 years or less	2.3%	0%	3.8%
9-11 years	4.9%	2.3%	5.7%
12 years	32.4%	16.1%	34.4%
1-3 years college	22.9%	24.5%	24.0%
4 years college or more	37.5%	57.2%	32.0%

The average household income for residents participating in nonresidential and residential activities is similar. Nonresidents have, on average, a household income higher than resident participants. Both have incomes higher than the 2006 state average (\$44,448, per U.S. Census Bureau). As with income levels, the education levels of residents who participate in residential and non-residential activities are similar; however, nonresidents have, on average, a higher level of education.

Participation

Wildlife viewing includes a broad category of activities. To help describe the types of activities undertaken by residents and tourists, and to better understand the types of wildlife they enjoy and the surroundings preferred, participation information is divided into two subsections. The first subsection explores nonresidential activities by residents and tourists. The second subsection examines residential activities.

Nonresidential participation

In 2006, there were 1.6 million wildlife viewers (residents and tourists) participating in nonresidential activities in Florida (Table 2). Of the total recreators in Florida, 813,381 were state residents and 746,403 were tourists (Table 3). The total number of wildlife viewing days in Florida was 16.6 million.

Table 2. Participation in non-residential wildlife viewing in Florida in 2006 *(participants 16 years old and older)*

	Resident	Nonresident	Total
Number of participants	813,381	746,403	1,559,784
Observing wildlife	618,671	553,210	1,171,880
Photographing wildlife	363,900	451,407	815,307
Feeding wildlife	304,375	133,263	437,638
Number of days	10,449,338	6,101,889	16,551,227
Observing wildlife	9,708,907	4,853,203	14,562,110
Photographing wildlife	4,585,262	2,428,434	7,013,696
Feeding wildlife	5,411,759	446,477	5,858,235
Number of trips	8,184,700	1,487,109	9,671,809

The primary wildlife viewing activity, measured in terms of number of participants and number of activity days, was observing wildlife; photographing wildlife was the second preferred activity. Please note one participant may engage in two or more activities per trip as these activities are not exclusive of one another.

Participation by resident and nonresident recreators in terms of sites visited and wildlife observed, fed or photographed is presented in Table 3. Note that the results presented in Table 3 do not necessarily imply that recreators prefer a certain site type or prefer to observe a certain wildlife type. This is because the results in Table 3 reflect participants' preferences and the availability of sites and wildlife.

With 746,000 visitors per year, more people travel to Florida to view wildlife than any other state - 24 percent more than the second-place state, California

(U.S. Fish and Wildlife Service's 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation)



monarch
Danaus plexippus

Table 3. Participation in non-residential wildlife viewing by site visited and wildlife observed, fed, or photographed in Florida in 2006

(Participants 16 years old and older, ranked)

	Resident	Nonresident	Total
Number of participants	813,381	746,404	1,559,785
Number of recreators visiting (ranked by total number of users):			
Public land	783,292	619,373	1,402,665
Private land	119,344	298,766	418,109
Number of recreators observing, feeding or photographing (ranked by major species):			
Birds	706,272	661,175	1,367,447
Shorebirds	605,069	684,439	1,289,508
Waterfowl	593,438	572,978	1,166,416
Birds of prey	495,502	362,506	858,008
Songbirds	480,578	364,261	844,840
Other birds	167,187	121,820	289,007
Other wildlife	551,735	433,413	985,148
Mammals	507,676	355,739	863,415
Small land mammals	478,425	317,096	795,521
Ocean mammals	348,361	336,396	684,756
Large land mammals	262,940	157,667	420,607
Fish	461,497	318,254	779,751

Note = a participant may be counted towards more than one category above



green anole
Anolis carolinensis

Wildlife viewing supports nearly as many jobs in-state as employed by Walt Disney World.

(Orlando Business Journal Book of Lists 2006)

One of every six Florida residents participates in some form of wildlife-viewing activity.

(18.090 million state residents in 2006 per U.S. Census Bureau, and 3.274 million wildlife watching participants residing in Florida)

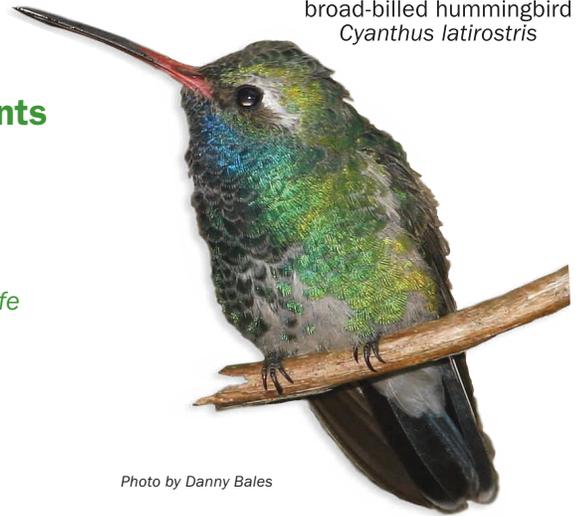


Photo by Danny Bales

Residential participation

In 2006, there were 3.3 million residential wildlife viewing participants in Florida (Table 4). This number represents Florida residents participating in wildlife viewing within one mile of their home. Compared to non-residential activity, there are twice as many residents who participate in wildlife watching within one mile of their homes than those who travel away from home.

