

U.S. Fish & Wildlife Service

2012-2013 South Florida Conservation Report



From Our Field Supervisor:

Continued Collaboration is the Key



*Larry Williams, Field Supervisor
South Florida Ecological Services Office,
credit Olivia Williams.*

You don't have to look far to see how dearly the people of Florida care about conservation and the magnificent landscapes and wildlife that make this beautiful state so unique and so worth preserving.

You don't have to look far to see how much the citizens of Florida care about conservation. Citizens helped create a new national wildlife refuge in the Everglades Headwaters. The Florida Department of Environmental Protection is writing a statewide Habitat Conservation Plan that will steward all 750 miles of Florida's beaches – great news for sea turtles and an effort unprecedented in the Nation. Ground was broken on several projects related to restoring the Everglades, including the Indian River Lagoon-South C-44 Reservoir and Stormwater Treatment Area, where the citizens of Martin County stepped up to pay a big portion of the cost to acquire the land. And in 2011, the first Florida Panther Festival attracted more than 1,000 people who celebrated the iconic feline that was voted by school children, in 1982, to be the state animal.

Floridians have a conservation ethic that is rarely matched and certainly spans generations. It's not surprising the first national wildlife refuge was established at Pelican Island in 1903, and a Floridian, a boat builder named Paul Kroegel, was the first person hired to protect it. It's not surprising that the Key deer was, in 1967, one of the first species listed under the Endangered Species Act. At that time Floridians had already fought for decades to protect Key deer and restore their population. They were not about to see this species, so unique to Florida and precious to its citizens, go without the additional protections this newly minted legislation could provide.

The South Florida Ecological Services Office has a long history of helping deliver conservation successes like these. And although the challenges are different today, the commitment of our office staff is stronger than ever – just as is the conservation ethic of Florida's citizens.

Our staff continuously works diligently on projects that some might find daunting. Efforts like: listing invasive constrictor snakes as “injurious” so their range expansion can be controlled; protecting key tracts of land so Florida panthers can move more easily across the landscape; helping determine the feasibility of Florida's first wind farms and writing conservation guides so rare species in the Florida Keys can forever coexist with development. And perhaps most ambitious of all, staff began work on the Central Everglades Planning Project, which aims to send water down the middle of the Everglades and restore the heart of Florida's best known wilderness landscape.

Big conservation efforts like these never happen through the work of one person, one office or one agency. They happen through collaborations that involve partners, stakeholders and citizens from all corners. As you read this report please take note of the partnerships we build and work within to foster and deliver world-class conservation.

Rarely, if ever, will you find that we accomplish a project solely on our own. But often you'll see our fingerprints, mixed with those of other agencies, non-profits, stakeholders, and of course citizens, brushed across the big canvass of conservation successes. Certainly there are more successes to come, if we keep working together!

Four Large Non-native Constrictor Snakes Listed as Injurious Wildlife

Our Invasive Species Coordinator, Washington office staff and others were instrumental in writing and publishing the U.S. Fish and Wildlife Service's final rule that prohibits the importation and interstate transportation of four non-native constrictor snakes that threaten the Everglades and other sensitive ecosystems across the United States and insular territories.

The final rule – which incorporates public comments, economic analysis, and environmental assessment – lists the Burmese python, the yellow anaconda, and the northern and southern African pythons as injurious wildlife under the Lacey Act in order to restrict their spread in the wild in the United States. It was published in the *Federal Register* on January 23, 2012.

In 2009, the U.S. Geological Survey released a report titled: *“Biological and Management Profiles and an Establishment Risk Assessment for Large Species of Pythons, Anacondas and the Boa Constrictor,”* where the four listed species were assessed as high risk species. High risk species, if established in this country, put larger portions of the U.S. mainland and insular territories at risk and constitute a greater ecological threat.

Sixty days after publication of the final rule in the *Federal Register*, interstate transport and importation of live individuals, gametes, viable eggs, or hybrids of the Burmese python, northern and southern African pythons and yellow anaconda into the United States for any purposes not permitted was prohibited. None of these species is native to the United States.

The Service will continue to consider listing as injurious wildlife five other species of non-native snakes that the agency also proposed in 2010 – the reticulated python, boa constrictor, DeSchauensee's anaconda, green anaconda and Beni anaconda.



Secretary of the Interior Ken Salazar (center) is joined by Service Director Dan Ashe (third from right) and others to display a 13-foot Burmese python January 17, 2012 after announcing the listing of Burmese pythons and three other large constrictor snakes as injurious wildlife under the Lacey Act, credit: DOI/Tami Heilemann.

Most people who already own any of these four species will not be affected. Those who own any of these four species of snakes will be allowed to keep them if allowed by state law. However, they cannot take, send or sell them across state lines. Those who wish to export these species may do so from a designated port within their state after acquiring appropriate permits from the Service.

The Burmese python has established breeding populations in South Florida, including the Everglades, that have caused significant damage to wildlife and that continue to pose a great risk to many native species, including threatened and endangered species. An established, reproducing population of large constrictor snakes introduced to U.S. ecosystems represents a new predator, which may prey on species not yet evolved to overcome the predator's

influence. Burmese pythons on North Key Largo have killed and eaten highly endangered Key Largo woodrats, and other pythons preyed on endangered wood storks.

