

### 3.5 BENEFITS OF PATHWAY



*“Walk and be happy, walk and be healthy. The best way to lengthen out our days is to walk steadily and with a purpose.”*

*– Charles Dickens, British novelist, 1812–70*

#### Introduction

Development of the ROGG, along with implementation of the alternative transportation strategies, constitutes additional up-front costs in infrastructure and capital facilities and ongoing of service delivery, maintenance and promotion. The benefits that come from a managed approach, however, also extend those that the path would provide on its own, and strengthen the case for the ROGG as a key component of an integrated visitor experience to the Everglades area. These benefits underscore the ROGG’s potential to be a regional amenity that promotes environmental health and increases the accessibility and quality of amenities in the Everglades. Besides bringing Miami-Dade and Naples communities closer to one of the nation’s greatest natural resources, the benefits that south Florida may experience from the development of the ROGG and corresponding alternative transportation strategies can be quantified in order to assess the value the path may have compared to costs.

For the purpose of this benefits analysis, maximum thresholds can be achieved through adoption of alternative transportation program outlined in Scenario 3. Benefits resulting from the development of the ROGG fall into three categories:

- Social Benefits
- Environmental Benefits
- Economic Benefits

These three categories form the three pillars of sustainable development as defined in the Johannesburg Declaration by the United Nations, 2005. This declaration created “a collective responsibility to advance and strengthen the interdependent and mutually reinforcing pillars of sustainable development; economic development, social development and environment protection at local, national, regional and global levels.”

It is these three pillars of sustainable development that will be quantified in this section. The following is a summary of pathway benefits documented:

- **Social Benefits** – This section quantifies a series of social benefits linked to the development of the ROGG and corresponding alternative transportation strategies that impact the daily quality of life for citizens and users. Two social benefits with extensive research include accessibility and healthy lifestyles.

- **Environmental Benefits** – This section examines environmental benefits linked to development of the ROGG and alternative transportation strategies such as vehicle trip reduction, vehicle miles traveled reduction and emission reduction.
- **Economic Benefits** – This section estimates a series of economic benefits associated with the development of the ROGG and alternative transportation strategies and includes, potential tourism expenditures, and sales tax revenues supported by pathway user spending.

The NPS released the 2013 National Park Visitor Spending Effect report and research showed that ENP had 1,047,116 total visitors in 2013 with total visitor spending of \$96.6 million. The visitor spending at ENP helped support 1,302 jobs and over \$138.3 million in contributions to the local south Florida economy. BICY experienced similar results with 1,007,789 visitors in 2013, spending approximately \$75.9 million. BICY visitor spending supported 997 jobs and over \$104.5 million in contributions to the local south Florida economy. When combined these two NPS land units had over two million visitors that spent \$172.5 million in 2013 which supported 2,299 jobs. Impact from these two NPS land units totaled \$242.8 million in contributions in 2013 to the local south Florida economy.

Calculating benefits, like calculating future path users, traffic, and costs, is based on previous research and assumptions made based on best available data. Results are estimates of benefits that could arise if all Scenario 2 and 3 alternative transportation strategies are implemented along with the development of the ROGG.

### 3.5.1 Social Benefits

Social benefits are those which improve the daily quality of life for citizens and users. The development of ROGG and accompanying alternative transportation strategies has the potential to provide many social benefits for the south Florida region, however, not all are quantifiable by calculations. Two benefits which are quantifiable based on readily available data include the following:

- Accessibility
- Health and Wellness

Each of the above benefits will be estimated for the ROGG and will show the direct benefits to south Florida based on the development of the path and alternative transportation strategies.

#### Accessibility

As established in Section 3.4 - Alternative Transportation Analysis, between 337,000 and 668,000 visitors may use the ROGG to experience the Everglades or to simply recreate. With a mean of over 500,000 visitors, the ROGG may be the most visited public facility along U.S. 41 for observing and experiencing the Everglades and Big Cypress Swamp.