Table 4. Participation in residential wildlife viewing in Florida in 2006 *(participants 16 years old and older, ranked)*

Number of participants	3,273,861	
Feeding birds and wildlife	2,474,003	(75.6%)
Birds	2,307,829	(70.5%)
Other wildlife	1,164,855	(35.6%)
Observing wildlife	2,363,676	(72.2%)
Photographing wildlife	1,230,178	(37.6%)
Visiting parks near home	624,088	(19.1%)
Maintaining plantings around home	448,175	(13.7%)
Maintaining natural areas around home	423,347	(12.9%)
Number of days		
Observing wildlife	245,609,606	
Photographing wildlife	36,212,590	

Note = a participant may enjoy more than one type of wildlife listed above

The primary residential wildlife viewing activity, measured in terms of number of participants, was feeding wildlife. Observing wildlife was the second most popular residential wildlife viewing activity. This is in contrast to the ranking of the non-residential activities, where observing wildlife was the most popular activity. Of those who participate in feeding birds and wildlife, most feed wild birds.

Given the manner in which the survey questions were asked, we cannot determine the number of days spent feeding wildlife. However, we can determine the number of days spent observing and photographing wildlife around the home. In terms of days spent in wildlife viewing activities, observing wildlife again was the most popular activity. Residents spent approximately 245.6 million days observing wildlife around their home compared with only 9.7 million days spent observing wildlife on trips away from home.

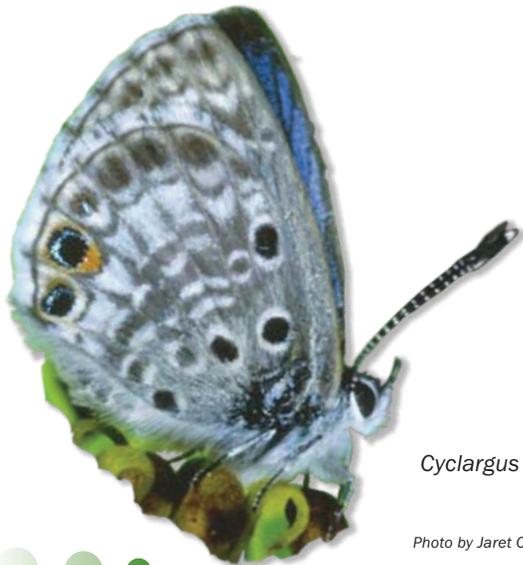
The no. 1 type of wildlife observed by residential recreators in Florida was birds (Table 5). The second most prominent category to be observed by residents was mammals, with most of these being small mammals. As with the results presented in Table 3, the Table 5 results do not necessarily imply that recreators prefer to observe a certain wildlife type because the results reflect participants' preferences and the availability of wildlife types.

Table 5. Participation in residential wildlife viewing by wildlife observed in Florida in 2006

(Number of participants 16 years old and older, ranked)

Number of recreators		
Birds	2,121,773	(64.8%)
Mammals	1,747,916	(53.4%)
small mammals	1,652,789	(50.5%)
large mammals	573,417	(17.5%)
Amphibians or reptiles	1,410,326	(43.1%)
Insects or spiders	1,060,140	(32.4%)
Fish and other wildlife	789,253	(24.1%)

Note = a participant may enjoy more than one type of wildlife listed above



In 2006, Florida residents who enjoyed viewing wildlife around their homes outnumbered the population of 21 states.

(U.S. Census Bureau)

Miami blue
Cyclargus thomasi bethunebakeri

Photo by Jaret C. Daniels

III. Economic impacts

Three forms of retail sales and economic impact:

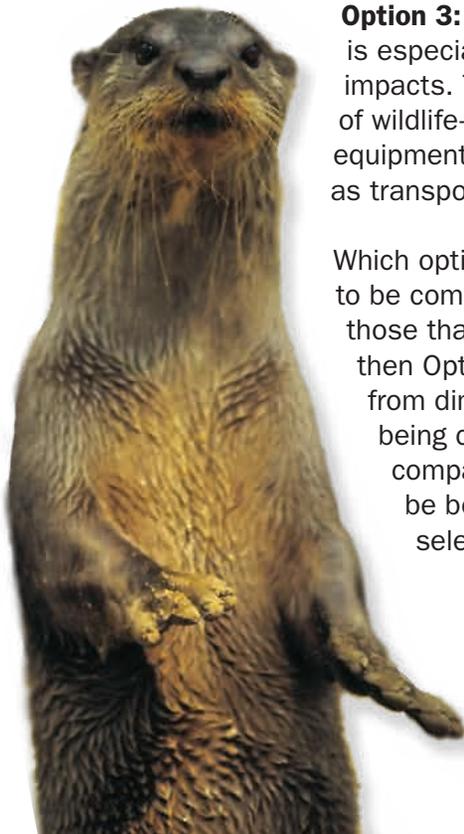
Retail sales, and economic impacts overall, can be reported in several forms. None is superior to the others; the choice of method used depends on the situation at hand. The three forms reported in this text are:

Option 1: Overall expenditures – this option provides the total retail sales as reported by the U.S. Fish and Wildlife Service’s (FWS) 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation (FWS Survey). Included are travel and equipment expenses, including big-ticket items such as vehicles and real estate. This number should be considered the upper-end estimate of the actual expenditures made in-state for wildlife viewing.