In the Everglades alone, state and federal agencies have spent millions of dollars addressing threats posed by pythons – an amount far less than is needed to combat their spread. If these species spread to other areas, state and federal agencies in these areas could be forced to spend more money for control and containment purposes.

The Department of Interior and its partners, including the Florida Fish and Wildlife Conservation Commission, South Florida Water Management District and others are committed to controlling the spread of Burmese pythons and other large non-native invasive constrictors.

Groundbreakings Show Federal Government's Commitment to Everglades Restoration

On many occasions Secretary of the Interior Ken Salazar has heralded the Federal government's commitment to Everglades restoration. At the groundbreaking ceremony for the Faka Union Pump Station he said, "From bridging the Tamiami Trail to the Site 1 Impoundment project, our investments in Everglades restoration are investments in Florida's future in ensuring clean water for its citizens and for the environment. We are putting people back to work and restoring the River of Grass."

In that regard, the South Florida Ecological Services Office is working with several partners including the U.S. Army Corps of Engineers, the State of Florida and others to usher in a dynamic era of Everglades restoration initiatives. The guiding blueprint for this effort is the Comprehensive Everglades Restoration Plan or CERP, which was approved as part of the Water Resources Development Act of 2000.

CERP includes dozens of integrated water management projects to restore south Florida natural ecosystems, while providing other water-related needs -- including water supply and flood control through 2050, across 13 million acres. Many of these lands are vital habitats for endangered and threatened species listed under the Endangered Species Act (ESA), as well as protected by state laws and other federal statutes.

Through the summer of 2012, seven CERP construction projects had broken ground and are at various degrees of completion. Upon completion, these projects will restore a combined 221,260 acres of south Florida lands critical to restoring America's Everglades. The Service's primary role in these projects is providing the guidance to optimize benefits to a wide range of fish and wildlife, including imperiled species. The CERP projects that have broken ground so far are:



Biologist Steve Schubert of the South Florida Ecological Services Office "throws dirt" with Acting Assistant Secretary of the Interior Rachel Jacobson Oct. 28, 2011 during the groundbreaking ceremony for the C-44 Reservoir and Stormwater Treatment Area in Martin County, Florida, credit: USFWS/Ken Warren.

more natural water flows in Taylor Slough. This, in turn, will improve the timing, distribution and quantity of water in Florida Bay.

- **Merritt Canal Pump Station at Picayune Strand** (January 2010) This undertaking will construct a pumping station in the Merritt Canal area of the Picayune Strand Restoration Project. It will restore water flow across the landscape, rehydrate drained wetlands, improve estuarine waters and restore habitat for threatened wildlife communities. Ultimately, the Picayune Strand Restoration Project is expected to restore 55,000 acres of wetlands and ensures protection and enhancement of essential habitat for the endangered Florida panther, among other species.

- **Biscayne Bay Coastal Wetlands, Phase 1** (May 2010) The project goal is to improve the ecology of Biscayne Bay, including the freshwater wetlands, tidal creeks and near-shore habitat. This will be accomplished by adjusting the quantity, quality, timing and distribution of fresh water entering the bay and Biscayne National Park.

- **Site 1 Impoundment** (October 2010) This will improve the ecological function of the Everglades by capturing and storing the excess surface water runoff from the Hillsboro Canal watershed and releases from the Arthur R. Marshall Loxahatchee National Wildlife Refuge and Lake Okeechobee. The project site is located on 1,800 acres of previously undeveloped land adjacent to the Hillsboro Canal in southern Palm Beach County. The impoundment features a 1,660-acre, approximately eight-foot deep above-ground impoundment (at maximum pool depth the impoundment stores 13,280 acre feet of water), with an inflow pump station, discharge gated culvert; one combined service/auxiliary non-gated

- **Tamiami Trail One-Mile Bridge** (December 2009) The project includes building a one-mile bridge to replace a portion of the Tamiami Trail, an east-west highway that has blocked natural freshwater flows southward into Everglades National Park for decades. The project will help revive wetland habitat for more than 60 threatened and endangered species.

- **C-111 Spreader Canal** (January 2010) This initiative will create a nine-mile hydraulic ridge adjacent to Everglades National Park that will keep more of the natural rainfall and water flows within Taylor Slough. Its goal is to improve park conditions by establishing



American crocodile at Everglades National Park, credit Kevan and Linda Sunderland, klshells@mindspring.com

spillway and one auxiliary non-gated spillway, and a seepage canal with associated structures. Recreational opportunities will also be available at two sites within the project footprint.

■ **Faka Union Canal Pump Station at Picayune Strand** (February 2011)

The project will restore natural water flows over an 85-square-mile area, improve the area's hydrology, enable the return of more balanced plant communities, increase aquifer recharge and send fresh water in a more natural manner to the coastal estuaries.

■ **C-44 Reservoir and Stormwater Treatment Area** (October 2011)

The Indian River Lagoon and the St. Lucie Estuary are two of the country's most productive and most threatened estuaries, home to more than 4,300 plant and animal species, and supporting an annual economic contribution of more than \$730 million. This phase of the overall Indian River Lagoon- South Project is the first of four planned above-ground reservoirs and the first of three new stormwater treatment areas to reduce sediment, phosphorus and nitrogen flowing into the St. Lucie River estuary and the lagoon. Ultimately, the entire Indian River Lagoon-South Project will reduce the incidence of ecologically damaging high volume discharges to this productive estuary.