#### Annual Visitation Estimates by Destination

Public Facility or Park	Number of Visitors
<b>River of Grass Greenway</b>	<b>503,250</b>
Big Cypress National Preserve Oasis Visitor Center*	445,500
Shark Valley Entrance at Everglades National Park**	160,000
Fakahatchee Strand Preserve State Park	121,139
Collier-Seminole State Park	57,939
Ten Thousand Islands National Wildlife Refuge	29,333

**Data Source:** National Park Service, Big Cypress National Preserve Business Plan, Fakahatchee Strand Visitation Reports, Collier-Seminole Visitation Reports, Ten Thousand Island NWR (2012) Visitations.  
**Assumptions/ Notes:** \* Based on BICY total visitation of 810,000 with Oasis Visitor Center estimated to receive 55% of visitors per BICY Business Plan;  
 \*\*Shark Valley Entrance figure based on total ENP visitation records for 2011; General Management Plan, pg. 264

#### Health and Wellness

Public agencies are increasingly striving to make citizens more aware of the health benefits of regular exercise, especially as healthcare costs continue to increase faster than nearly all other categories of household spending. As with environmental benefits, health benefits are more difficult to quantify and link directly with the path.

Using the estimates for total number of visitors and the mode shares resulting from each scenario, as well as average trip length and travel time for pedestrians and cyclists, calories burned and pounds lost were estimated for each scenario. Scenario 3 predicts more walking and cycling than the other scenarios, with an estimated total pounds lost of 8,581 annually or 214,525 pounds over the next 25-years.

#### Estimated Calories Burned and Pounds Lost Annually

Scenario	Total Calories Burned Annually	Pounds Lost Annually <sup>^</sup>
Pathway Only	6,751,080	<b>1,928</b>
Basic Initiatives	17,232,961	<b>4,923</b>
Progressive Demand Management	30,035,707	<b>8,581</b>

**Assumptions/ Notes:** <sup>^</sup> Approximately 3,500 calories per pound lost.  
 Scenario 1 modes: 0.9% Bike, 3.4% Pedestrian  
 Scenario 2 modes: 5.1% Bike, 4.2% Pedestrian  
 Scenario 3 modes: 6.9% Bike, 10.5% Pedestrian

### 3.5.2 Environmental Benefits

Environmental benefits are those which reduce human impacts upon the natural world while improving the daily quality of life for path users and citizens. The development of ROGG and the accompany alternative transportation strategies has the potential to provide many environmental benefits for the community that advance both Miami-Dade County and Collier County’s environmental goals. Four benefits are quantifiable based on readily available data and include:

- Reduced Annual Average Daily Vehicle Trips (AADTs)
- Reduced Vehicle Miles Traveled (VMTs)
- Emissions Reduction
- Reduced Fossil Fuel Use

Each of the above benefits will be estimated for the ROGG and will show the direct benefits to south Florida based on the development of the path and full alternative transportation strategies.

#### Annual Average Daily Vehicle Trips (AADTs)

When combined with the implementation of alternative transportation strategies outlined in Scenarios 2 and 3 with the development of the ROGG, maximum reduction in Annual Average Daily Vehicle Trips (AADTs) may be realized. AADTs are the total volume of traffic on a given roadway, in this case U.S. 41, over one year divided by 365. With full implementation through Scenario 3, AADTs may be reduced by 332,074 for a net reduction of all traffic on U.S. 41 by 114,913 vehicle trips.

#### Estimated Annual Average Daily Vehicle Trips (AADTs) Reduction

Scenario	Net AADTs Reduction	Alternative Transportation Strategies AADTs Reduction
Pathway Only	+202,770	<b>-8,648</b>
Basic Initiatives	+115,446	<b>-85,613</b>
Progressive Demand Management	-114,913	<b>-332,074</b>

**Assumptions/ Notes:** Net AADTs represent total vehicle AADTs upon full implementation of ROGG and Scenario 3 Alternative Transportation Strategies.