Option 2: Overall expenditures minus some equipment items – the FWS Survey reports expenditures reported by participants made primarily for the purpose of wildlife viewing. However, even if the item’s primary purpose was for wildlife viewing, it may be safe to say some of these items are used partly or mostly for non-wildlife viewing purposes. Examples include a camper which may also be used for general vacations in addition to wildlife viewing activities, or binoculars which may be used for sporting events in addition to bird watching. Including the full cost of these items may overestimate the true impact of wildlife viewing. Therefore, adjustments are made to discount these items. This estimate may be considered the lower range of the actual expenditures made in-state for wildlife viewing. This option excludes expenditures for binoculars, cameras, other miscellaneous special equipment, tents and tarps, vehicles, camping equipment and one-half of backpacks, daypacks and clothing - all items that may be used for other activities besides wildlife viewing.

Option 3: Often travel expenses are the major item of interest. This is especially true when considering tourism and local economic impacts. This option is offered to help explain the economic impacts of wildlife-related travel and tourism. This option excludes all equipment expenditures. Only travel related items are included such as transportation costs, food and beverages, lodging, etc.

Which option to use depends on the situation. If wildlife viewing is to be compared to other recreation-based industries, especially those that report the full range of related consumer purchases, then Option #1 is correct. If the ramifications to the state economy from diminished wildlife resources or their related recreation are being considered, then Option #2 may be the best option. When comparing the tourism contributions of wildlife, Option #3 may be best. Users are advised to carefully examine all issues when selecting the best data option to apply.



northern river otter
Lontra canadensis

Retail sales

The expenditure figures (Table 6) describe the total retail sales generated from 2006 wildlife viewing by specific categories of goods and services. Adjustments for Options #2 and #3 are first made in Table 7. Regarding trip expenditures, residents spent the largest amount on food, drink and refreshments (almost \$90.3 million), followed by lodging (\$63 million). Nonresidents, on the other hand, spent the most on lodging (\$236.3 million), followed by food, drink and refreshments (\$175.6 million). The largest equipment expenditures by Florida residents were for pickups, campers and motor homes (\$517.6 million), followed by land purchases (\$364.4 million) and boats (\$302.1 million). Note that equipment expenditures are comprised of expenditures that may have been made for residential and/or non-residential activities.

Before any adjustments are made for Options #2 and #3, total resident expenditures for wildlife viewing were \$2.43 billion. Nonresident expenditures were \$653.3 million and represent new dollars brought into the state economy by out-of-state visitors.

Table 7 shows figures for the average amount spent per day by recreators for residential activities and non-residential activities, as well as the average spent annually. Adjustments are made in Table 7 to present Options #2 and #3 as described in the beginning of this section.

Since the Survey does not collect total days of residential participation, the residential per day figures in Table 7 are estimated based on the number of days spent observing wildlife. The non-residential per day figures are estimated by totaling the travel expenses plus several equipment items that would be used away from home: binoculars, clothing, camping gear, backpacks and daypacks, vehicles and one-half of cameras, film and developing (unless a specific item is deleted for a specific option). The residential per day figure is estimated by totaling the remaining equipment items. Also, since purchased land may be used for recreation or to build a home, 50 percent of its value was assigned to both the residential and non-residential estimates.



great blue heron
Ardea herodias

Wildlife viewing-related expenditures (equipment, travel, wildlife feed, etc.) in Florida are comparable to sales of golf equipment nationally.

(National Sporting Goods Association and the U.S. Fish and Wildlife Service: \$3.4 billion for golf equipment in 2006 and \$3.1 billion for wildlife viewing in Florida)



Table 6. Expenditures made by residents and non-residents participating in wildlife viewing in Florida in 2006

(Participants 16 years old and older)

	Residents	Nonresidents	Total
Trip Expenditures			
Food	\$90,279,272	\$175,641,624	\$265,920,896
Lodging	\$62,955,541	\$236,300,069	\$ 299,255,610
Airfare	\$21,901,712	\$54,911,245	\$76,812,957
Public transportation	\$7,116,584	\$56,906,695	\$64,023,279
Private transportation	\$49,768,204	\$73,447,849	\$123,216,052
Guide fees	\$7,469,937	\$18,545,772	\$26,015,709
Public land access fees	\$4,746,921	\$2,260,215	\$7,007,136
Private land access fees	\$77,599	\$7,164,204	\$7,241,803
Equipment rental	\$7,212,661	\$6,740,189	\$13,952,851
Boat fuel	\$686,210	\$486,717	\$1,172,927
Other boat costs	\$1,545,816	\$128,273	\$1,674,089
Heating and cooking fuel	\$1,228,372	\$420,563	\$1,648,934
Equipment Expenditures			
Binoculars, scopes	\$27,396,727	\$2,094,747	\$29,491,474
Cameras	\$126,204,502	\$3,701,686	\$129,906,188
Film and developing	\$38,240,834	\$5,749,188	\$43,990,021
Commercially prepared bird food	\$69,499,033		\$69,499,033
Other bird food	\$13,177,909	\$6,986	\$13,184,894
Food for other wildlife	\$30,836,606	\$441,892	\$31,278,498
Nest boxes, feeders	\$24,549,534	\$1,906,091	\$26,455,625
Other special equipment	\$1,076,359	\$72,339	\$1,148,697
Tents, tarps	\$12,277,912	\$519,809	\$12,797,721
Backpacking equipment	\$235,308		\$235,308
Other camping equipment	\$9,428,780		\$9,428,780
Day packs, special clothing	\$7,479,961	\$611,747	\$8,091,708
Magazines and books	\$19,122,187	\$4,856,946	\$23,979,133
Membership dues, contributions	\$31,941,477	\$363,232	\$32,304,709