Fast-Track Planning Effort Announced

Senior policy officials from the Department of the Army, the Department of the Interior, the Environmental Protection Agency and the State of Florida, including the South Florida Water Management District and the Florida Department of Environmental Protection convened at the South Florida Ecosystem Restoration Task Force (Task Force) meeting Oct. 27, 2011.

They announced a fast-track planning effort for the next generation that will, when authorized by Congress, improve the Central and Southern Everglades by putting more fresh and clean water into the River of Grass.

The Central Everglades Planning Project (CEPP) will incorporate updated science and maximize use of publicly-owned lands to focus the next phase of Everglades Restoration on the Central and Southern Everglades. This planning process will build on three years of unprecedented restoration progress between the federal government and the State of Florida including groundbreakings for six CERP projects.

The CEPP will analyze alternatives that will reduce the discharge of water currently damaging the Caloosahatchee and St. Lucie estuaries and provide more natural flow and depths of clean new water through the Central Everglades and Everglades National Park. This initiative will use a fast-tracked planning process, a pilot program that the Army Corps of Engineers is initiating elsewhere in the country, designed to yield restoration benefits at an efficient rate.

The CEPP responds directly to the 2008 and 2010 recommendations from the National Academy of Sciences and restoration scientists who recognize the need to address unnatural water levels in the water conservation areas and Everglades National Park as one of the biggest challenges facing restoration managers.

Background/History

The original Central & Southern Florida Project (C&SF) was authorized in 1948 to provide water supply, flood control, water management, and other benefits to the south Florida region, including the Kissimmee River, Lake Okeechobee and Everglades. After years of operating the C&SF Project, adverse environmental effects, such as changes in surface water flows, increased nutrients, declining wildlife populations and habitat degradation were detected. The Water Resources Development Act (WRDA) of 1992 provided the U.S. Army Corps of Engineers (Corps) with the authority to conduct a Restudy of the C&SF Project. Recommended improvements to the C&SF Project contained in the Restudy report were authorized by the WRDA 2000. CERP is based on the Restudy and is a partnership between the Corps and the South Florida Water Management District. The CERP originally included 62 projects, but this list evolved over time.

We've been an integral partner in the development and implementation of the CERP. We provide technical assistance and scientific expertise throughout all phases of project planning, implementation and monitoring. In particular, we assist the lead agencies in designing projects to avoid or minimize impacts to listed species, migratory birds and other wildlife of concern in the project area.

There are nearly 70 species of plants and animals on the federal threatened and endangered species list within the CERP boundary. Additionally, about 200 species of migratory birds are found in the project area. Our specialists work under the authorities of the ESA and Fish and Wildlife Coordination Act. We're also involved in the assessment of contaminants on many of the project sites.

Miami Blue Butterfly Listed as Endangered

On April 4, 2012, we announced the listing of the Miami blue butterfly as “endangered” under the Endangered Species Act (ESA). That action followed an emergency listing enacted on August 10, 2011 that protected the butterfly for 240 days. The emergency listing was the first done by the U.S. Fish and Wildlife Service in more than nine years, and the first for the South Florida Ecological Services Office.

The Miami blue is a small, coastal, non-migratory butterfly endemic to south Florida. Its geographic range once extended from the Dry Tortugas north along the Florida coasts to about St. Petersburg and Daytona, but it is now restricted to a few, small, remote islands within the Florida Keys. In making this emergency listing determination, we carefully assessed the best scientific and commercial information available.

The Miami blue butterfly is imminently threatened by the combined influences of habitat destruction and modification, herbivory of host plants by exotic green iguanas, illegal collection, accidental harm from humans, restricted range, small population size, loss of genetic heterogeneity, and catastrophic environmental events, such as hurricanes. Predation and disease may also be threats due to small population size. Habitat loss and fragmentation, pesticide application from mosquito control practices, displacement of native host plants, and other threats exist. Environmental effects from climatic changes, including sea level rise, are also significant long-term threats that are expected to substantially reduce the butterfly’s habitat in both its current and historical range.



© Paula Cannon

A Miami blue butterfly closes in on a soft landing.

After careful review, we determined that designation of critical habitat for the Miami blue butterfly is not prudent because publishing maps and descriptions of critical habitat areas would widely announce the exact location of the butterfly to poachers, collectors, and vandals and may further facilitate disturbance and destruction of the butterfly’s habitat. Overall, we determined that, in this case, increased threat to the subspecies of designating critical habitat outweighs the benefits of such designation.

Under the emergency provisions of the ESA, we also listed the cassius blue, ceraunus blue, and nickerbean blue butterflies as threatened throughout their natural ranges due to their similarity of appearance to the Miami blue. These three butterflies overlap in range with the Miami blue in south Florida, but their entire natural ranges include the Cayman Islands, Bahamas, Cuba and Greater Antilles.

In addition, we issued a 4(d) special rule on these species to establish prohibitions on collection and commercial trade within the United States. This action also prohibits the import into and export from, the United States of the three similar butterflies. Otherwise lawful activities that may impact these similar butterflies—such as legal use of pesticides, mowing, and vehicle use—are not prohibited. Extending the prohibitions of collection, possession, and trade to the three similar butterflies will provide greater protection to the Miami blue.