#### Vehicle Miles Traveled (VMTs)

With a reduction in AADTs, a corresponding effect is a reduction in Vehicle Miles Traveled (VMTs) which represent all miles traveled on a given roadway, U.S. 41. With full implementation of ROGG and Scenario 3, VMTs may be reduced by a net 24.9 million miles annually for a total reduction of 8.6 million miles annually when increased traffic due to the potential impact of ROGG is factored.

#### Estimated Annual Vehicle Trip Miles (VTMs) Reduction

Scenario	Net VMTs Reduction	Alternative Transportation Strategies VMTs Reduction
Pathway Only	+15,207,750	<b>-648,000</b>
Basic Initiatives	+8,658,450	<b>-6,420,975</b>
Progressive Demand Management	-8,618,475	<b>-24,905,550</b>

**Assumptions/ Notes:** Net VMTs represent total vehicle mileage upon full implementation of ROGG and Scenario 3 Alternative Transportation Strategies.

#### Emission Reduction

The total reduction of VMTs was used in calculating the emissions reduction expected from the development of ROGG and full implementation of Scenario 3. For the average passenger car this represents the reduction in emission pollutions for the following components:

- Hydrocarbons: ((2.8g/mi x 8,618,475 mi) / 454g) = **53,513 lb. of hydrocarbons reduced annually;**
- Carbon Monoxide: ((20.9g/mi x 8,618,475 mi.) / 454g) = **396,753 lb. of carbon monoxide reduced annually;**
- Oxides of Nitrogen: ((1.39g/mi x 8,618,475 mi.) / 454g) = **26,386 lb. of oxides of nitrogen reduced annually;**
- Carbon Dioxide: (0.916 lb./mi. x 8,618,475 mi) = **7,894,523 lb. of carbon dioxide or 3,947 tons reduced annually.**

All figures are based on averages only. Source: US Environmental Protection Agency, April, 2000; Emission Facts

### Reduced Fossil Fuel Use

Using the same total VMTs reduction figure, an estimated fuel savings can be calculated. Using US DOT National Highway Traffic Safety Administration (NHTSA) - Summary of Fuel Economy Performance report, the average vehicle (combination of car and pick-up) miles per gallon (MPG) was 34.1 for the month of June, 2014.

At this rate, the full implementation of ROGG and Scenario 3 Alternative Transportation strategies would reduce fossil fuel consumption by 252,741 gallons annually. This is equal to approximately 21.8 tanker trucks worth of gasoline with an annual savings of \$930,086.

**Note:** Average gas price of \$3.68 is for the month of June, 2014 as calculated by American Automobile Association (AAA).

#### Estimated Fossil Fuel Reduction

Time Period	Gallons of Gasoline Reduced	Gasoline Savings
Annually	252,741	<b>\$930,086</b>
Over 10 Years	2,527,410	<b>\$9,300,860</b>
Over 25 Years	6,318,525	<b>\$23,252,171</b>

**Assumptions/ Notes:** Total of 8,618,475 VMTs reduced annually with an average MPG of 34.1. AAA average gasoline price of \$3.68 as of June, 2014.

### 3.5.3 Economic Benefits

Economic sustainability can be measured in a number of ways, but generally is defined as the ability of an economy to maintain a healthy level of activity and development for many generations. Of the three types of benefits analyzed, economic benefits are perhaps the easiest to quantify. The following benefits were selected to be quantified through readily available data:

- Potential tourism expenditures
- Potential Florida State sales tax revenue
- Potential Miami-Dade County sales tax revenue
- Potential Collier County hotel tax revenue
- Potential Miami-Dade County hotel tax revenue

The methodology for determining each of these benefits, and their corresponding results are in the following sections.

#### Tourism Expenditures

Everglades National Park conducted a comprehensive visitor spending impact study in 2008 which was utilized in quantifying economic benefits associated with ROGG and full implementation of Scenario 3 Alternative Transportation strategies.