Other equipment	\$1,696,966		\$1,696,966
Off-road and 4WD vehicles,	\$284,590,750		\$284,590,750
Pickups, campers, motor homes	\$517,614,174		\$517,614,174
Boats	\$302,130,123		\$302,130,123
Trailer, boat accessories	\$8,980,326		\$8,980,326
Cabin			
Other equipment	\$239,631,362		\$239,631,362
Land purchases	\$364,426,890		\$364,426,890
Land leases			
Plantings	\$42,691,136		\$42,691,136
Total trip and equipment expenditures	\$2,428,217,684	\$653,278,076	\$3,081,495,760

In 2006, all state residents who participated in wildlife viewing activities in Florida could fill

- **FSU’s Doak Campbell Stadium nearly 39 times,**
- **UF’s Ben Hill Griffin Stadium at Florida Field nearly 37 times,**
- **Tampa’s Raymond James Stadium nearly 50 times,**
- **Miami Dolphins’ Stadium over 43 times, and**
- **Jacksonville Municipal Stadium over 43 times.**

(Florida State University, the University of Florida and ballparks.com)



crested caracara
Caracara cheriway

Photo by Meaghan Manning

Table 7. Average expenditures for wildlife viewers in Florida in 2006 (participants 16 years old and older)

	Residents	Nonresidents	Average
Avg. per participant, annually			
Option 1:			
Residential activities	\$256		
Non-residential activities	\$1,954	\$865	\$1,433
Option 2:			
Non-residential activities, minus equipment used possibly for nonrecreational activities ¹	\$748	\$856	\$800
Option 3:			
Non-residential activities, travel expenses only ²	\$313	\$848	\$569
Avg. per day, per participant			
Option 1:			
Non-residential activities	\$152	\$106	\$135
Option 2:			
Non-residential activities, minus equipment used possibly for non-recreational activities ¹	\$58	\$105	\$75
Option 3:			
Non-residential activities, travel expenses only ²	\$24	\$104	\$54
Total spent by recreators			Total
Option 1:			
Residential activities	\$838,649,459	\$7,647,486	\$846,296,944
Non-residential activities (includes ALL equipment)	\$1,589,568,225	\$645,630,590	\$2,235,198,816
Total:	\$2,428,217,684	\$653,278,076	\$3,081,495,760
Option 2:			
Residential activities	\$597,941,738	\$7,575,147	\$605,516,885
Non-residential activities, minus equipment used possibly for nonrecreational activities ¹	\$608,197,746	\$639,008,475	\$1,247,206,221
Total:	\$1,206,139,484	\$646,583,622	\$1,852,723,106
Option 3:			
Residential activities	n/a	n/a	
Non-residential activities, travel expenses only ²	\$254,988,829	\$632,953,414	\$887,942,242
Total:	\$254,988,829	\$632,953,414	\$887,942,242

¹ = This figure excludes expenditures for binoculars, cameras, other miscellaneous special equipment, tents and tarps, vehicles, camping equipment and 1/2 of backpacks, daypacks and clothing - all items that may be used for other activities besides wildlife viewing.

² = Travel expenses include fuel, transportation, food, beverages, restaurants, lodging and related expenses.

Once boats and vehicles are removed from the equation, residents on average spend about one-half the amount per day of activity than nonresidents when they travel away from home to view, feed or photograph wildlife. Residents spend more annually, but that most likely reflects a higher proportion of their overall annual activities occurring in Florida compared to nonresidents.

Total economic effect (output)

Expenditures made by wildlife viewers generate rounds of additional spending through the economy. For example, once a sale is made, the retailer buys additional inventory from the wholesaler, who in turn buys more from a manufacturer. These are indirect impacts. Each of these businesses also pays their employees (known as “induced” impacts). The sum of these multiple rounds of spending is the total economic effect resulting from the original retail sale. Additional descriptions of direct, indirect and induced impacts are provided in Appendix A. The economic figures in Table 8 show the total economic effect from 2006 wildlife viewing activities in Florida ranges from \$3.2 billion upwards to \$5.2 billion (\$4.1 billion by residents and nearly \$1.2 billion by nonresidents). Travel expenses alone generate \$1.6 billion in total economic effects. Tables detailing the economic impacts of wildlife viewing for each specific category of goods and services are provided in Appendix C.

Earnings

Total household income (salaries and wages) generated during 2006 from wildlife-viewing recreation in Florida was estimated upwards of \$1.6 billion (\$1.2 billion by residents and \$391.8 million by nonresidents).

Employment

During 2006, wildlife viewing supported a minimum of 34,523 full and part-time jobs and a maximum of 51,367 full and part-time jobs in Florida (38,069 generated by resident spending and 13,298 generated by nonresident spending) in 2006. These are jobs that are directly associated with wildlife viewing use, in addition to jobs in industries that indirectly support these activities. Travel-related expenses alone supported 17,883 jobs.