We invited public comment on all aspects of the proposed rule, seeking all available scientific or commercial information concerning the Miami blue, its threats, locations of any additional populations, and effects of establishing prohibitions on collection and trade of the three other similar butterflies. In addition to seeking input from interested parties, we also requested scientific peer review from 14 independent reviewers. The deadline for submitting comments was October 11, 2011. Pending review of the collected information and comments, we will decide if the proposed rule should be approved, revised or withdrawn.

We continue to work with the state and many other partners on initiatives for the Miami blue, such as conducting additional surveys to search for other potential populations, assessing the extent of occupancy and size of the remaining population, and looking at options for controlling and reducing other threats.

Wildlife Corridor Critical to Florida Panther Recovery Protected

A potential pathway to the future for Florida panthers was established in May 2012 when almost 1,300 acres within the “Florida Panther Dispersal Zone” were protected against future development when the U.S. Fish and Wildlife Service (Service) and several partners acquired the land. This protected land is critical for wildlife passage and the natural recovery of the Florida panther.

The conservation easements established on the 1,278-acre property along the Caloosahatchee River in Glades County is a key landscape through which Florida panthers can disperse from habitats farther south.

In fact, a female panther and her two kittens were photographed in an area near the protected property — less than three miles from the Caloosahatchee River; the farthest north a female has been documented since Florida panther research started in 1973.

This acquisition was accomplished just in time to prevent the land from going to foreclosure auction.

Protecting this land was made possible through the cooperative efforts of several partners including the Service, The Nature Conservancy (TNC), the Department of Agriculture’s Natural Resources Conservation Service (NRCS), The National Fish and Wildlife Foundation (NFWF), Walmart, the U.S. Army Corps of Engineers and others.

A portion of the protected land will continue in the rich ranching heritage of South Florida and another portion will have its wetlands restored. This supports Everglades restoration initiatives by bringing back the natural functions of the wetland to recharge groundwater; reduce flooding and protect biological diversity.

The purchase was covered by approximately \$2 million from TNC in private philanthropy, and \$1.5 million each from the USFWS and the private entity that purchased the property encumbered by conservation easements. NRCS provided \$1.5 million to purchase a conservation easement on 718 acres of the property. Another \$200,000 was provided through Acres for America, a partnership between the NFWF and Walmart.

TNC collected the funding from the various sources and used those funds to buy the property.

The new owner, Lone Ranger LLC, will utilize the property in accordance with the conservation easements secured in the transaction. The Nature Conservancy and NRCS will monitor the easements.

This acquisition will encourage the natural recovery of the Florida panther population by providing habitat where animals can den and stalk prey, and migrate to areas north of the river. Other species, including the “endangered” wood stork and “threatened” crested caracara, will benefit as well. In addition to providing funds through the Recovery Land Acquisition Program, the Service provided technical assistance regarding federally listed species.



This map shows the location of the protected property, which sits along the Caloosahatchee River on the northern edge of the Florida Panther Dispersal Zone. (Map courtesy of the Natural Resources Conservation Service)

In an editorial published May 26, 2012 the Tampa Bay Times hailed this deal as “a model for future efforts to protect Florida wildlife, encouraging private owners to preserve land while costing the state virtually nothing in a time of tightening belts.”

Service Helps Fund Livestock Depredation Study

Florida Panthers normally prey on white-tailed deer, wild hogs and other wildlife. Yet, in recent years, reports began to surface of panthers preying on calves.

That prompted us and The University of Florida's Institute of Food and Agricultural Sciences (IFAS) to fund a cooperative research project designed to provide scientific data on what factors are contributing to calf deaths on ranches in southwest Florida. The two-year study is focusing on ranches in southwest Florida where the goal is to determine the extent to which predators, in particular the Florida panther, are responsible for calf mortality.

This research started in the fall of 2011 and is helping us learn more about the panther's impact on cattle ranching by monitoring calf survival. Field work includes using radio telemetry, conducting necropsies, and measurement of local and landscape scale habitat variables. Calves are tagged within 24 hours of birth with ear tag transmitters equipped with mortality sensors. Tagged calves are monitored daily for 60-90 days, which represents the period of greatest risk to predators, and periodically thereafter until sale, which is typically at six to eight months of age.

The objectives of this project are to:

- Quantify the extent to which calf depredation is occurring in southwest Florida and the extent to which the Florida panther and other predator species are responsible for those depredations; and
- Identify and model predictor variables at depredation sites that are associated with increased risks of depredation by the Florida panther and other predators.



A Florida panther is photographed at night by an automated camera returning to its cache to get the calf meat it had buried earlier; credit: University of Florida/C. Jacobs.

All calf mortalities are being documented and evaluated for cause of death using standard evaluation methods, including protocols consistent with depredation information collected by the Florida Fish and Wildlife Conservation Commission (FWC).

The FWC is also directing resources to this project. Agency staff will study individual panthers that are on or near the same ranches where the calf studies will be conducted and look at panther prey selection to determine the role that calves play in the panther's diet.

Location and landscape variables associated with mortality sites (e.g., land cover, distance to forest cover, etc.) will be documented as these may provide important information regarding predictors for risk of calf depredation by the Florida panther and other predators.

This study will also provide quantitative information regarding depredation that can be used by state and federal agencies when evaluating management strategies and options to address depredation issues in southwest Florida.

The Florida panther recovery plan acknowledges the importance of private lands and states the importance of obtaining the support of private landowners for maintaining property in a manner that is compatible with panther use.