The Impacts of Visitor Spending on Local Economy - Everglades National Park 2008 study results are based on a systematic, random sample of 1,741 visitor groups during the peak winter and spring months. Survey results showed that the average visitor group consisted of 2.7 people per trip.

Forty-four percent of all visiting groups were day trips from within the State of Florida, 38% included a hotel or lodging stay and 5% consisted of camping. Many visitors to Everglades National Park had multiple reasons for visiting Florida or the south Florida region, however, 23% of day trips were for the sole purpose of visiting ENP, 34% of all camping trips were for solely visiting ENP, and 20% of all hotel/lodging stays were solely for the purpose of visiting ENP. The following table summarizes these figures when applied to potential mean visitor estimates for ROGG.

#### Estimated Annual ROGG Visitor Groups

Type of Visitor Group	Number of Visitor Groups	Number of Visits Solely for ROGG
Day/ Local Trips	82,010	<b>18,862</b>
Camping	9,319	<b>3,168</b>
Hotel/ Lodging Stay	70,827	<b>14,165</b>
<b>Total Visitor Groups:</b>	<b>186,388</b>	<b>36,195</b>

**Assumptions/ Notes:** Average visitor group is 2.7 persons.. Type of Visitors displayed do not equal Total Visitor Groups due to exclusion of OVN or Other Visitor Nights in which visitors did not provide spending details.

The Everglades National Park Impacts of Visitor Spending on Local Economy gathered information from survey respondents on spending habits in a number of categories such as hotel, restaurant, gas, souvenir and admission fees. For hotel/lodging stay visitor group, the average total trip expenditure was \$1,108.84 in 2008 dollars. Adjusted for inflation total trip expenditures would be \$1,196.55 in 2013 dollars. Visitor groups camping outside of ENP were the next highest spenders with \$654.10 in total trip expenditures in 2008, adjusted to \$705.84 in 2013 dollars. Campers staying within ENP spent a trip total of \$116.78 per visitor group, adjusted to \$126.02 in 2013 dollars. Day trippers spent an average of \$107.40 per visitor group in 2008, adjusted to \$115.89 in 2013 dollars. Local Trips visitor groups spent an average of \$83.58 per trip, adjusted to \$90.19 in 2013 dollars. The following table applies these spending habits to potential ROGG visitor groups.

#### Estimated Annual ROGG Visitor Groups Total Trip Expenditures

Type of Visitor Group	Number of Visitor Groups	Total Direct Expenditures
Day/ Local Trips	82,010	<b>\$8,402,405</b>
Camping	9,319	<b>\$3,270,812</b>
Hotel/ Lodging Stay	70,827	<b>\$84,748,046</b>
<b>Total Visitor Groups:</b>	<b>186,388</b>	<b>\$96,421,263</b>

**Assumptions/ Notes:** Average visitor group is 2.7 persons..All amounts have been adjusted for inflation. Camping is 40% in other facility and 60% in park facility. Excludes OVN trips from Visitor Groups.

The average overnight hotel/lodging stay for visitors to ENP was 3.5 nights with an average hotel/lodging per night expenditure of \$154.02 per visitor group per night in 2008 dollars, adjusted to \$166.20 in 2013 dollars.

#### Potential Florida State Sales Tax Revenue

The State of Florida collects a 6% sales tax on expenditures, excluding necessary groceries. When applied to potential visitor group expenditures for ROGG the State of Florida may collect \$5,435,583 annually, or approximately \$135.8 million in sales tax revenue over a 25-year period (not adjusted for inflation).