Tax revenues

Expenditures by residents and nonresidents generate sales tax revenues for the state. Likewise, the jobs generated by wildlife-viewing activities create additional federal income tax revenues. Total state tax revenues generated by wildlife viewing are estimated at a minimum of \$205.6 million up to \$312.8 million. Total federal income tax revenues generated by wildlife viewing ranges up to \$385.3 million.



white-tailed deer
Odocoileus virginianus

Table 8. Economic impacts of wildlife viewing in Florida in 2006 (population 16 years old and older)

Option 1 - Impacts generated from ALL travel and equipment expenditures			
	Resident	Nonresident	All participants
Retail sales	\$2,428,217,684	\$653,278,076	\$3,081,495,760
Total economic effect ¹	\$4,078,379,997	\$1,169,686,254	\$5,248,066,251
Salaries and wages	\$1,203,704,652	\$391,836,701	\$1,595,541,353
Full and part-time jobs	38,069	13,298	51,367
Tax revenues:			
State and local revenue	\$243,091,642	\$69,722,853	\$312,814,495
Federal revenue	\$292,512,306	\$92,798,273	\$385,310,579
Option 2 - impacts generated from all expenditures EXCLUDING equipment, possibly used part of the year for non-wildlife viewing activities			
	Resident	Nonresident	All participants
Retail sales	\$1,206,139,484	\$646,583,622	\$1,852,723,106
Total economic effect ¹	\$1,995,227,703	\$1,157,436,909	\$3,152,664,612
Salaries and wages	\$592,004,011	\$387,662,433	\$979,666,444
Full and part-time jobs	21,322	13,201	34,523
Tax revenues:			
State and local revenue	\$136,393,950	\$69,170,810	\$205,564,760
Federal revenue	\$150,073,564	\$91,843,194	\$241,916,758
Option 3 - Impacts generated from travel-related expenditures only			
	Resident	Nonresident	All participants
Retail sales	\$254,988,829	\$632,953,414	\$887,942,242
Total economic effect ¹	\$453,201,982	\$1,133,123,579	\$1,586,325,561
Salaries and wages	\$146,752,482	\$379,697,237	\$526,449,719
Full and part-time jobs	4,899	12,984	17,883
Tax revenues:			
State and local revenue	\$27,124,677	\$67,857,579	\$94,982,256
Federal revenue	\$34,909,161	\$90,003,733	\$124,912,894

¹ Total economic effect = The rounds of additional spending throughout the state economy stimulated by the original retail sale. For example, once a sale is made, the retailer buys additional inventory from the wholesaler, who in turn buys more from a manufacturer. These are indirect impacts. Each of these businesses also pays employees (known as "induced" impacts), and pays other bills. The sum of these transactions is the total economic effect, also known as the output or multiplier effect.

Trends since 1991

Over the past ten years, there has been some fluctuation in the retail sales and impacts attributable to wildlife viewing. Some of the fluctuation can be attributed to ever-shifting number of participants and expenditures per outing, and some of the trend can be attributed to natural error in the survey data sources. The degree that each source contributes to change is unknown. Please note that trends are best measured based on retail sales. A change in the economic models from the 2001 report to the 2006 report do not permit an accurate trend comparison for the total multiplier effects of jobs, income and tax revenues. However, retail sales estimates were unaffected. It is valid and safe to compare 2006 retail sales data from this report to previous retail sales estimates from previous reports. Table 9 presents the ten-year trends.

Table 9. Retail sales from wildlife viewing in Florida in 2006

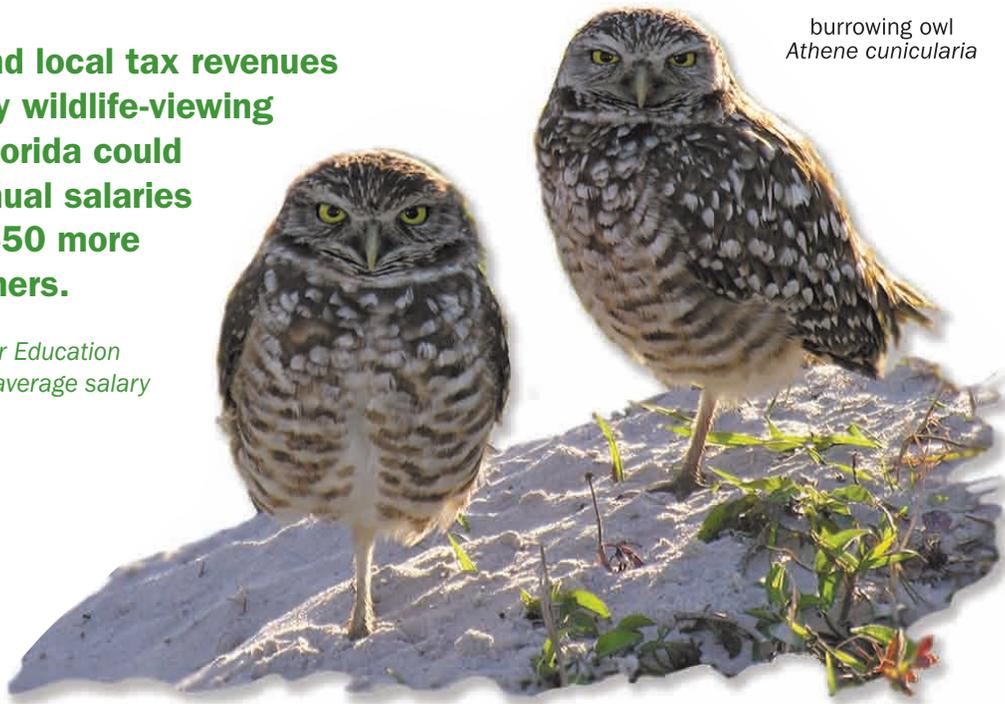
(Population 16 years old and older)