Climate Change Tools Developed

Climate change is quickly becoming one of the most important conservation planning stressors. Many studies focus on the direct effects of climate change on particular species and/or habitats, however, additional factors such as human development will be both directly and indirectly affected by climate change.

We're preparing for the future impacts of climate change in Florida by funding a multi-year scientific initiative with the U.S. Geological Survey (USGS) carried out by researchers from the Massachusetts Institute of Technology (MIT) and GeoAdaptive Inc.

Our study brings all of this information together and predicts this type of data for the future. It investigates a number of possible trajectories of future landscape transformation in Peninsular Florida in light of four main drivers of change: climate change, shifts in planning approaches and regulations, population change and variations in conservation financial resources. Through a systematic exploration at the landscape-scale, this research aims to identify some of the major challenges to future conservation efforts.

Each scenario is projected into the future using a computer simulation technique that creates land use visualizations called "alternative futures." These alternative futures integrate the best available scientific information on climate change with local knowledge and expertise in order to create a suite of management-relevant scenarios for Peninsular Florida. Stakeholder based scenarios were conceived not as blueprints for the future, but rather as learning tools for management of uncertainty.

Three future time intervals were simulated for each scenario: 2020, 2040 and 2060. Each alternative future visualizes land use patterns and landscape transformations such as coastal inundation, urbanization and infrastructure changes.



South Florida species such as this Key deer fawn will likely be impacted by sea level rise, credit: Kevan and Linda Sunderland, klshells@mindspring.com.

Future changes in conservation lands are modeled and/or designed based on the input from local experts and managers and using the best available ecological information and data.

During fiscal year 2012 the scenarios are being extended to the peninsular Florida landscape conservation boundary, an increase of 11 counties. In 2013, the rest of Florida including the coastline for the statewide beaches habitat conservation plan will be included. Other aspects are being added to the scenarios including:

- Carbon sequestration and carbon accounting;
- More refined storm surge modeling; and
- Species and habitats for the Florida Keys including mangrove, corals and possible sea grass.

This scenario-based research investigation aims to better illustrate the challenges and future conditions decision-makers may need to consider in developing conservation strategies. The scenarios help managers understand the cumulative impacts of possible decisions across a range of scales and allow them to form partnerships they may need to better prepare for future changes.

Once the simulations are complete, an online tool will also be available to aid decision-making by visualizing the scenarios and their potential impacts at the three time intervals. In short, the scenarios are intended to serve as learning and exploratory tools that enable conservation managers to better understand the different trajectories of change and the forces that shape them.

Florida Gets \$1.2 Million in Habitat Conservation Grants

In August 2012, the U.S. Fish and Wildlife Service announced nearly \$33 million in grants to 21 states to support conservation planning and acquisition of vital habitat for threatened and endangered fish, wildlife and plants.

Three of those grants totaling approximately \$1.2 million, will support wildlife conservation efforts in Florida. They are:

Statewide Habitat Conservation Plan (HCP) for Florida Beaches (35 Coastal Counties) - \$766,014

This grant will assist in the sixth year of this HCP planning effort. Stakeholders plan to assimilate acquired data into a detailed draft of the HCP and activities in the coastal area and their threats to listed species will be analyzed. The goal of the HCP is to allow for ongoing beach structure protection measures while limiting and mitigating adverse effects to the nesting of the federally-listed loggerhead, Kemp's ridley, leatherback, green, and hawksbill sea turtles, five beach mouse subspecies, and shorebirds, including wintering piping plover. The Florida Department of Environmental Protection is leading this effort in conjunction with builders groups, municipalities, and other stakeholders.

Highlands County Multi-Species Habitat Conservation Plan (Highlands County) - \$300,250

This grant will assist in initiating the planning effort for a county-wide HCP for scrub habitats, the Florida scrub-jay, eastern indigo snake, sand skink, blue-tailed mole skink, and other dry scrub species. Implementation of an HCP in Highlands County marks a significant step forward for scrub conservation in the heart of Florida's central ridge and will enhance similar conservation efforts in neighboring counties.



A green sea turtle hatchling makes its way through the sand on a Florida beach, credit: Vince Lamb.

East Collier County Multiple-Species Habitat Conservation Plan (Collier County) - \$149,949

This grant will assist in concluding the planning efforts for the first area-wide HCP to cover the Florida panther. Expected results include the production of a draft HCP and an environmental impact statement. Implementation of this HCP will provide the first such conservation plan in the panther's primary recovery zone. The plan represents the collaborative effort among many private stakeholders with ranching, development, and conservation interests.

Authorized by Section 6 of the Endangered Species Act, these competitive grants enable states to work with private landowners, conservation groups and other government agencies to initiate conservation planning efforts and acquire and protect habitat to support the conservation of threatened and endangered species.

Habitat Conservation Plans (HCPs) are agreements between a landowner and us. These agreements allow a landowner to undertake otherwise lawful activities on their property, even if they may impact listed species, when that landowner agrees to conservation measures designed to minimize and mitigate the impact of those actions. HCPs may also be developed by a county or state to cover certain activities of all landowners within their jurisdiction and may address multiple species.

In the mid-2000s, our HCP Team was overwhelmed with requests for project-by-project reviews for development activities that impact scrub-jays. We knew this was inefficient both from the regulated community's and our perspective as well as in terms of listed species conservation.