#### Estimated Annual State of Florida Sales Tax Revenue (Direct Expenditures)

Type of Visitor Group	Visitor Group Annual Taxable Direct Expenditures	Florida State Annual Sales Tax Revenue
Day/ Local Trips	\$7,343,189	<b>\$440,591</b>
Camping	\$2,740,822	<b>\$164,449</b>
Hotel/ Lodging Stay	\$80,509,050	<b>\$4,830,543</b>
<b>Annual Totals:</b>	<b>\$90,593,061</b>	<b>\$5,435,583</b>

**Assumptions/ Notes:** State of Florida collects a 6% sales tax as of 2014 on non-grocery expenses.

#### Potential Miami-Dade County Sales Tax Revenue

Directly related to the estimated sales tax collected by the State of Florida, Miami-Dade County has a 1% sales tax on all non-grocery related expenses. In order to capture the estimated amount of tourism expenditures within the Miami-Dade County portion of ROGG, south Florida tourism percentages are applied. Of the 15,473,000 (2011) visitors, 89.8% visited Miami-Dade County and 10.2% visited Collier County. These percentages are applied to county sales tax revenues.

Miami-Dade County may collect an estimated \$813,522 annually, or over \$20.3 million over a 25-year period, in sales tax from ROGG visitor group related travel expenditures.

**Potential Collier County Hotel Tax Revenue**

In addition to state and county sales tax revenue, Collier County collects a 4% hotel tax for over-night stays or short-term rentals. In order to capture the estimated amount of tourism expenditures within the Miami-Dade County portion of ROGG, south Florida tourism percentages are applied. Of the 15,473,000 (2011) visitors, 89.8% visited Miami-Dade County and 10.2% visited Collier County. These percentages are applied to county sales tax revenues.

Collier County may collect an estimated \$165,362 annually, or over \$4.1 million over a 25-year period, in hotel tax revenue from ROGG visitor group hotel expenditures and generate over 25,000 hotel night stays.

Note: A typical Hotel Trip Visitor Group stays for an average of 3.5 nights per trip. One hotel room is estimated for each visitor group of 2.7 persons per night.

**Potential Miami-Dade County Hotel Tax Revenue**

Miami-Dade collects a 6% hotel tax for over-night stays and short-term rentals. In order to capture the estimated amount of tourism expenditures within the Miami-Dade County portion of ROGG, south Florida tourism percentages are applied. Of the 15,473,000 (2011) visitors, 89.8% visited Miami-Dade County and 10.2% visited Collier County. These percentages are applied to county sales tax revenues.

Miami-Dade County may collect an estimated \$2,183,758 annually, or \$5.5 million over a 25-year period, in hotel tax from ROGG visitor group hotel expenditures and generate over 222,000 hotel night stays.

Note: A typical Hotel Trip Visitor Group stays for an average of 3.5 nights per trip. One hotel room is estimated for each visitor group of 2.7 persons per night.