Year	Retail sales	Percent change since 1991
1991	\$1.212 billion	
1996	\$1.677 billion	38%
2001	\$1.575 billion	30%
2006	\$3.081 billion	154%

The state and local tax revenues generated by wildlife-viewing activity in Florida could fund the annual salaries for up to 6,550 more school teachers.

*(National Center for Education
Statistic, \$47,750 average salary
per teacher)*

burrowing owl
Athene cunicularia





Appendix A

Definitions

Economic benefits can be estimated by two types of economic measures: economic impacts and economic values. An economic impact addresses the business and financial activity resulting from the use of a resource. Economic value, on the other hand, is a non-business measure that estimates the value people receive from an activity after subtracting for their costs and expenditures. This concept is also known as consumer surplus.

There are three types of economic impact: direct, indirect and induced. A direct impact is defined as the economic impact of the initial purchase made by the consumer (the original retail sale). Indirect impacts are the secondary effects generated from a direct impact, such as the retailer buying additional inventory, and the wholesaler and manufacturers buying additional materials. Indirect impacts affect not only the industry being studied, but also the industries that supply the first industry. An induced impact results from the salaries and wages paid by the directly and indirectly impacted industries. The employees of these industries spend their income on various goods and services. These expenditures are induced impacts, which, in turn, create a continual cycle of indirect and induced effects.

The direct, indirect and induced impact effects add together to provide the overall economic impact of the activity under study. As the original retail purchase (direct impact) goes 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 examination ends.

This study presents several important measures:

Retail sales – These include the expenditures made by wildlife viewers for equipment, travel expenses and services related to their wildlife viewing activities over the course of the year. The initial retail sale is the direct impact.

Total economic effect – Also known as the “total multiplier effect” or “output,” this measure reports the sum of the direct, indirect and induced impacts resulting from the original retail sale. This figure explains the total activity in the economy generated by a retail sale.



gray fox
Urocyon cinereoargenteus

Another way to look at this figure is, if the activity in question were to disappear and participants did not spend their money elsewhere, the economy would contract by this amount.

Salaries and wages – This figure reports the total salaries and wages paid in all sectors of the economy as a result of the activity under study. These are not just the paychecks of those employees directly serving recreators or manufacturing their goods, it also includes portions of the paychecks of, for example, the truck driver who delivers food to the restaurants serving recreators and the accountants who manage the books for companies down the supply chain, etc. This figure is based on the direct, indirect and induced effects, and is essentially a portion of the total economic effect figure reported in this study.

Jobs – Much like salaries and wages, this figure reports the total jobs in all sectors of the economy as a result of the activity under study. These are not just the employees directly serving recreators or manufacturing their goods, they also include, for example, the truck driver who delivers food to the restaurants serving recreators and the accountants who manage the books for companies down the supply chain, etc. This figure is based on direct, indirect and induced effects.

Wildlife viewing is defined here as the primary purpose of observing, photographing or feeding of fish or other wildlife. Wildlife is defined as animals that are living in natural or wild environments. Animals in museums, zoos and aquariums are not included. Domestic and farm animals also are not included as wildlife. Wildlife viewing is divided into two types of activity: residential and nonresidential. According to the 2006 USFWS Survey, residential activities are those activities that occur within one mile of one's home for the primary purpose of observing, photographing or feeding wildlife. In contrast, according to the Survey, nonresidential activities are trips or outings that occur at least one mile from home for the primary purpose of observing, photographing or feeding wildlife. Given the definitions, residential activities are made by Florida residents, whereas non-residential activities are made by both Florida residents and nonresidents.

Wildlife viewing, photography and feeding is enjoyed by 3.274 million Florida residents – 21 percent more than the population of the Tampa/St. Petersburg/Clearwater metropolitan area.

(U.S. Census Bureau)



American alligator
Alligator mississippiensis

Appendix B

Methods

The methods used to generate the economic impact estimates are separated into three stages:

1. Tabulate the expenditures made by recreators (16 years old and older) from the 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (Survey);
2. Estimate the indirect and induced effects of the consumer spending through the use of an input-output model of the state economy and the IMPLAN economic modeling software; and
3. Estimate federal and state/local tax revenues with the IMPLAN economic modeling software.