We made it a priority to be proactive instead of reactive. We set a goal in 2006 to convince every county in our area with major scrub-jay populations to obtain Section 6 funding to develop countywide or regional HCPs.

This strategy provides regulatory assurance for the regulated community (they know up front when they can build and what the minimization measures and mitigation cost as will be).

It also streamlines the permitting process, which reduces development costs. It allows us to consider conservation from a large-scale, comprehensive perspective to ensure habitat connectively and reduce fragmentation. We can guide development away from sensitive or important areas or habitats.

Lake Toho Hydrilla Treatment Plans Benefit Snail Kites

To improve foraging and nesting for the endangered Everglade snail kite on Lake Tohopekaliga (Toho), we're working with the Florida Fish and Wildlife Conservation Commission (FWC), other partners and stakeholders to continuously develop and refine adaptive strategies related to hydrilla management.

This new approach, in place since 2009, resulted in a more flexible plan for the management and control of hydrilla, which is an invasive non-native aquatic plant that can provide habitat and food for fish, snails and waterfowl, but under certain conditions, can cause navigation problems and limit access to boaters.

Lake Toho contains hundreds of acres of hydrilla, which despite its disadvantages, provides an important food source for an exotic species of apple snail that lives in the lake.

The snail is eaten by the snail kite, and its availability on Lake Toho may have led to Lake Toho becoming one of Florida's most productive snail kite nesting areas in recent years. As a result, along with FWC and others, we have to manage how, when and where hydrilla is controlled on the lake so that enough snails are available during the snail kite's nesting season.

In recent years, Lake Toho and other lakes in the Kissimmee Chain have supported the majority of nesting activity and became some of the few spots left where snail kites are nesting. The breeding season varies annually in relation to water levels and rainfall, but most nests are initiated from December to July.



With an apple snail in one of its talons, an Everglade snail kite calls while in flight, credit: Kevan and Linda Sunderland, klshells@mindspring.com.

Nesting almost always occurs over water, which deters predation, and occurs in the immediate vicinity of foraging habitat. Snail kites almost exclusively eat native and non-native apple snails using their sharp, curved bills to pluck the snails from their shells. Keeping this in mind, coupled with the precarious nature of the snail kite population, we and the FWC decided changes were needed in the way hydrilla is managed on the lake.

A key milestone in this initiative took place November 5, 2010 with a meeting with government officials, followed by a meeting with members of the general public at the Osceola County Commission Chambers in Kissimmee, Florida. Staff from both the FWC and our office presented information on the hydrilla treatment plan, as well as the dire status and needs of the snail kite.

The agencies used these meetings, as well as follow up sessions, to explain how an extra cautious approach is warranted when controlling hydrilla to help the kites recover from the severe winter of 2009.

Together, we are striving to balance the needs of this endangered species with the needs of the other plant and wildlife species, fishermen, boaters and the folks who live around the lake.

Florida's First Roadside Automated Detection System

We're working on a collaborative effort to establish, maintain and evaluate a pilot program to determine if technology called the Roadside Animal Detection System (RADS) can reduce the number of Florida panthers being struck by vehicles.

A \$650,000 federal grant to the Florida Department of Transportation's (FDOT's) Transportation Enhancement Project allowed for the installation and ongoing evaluation of a RADS system along both sides of a 1.3 mile stretch of U.S. Highway 41 in Collier County.

RADS is a remote sensing system that helps drivers avoid crashes with animals on the roadway. It employs electronic sensors installed along both sides of a stretch of roadway to detect large animals (e.g., panther, deer, black bear) as they approach the road. The triggering of a sensor activates warning message signs alerting drivers to the presence of animal(s) on or near the roadway. Early warning can result in increased driver's awareness and reductions in speed that increase the probability of avoiding collisions with wildlife.

Although this system has not been used in Florida, RADS has been effective in several western states and costs less than building wildlife crossings. In addition, there is no fencing associated with RADS. This system was installed along both sides of U.S. 41 from just west of the entrance to the Trail Lakes Campground to just east of the U.S. 41/Turner River Road intersection.

Panther zone advisory signs also are in place. Flashing lights on signs will help alert motorists to the panther zone, and speed feedback signs (one in each direction) will advise motorists to slow down if they are traveling above the posted speed limit in this segment of the highway where several panthers have been hit.



The lights flash on Florida's first Roadside Automated Detection System, warning drivers to slowdown for nearby wildlife, credit: Alicia Gonzalez.

The FDOT's project to install the RADS was completed in December 2011. Wildlife crossings are typically the most effective way for wildlife to safely pass across a busy road, but in south Florida a wildlife crossing can cost up to \$4 million because of high water tables and other necessary roadside modifications such as raising the wildlife crossing entrance to the same level as the road.

Our partners in this effort include the FDOT, Defenders of Wildlife, Big Cypress National Preserve, the Florida Fish and Wildlife Conservation Commission, Montana State University Western Transportation Institute and the University of Central Florida.

New Florida Sand Skink Protocol

Skinks occur in well-drained, sandy soils greater than or equal to 82 feet in elevation along the ridges of Central Florida in scrub, sandhill, or xeric hammock natural ecological communities, such as oak-dominated scrub, turkey oak barrens, high pine and xeric hammocks.