**Pathway Benefits Summary**

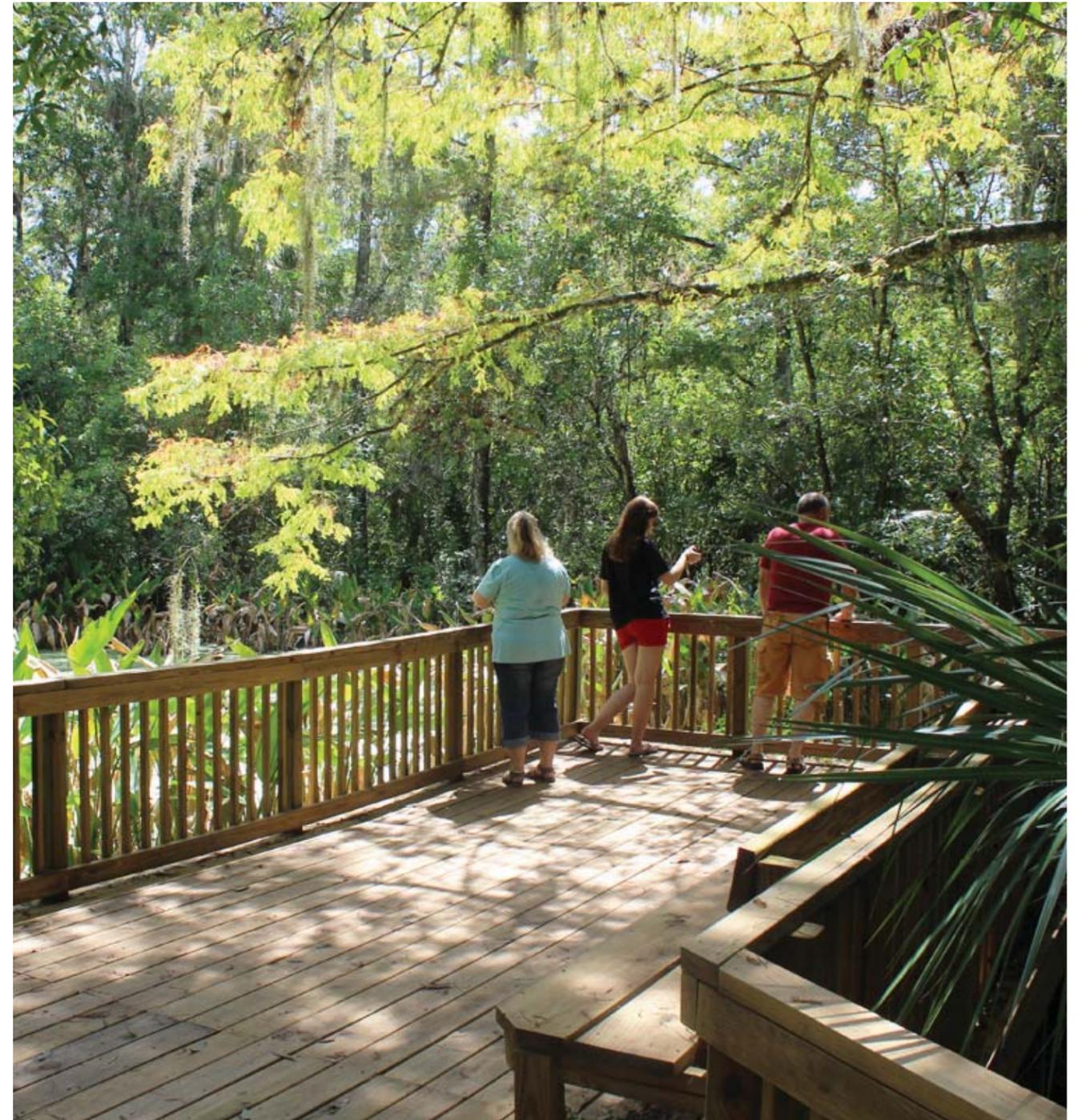
The estimated social, environmental and economic benefits associated with the development of the ROGG is strengthened when combined with the full implementation of all proposed alternative transportation strategies throughout the ROGG Study Area. Working in conjunction, the south Florida region could experience the following benefits:

- 503,250 visitors to the ROGG,
- Burning of 30 million calories due to the accessibility of ROGG for recreation and exercise,
- Loss of approximately 214,000 pounds over a 25-year period due to increased physical activity,
- Reduction of approximately 114,000 vehicle trips annually,
- Reduction of 8.6 million vehicle miles annually,
- Savings of 6.3 million gallons of gasoline worth over \$23 million over a 25-year period,
- Reduction of 3,947 tones of CO<sup>2</sup> annually,
- Generation of approximately \$96 million in direct visitor expenditures annually
- Generation of approximately \$8.6 million in state and local sales tax and hotel tax revenue, equally over \$214 million in revenue over a 25-year period.

Estimates are based on best available data and are meant to provide a magnitude of potential benefits.

**Jurisdictional Tax Revenue Estimates**

Jurisdiction	Annual Sales Tax Revenue	County Hotel Tax Revenue
State of Florida	\$5,435,583	-
Collier County	-	\$165,362
Miami-Dade County	\$813,522	\$2,183,758
<b>Annual Totals:</b>	<b>\$6,249,105</b>	<b>\$2,349,120</b>



Tourist at Fakahatchee Strand Preserve State Park