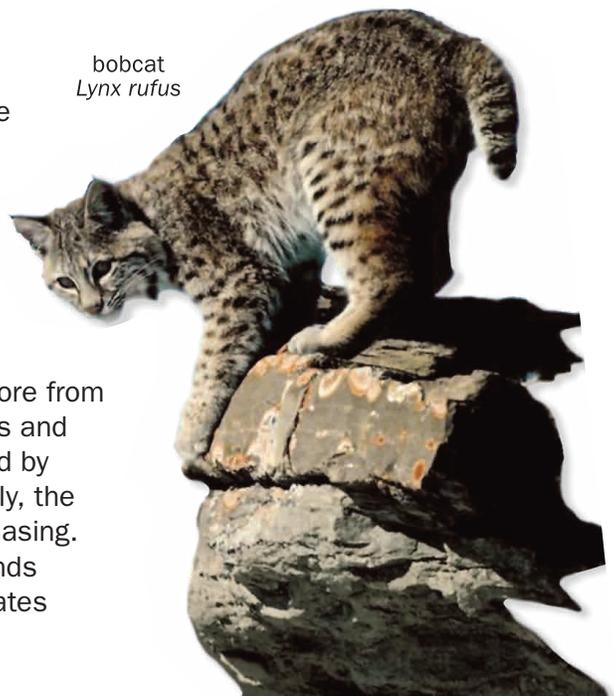
1. Tabulating expenditures

Wildlife viewing expenditures were obtained from the survey. This Survey is conducted approximately every five years by the FWS and U.S. Bureau of the Census. The Survey provides data required by natural resource management agencies, industry and private organizations at the local, state and national levels to assist in optimally managing natural resources. The Survey is funded through excise taxes on hunting and fishing equipment through the Federal Aid in Sport Fish and Wildlife Restoration Acts.

Expenditures by wildlife viewers were categorized into resident and nonresident files. Both included information on travel-related categories such as food and lodging and equipment expenditures such as guidebooks and binoculars. Together, the resident and nonresident files represent all expenditures made in state in 2006.

2. Applying the economic model

To estimate the economic impacts, the data were analyzed with the IMPLAN input-output model. The IMPLAN model was developed by MIG, Inc. of Stillwater, Minn. originally for use by the U.S. Forest Service. Input-output models describe how sales in one industry impact other industries. For example, once a consumer 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 salaries and wages paid by these businesses stimulate more benefits. Simply, the first purchase creates numerous rounds of purchasing. Input-output analysis tracks how the various rounds of purchasing benefit other industries and generates economic benefits.



bobcat
Lynx rufus

The relationships between industries are explained through multipliers. For example, an income 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 of Industry X for its products or services. The IMPLAN model provides multipliers for all major industries in the United States and for each state. The IMPLAN model includes output, earnings and employment multipliers. The output multiplier measures the total economic effect 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. IMPLAN also estimates federal, state and local tax revenues.

To apply the IMPLAN model, wildlife viewing expenditures are matched to the appropriate industry sector. The resulting estimates describe the salaries and wages, total economic effects and jobs supported by the purchases made by wildlife viewers. This same process is repeated for all reported expenditures.

3. Estimating Tax Revenues

The IMPLAN model estimates detailed tax revenues at the local, state and federal levels. The summary estimates provided in this report represent the total taxes estimated by the IMPLAN model including all income, sales, property and other taxes and fees that accrue to the various local, state and federal taxing authorities.

The total spent annually in Florida for wildlife viewing is two and a half times greater than the value of the state's annual orange crop harvest.

(\$1.23 billion in 2006, per the USDA as reported by the Lakeland Ledger)



gopher tortoise
Gopherus polyphemus

Appendix C

Economic impact tables for wildlife viewing

Economic sectors stimulated by nonresident Wildlife viewing spending*

	Total output (sales)	Employment	Income
Agriculture, forestry, fish and hunting	\$7,886,975	126	\$1,660,581
Mining	\$17,569,198	64	\$1,109,874
Utilities	\$17,974,850	33	\$3,773,144
Construction	\$6,413,693	71	\$2,790,390
Manufacturing	\$96,645,864	289	\$13,613,712
Wholesale trade	\$38,092,292	288	\$16,238,840
Transportation and warehousing	\$172,607,136	1,095	\$51,284,684
Retail trade	\$94,488,824	1,813	\$43,774,668
Information	\$28,566,684	129	\$7,549,087
Finance and insurance	\$41,523,176	269	\$14,204,411
Real estate and rental	\$55,969,212	393	\$10,857,670
Professional scientific and technical services	\$48,686,584	463	\$22,986,248
Management of companies	\$13,843,073	86	\$6,352,276
Administrative and waste services	\$30,507,298	499	\$13,759,839
Educational services	\$3,539,516	73	\$1,994,861
Health and social services	\$40,326,060	535	\$21,889,040
Arts-entertainment and recreation	\$24,454,862	333	\$9,358,849
Accommodation and food services	\$347,832,128	5,366	\$117,583,840
Other services	\$30,704,092	1,122	\$16,820,466
Government and non NAICs	\$51,629,604	251	\$14,234,223
Total	\$1,169,261,121	13,297	\$391,836,703

* Wildlife viewing expenditures benefit nearly all sectors of Florida's economy. For example, purchases of bird seed and the planting of wildlife food plots and backyard wildlife habitats stimulate the sale of seed and native plants through local stores and nurseries.