Sand skinks have also been documented in suitable soils where natural vegetative cover has been altered for human uses such as pine plantations, active or inactive citrus groves, pastures, and residential developments, as well as in old fields and overgrown scrub. This species typically occurs in areas that contain a mosaic of open sandy patches interspersed with forbs, shrubs or trees and use a variety of micro-habitats within xeric communities.



The sand skink is a small lizard that typically lives in the sandy ridges of central Florida from Marion County south to Highlands County, credit: Todd Pierson.

Skinks spend most of their lives below ground and are difficult to detect. Without a quantitative assessment of abundance, we have difficulty determining skink population trends for annual recovery data calls and status reviews. Current survey methods only record skink presence through visual observation of tracks, either through pedestrian surveys or by looking under cover boards (2x2 foot boards designed to detect skinks or skink tracks). In 2010, we initiated a grant agreement with the University of South Florida (USF) to evaluate ways to detect population trends and develop a monitoring program that is useful to managers. USF is assessing the relationship between tagged individuals and the number of tracks recorded under cover boards. Our office provided \$175,075 in FY10 and FY11 to support this valuable research project.

We formed an inter-office team to update our 2004 skink survey protocol and skink consultation and conservation guide (CCG). The 2004 protocol requested that applicants conduct surveys for skinks in natural habitats only, based on vegetative cover types and elevation and did not request surveys in altered habitats (such as citrus groves or improved pasture).

The revised version incorporated new information about the importance of soil characteristics rather than vegetative cover type in determining skink distribution and also considered new data on skink movement and dispersal distances.

After posting the revised protocol on our website earlier this year, our office and the Jacksonville office received concerns from developers, consultants and county planners. Concerns mainly centered on the addition of a buffered area around cover boards where positive survey results for skinks are recorded. We have since removed the buffer language from the protocol, and, instead, will use the new dispersal information to guide the review of individual applications. In cooperation with the North Florida Ecological Services Office and our partners at the Florida Fish and Wildlife Conservation Commission, we revised the guidelines and made them available to the public and finished the review in January 2012.

Our office has developed and continues to work with interested applicants to develop conservation banks for skinks to offset adverse impacts to the species that occur elsewhere.

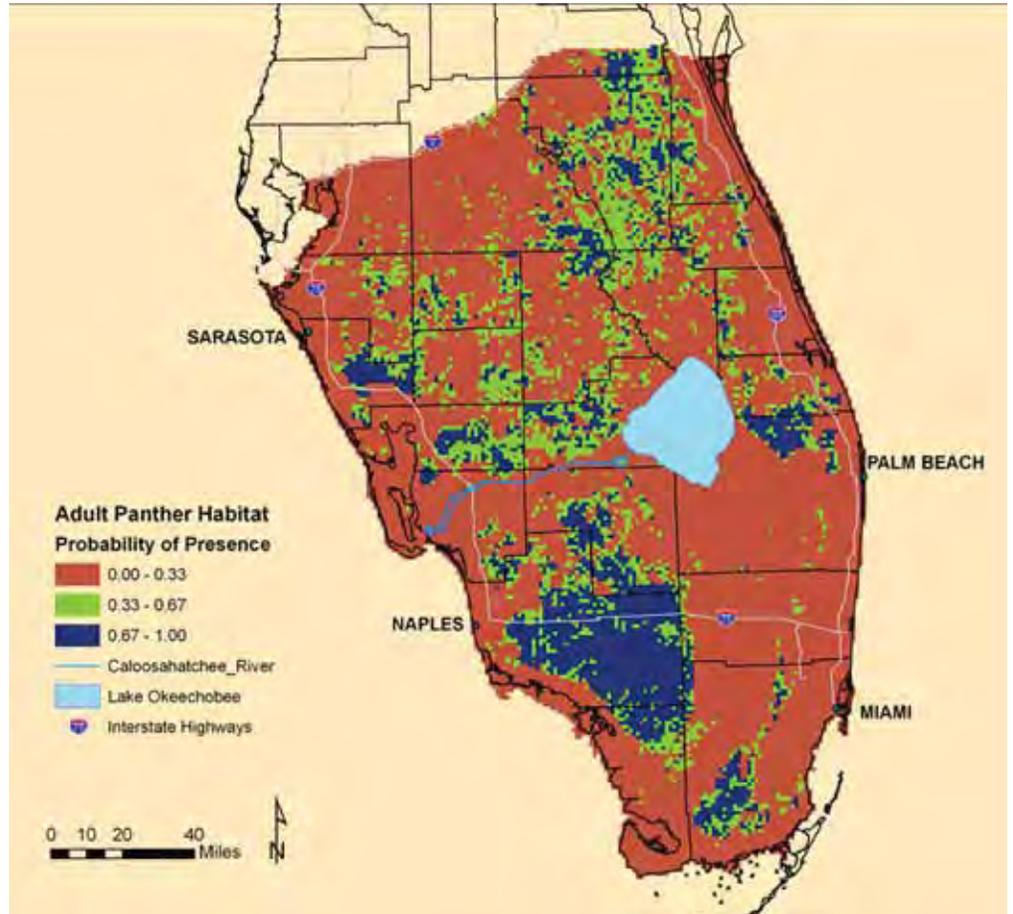
Florida Panther Population Model

Two of our scientists developed a Florida panther absence/presence model that helps evaluate the impacts of future development projects, prioritize areas for Florida panther conservation (*e.g.*, mitigation areas, panther conservation banks, conservation easements and fee title purchases) and evaluate the potential impacts associated with climate change.