Economic sectors stimulated by resident Wildlife viewing spending*

	Total output (sales)	Employment	Income
Agriculture, forestry, fish and hunting	\$106,166,352	2,727	\$18,849,766
Mining	\$19,778,784	73	\$1,469,441
Utilities	\$44,566,560	80	\$9,317,842
Construction	\$16,659,305	182	\$7,181,852
Manufacturing	\$1,299,312,384	4,093	\$233,364,432
Wholesale trade	\$132,286,160	1,001	\$56,393,924
Transportation and warehousing	\$251,205,088	1,283	\$66,090,688
Retail trade	\$612,757,440	13,039	\$317,525,184
Information	\$84,771,616	382	\$22,440,736
Finance and insurance	\$129,257,720	840	\$44,296,992
Real estate and rental	\$496,669,856	3,425	\$80,890,856
Professional scientific and technical services	\$162,094,752	1,499	\$74,642,792
Management of companies	\$47,474,964	296	\$21,785,198
Administrative and waste services	\$81,306,096	1,505	\$39,948,440
Educational services	\$11,176,728	230	\$6,287,064
Health and social services	\$124,163,784	1,647	\$67,391,976
Arts-entertainment and recreation	\$26,108,706	410	\$10,958,147
Accommodation and food services	\$175,529,056	3,084	\$60,660,084
Other services	\$116,552,056	1,982	\$48,180,032
Government and non NAICs	\$135,725,616	291	\$16,029,191
Total	\$4,073,563,023	38,069	\$1,203,704,637

* Wildlife viewing expenditures benefit nearly all sectors of Florida's economy. For example, purchases of bird seed and the planting of wildlife food plots and backyard wildlife habitats stimulate the sale of seed and native plants through local stores and nurseries.

Economic sectors stimulated by resident and Nonresident wildlife viewing spending*

	Total output (sales)	Employment	Income
Agriculture, forestry, fish and hunting	\$114,053,327	2,853	\$20,510,347
Mining	\$37,347,982	137	\$2,579,315
Utilities	\$62,541,410	113	\$13,090,986
Construction	\$23,072,998	253	\$9,972,242
Manufacturing	\$1,395,958,248	4,382	\$246,978,144
Wholesale trade	\$170,378,452	1,289	\$72,632,764
Transportation and warehousing	\$423,812,224	2,378	\$117,375,372
Retail trade	\$707,246,264	14,851	\$361,299,852
Information	\$113,338,300	511	\$29,989,823
Finance and insurance	\$170,780,896	1,109	\$58,501,403
Real estate and rental	\$552,639,068	3,818	\$91,748,526
Professional scientific and technical services	\$210,781,336	1,961	\$97,629,040
Management of companies	\$61,318,037	383	\$28,137,474
Administrative and waste services	\$111,813,394	2,004	\$53,708,279
Educational services	\$14,716,244	303	\$8,281,925
Health and social services	\$164,489,844	2,181	\$89,281,016
Arts-entertainment and recreation	\$50,563,568	743	\$20,316,996
Accommodation and food services	\$523,361,184	8,450	\$178,243,924
Other services	\$147,256,148	3,104	\$65,000,498
Government and non NAICs	\$187,355,220	542	\$30,263,414
Total	\$5,242,824,144	51,366	\$1,595,541,340

* Wildlife viewing expenditures benefit nearly all sectors of Florida's economy. For example, purchases of bird seed and the planting of wildlife food plots and backyard wildlife habitats stimulate the sale of seed and native plants through local stores and nurseries.

Appendix D

More fun facts

1. Wildlife viewing supports nearly four times more jobs in-state than employed by FPL Group, the parent of Florida Power and Light. (2006 *Fortune 500*)
2. Wildlife viewing, photography and feeding is enjoyed by 3.274 million Florida residents – nearly 10 times more than the population of the Tallahassee metropolitan area. (U.S. Census Bureau)
3. Since 2001, the number of people who visited Florida to view wildlife increased 50 percent. (U.S. Fish and Wildlife Service's 2001 and 2006 *National Surveys of Fishing, Hunting and Wildlife-Associated Recreation*)
4. In 2006, the nonresident wildlife viewers in Florida (746,000) equaled the population of South Dakota and brought \$653 million into the state economy. (U.S. Fish and Wildlife Service's 2006 *National Survey of Fishing, Hunting and Wildlife-Associated Recreation*; U.S. Census Bureau)
5. Approximately the same number of people participated in wildlife viewing in Florida than voted for either candidate in the 2004 presidential election. (3.274 million residents participated in wildlife viewing, 3.965 million people voted for Bush and 3.583 million voted for Kerry; U.S. Federal Elections Commission)
6. The state tax revenues from viewing wildlife in Florida in 2006 equaled half the annual toll collections on the Florida Turnpike. (Florida Department of Transportation)
7. In 2006, if the jobs supported by wildlife viewing expenditures had disappeared, the state unemployment rate would have jumped from 3.3 percent to 3.9 percent. (as of November, 2006; data source: U.S. Bureau of Labor Statistics)
8. Jobs supported by wildlife viewing in Florida are approximately the same size as the work force in the Sebastian/Vero Beach area. (U.S. Bureau of Labor Statistics)
9. In 2006, seven times more was spent just in Florida for wildlife viewing than earned nationally by "Pirates of the Caribbean: Dead Man's Chest" – the top grossing movie of 2006. (BoxOfficeMojo.com)



laughing gull
Larus atricilla

Prepared by: Southwick Associates, Inc.
P. O. Box 6435
Fernandina Beach, FL 32035
(904) 277-9765
Email: Rob@southwickassociates.com

For the



**Florida Fish and Wildlife
Conservation Commission**

MyFWC.com

February 27, 2008