Using radio-telemetry data from 84 prime-aged adult panthers (31 males and 53 females) during the period 1999 to 2009 (30,247 radio-locations), we analyzed the characteristics of the occupied area and used those attributes in a generalized linear model and a random forest model to develop a predictive distribution map for resident breeding Florida panthers in south Florida.

Using 10-fold cross validation, the model was 90 percent accurate in predicting presence or absence of panthers in the 17,000 km² study area. Analysis of variable importance indicated that the amount of wetland forests and forest edge, hydrology, and human population density were the most important factors determining presence or absence of panthers in south Florida. Marshes, shrub swamps, and grassland/prairies were also important components of panther habitat.

As expected, saltwater wetlands and urbanized areas were strong negative predictors of panther presence.



Graphic by USFWS/Chris Belden.

The models indicate that 6,345 km² of suitable breeding habitat remain in southern Florida and that 1,548 km² (25%) of this habitat is in non-protected private ownership. These models should be useful for evaluating the impacts of future development projects, in prioritizing areas for panther conservation (*e.g.*, mitigation areas, panther conservation banks, conservation easements, and fee title purchases) and evaluating the potential impacts of sea-level rise and changes in hydrology associated with climate change.

These models were shared with the Florida Fish and Wildlife Conservation Commission. They're looking at our study as a possible tool to help with determining the population and carrying capacity for panthers in south Florida.

The Florida panther is the last subspecies of "puma" still surviving in the eastern United States. Historically occurring throughout the southeastern United States, today the panther is restricted to less than five percent of its historic range in one breeding population located in southern Florida.

WCA-3 Multi-Species Transition Strategy

Our biologists innovatively used science to create the Multi-species Transition Strategy for Water Conservation Area 3A (WCA-3A). WCA-3A is a half-million acres of the most extensive, relatively intact ridge and slough landscapes remaining in the Everglades ecosystem. It provides vital habitat for endangered species such as the Everglade snail kite, wood stork, crested caracara and many species of wading and migratory birds. The area is also valued for its recreational fishing and hunting.

The Miccosukee Tribe has a perpetual lease to the western portion of WCA-3A and relies upon Everglades lands to support its culture, religion and economic survival. The management of water through WCA-3 plays a key role in restoring the condition of Everglades National Park and Cape Sable seaside sparrow habitat immediately downstream. For over a decade, constraints such as peat subsidence, poor water quality and barriers to flow such as the Tamiami Trail, and seemingly opposing species needs have created challenges for simultaneously improving all aspects through restoration.

Between April 2008 and July 2010, our biologists led a multi-disciplinary team of U.S. Fish and Wildlife Service staff who worked with academic experts and our partners at the U.S. Army Corps of Engineers, the South Florida Water Management District, the Florida Fish and Wildlife Conservation Commission, and Everglades National Park, to create a new approach to managing water levels in WCA-3A.

The resulting Multi-Species Transition Strategy for WCA-3A includes species-specific ranges (windows for water managers) which reflect water levels or depths, identified by species experts using the best available science, that are believed to provide optimal conditions for breeding and foraging.



A crested caracara looks for prey, credit: Kevan and Linda Sunderland, klshells@mindspring.com.

The strategy's "recommended seasonal range" was developed by the Service taking into consideration the needs of multiple species, inter-annual variability, spatial extent of WCA-3A and identified focal areas for certain species.

This new strategy is the cornerstone of an even larger effort, the Everglades Restoration Transition Plan, which originally arose as a modification to the Interim Operating Plan for the protection of the Cape Sable seaside sparrow, but now encompasses a broader array of species and habitats.

This science-based, multi-species strategy is being used in recurring interagency teleconferences. In their 2010 review of Everglades restoration progress, the National Academy of Science specifically recognized the value of this strategy and commended us for it.



Everglade snail kite with an apple snail, credit Kevan & Linda Sunderland, klshells@mindspring.com

Modified Protections for Gopher Tortoises and Loggerhead Turtles

Changes to the way loggerhead sea turtles and gopher tortoises are listed should help to better protect both species.

We joined with the National Oceanographic and Atmospheric Administration (NOAA) to issue a final rule on September 16, 2011 changing the listing of loggerhead sea turtles under the Endangered Species Act from a single threatened species to nine distinct population segments listed as either threatened or endangered.

Scientists believe this will help focus their sea turtle conservation efforts to the specific needs of the distinct populations. We share jurisdiction with NOAA for loggerhead sea turtles listed under the ESA.

This division of **loggerhead sea turtles** into nine distinct population segments will help us focus more on the individual threats turtles face in different areas. Wide-ranging species, such as the loggerhead, benefit from assessing and addressing threats on a regional scale. The listing of separate distinct population segments will help us better assess, monitor, and address threats, and evaluate conservation successes, on a regional scale.

Loggerhead sea turtles were listed as threatened throughout their range in 1978. In 2008, a biological review team of scientists from NOAA, FWS and the states of Florida and North Carolina identified nine biologically discrete and significant DPSs. Since then, NOAA and FWS have been evaluating threats to and the status of each of the nine DPSs, to determine if they should be listed as threatened or endangered.



A juvenile gopher tortoise chomps on some vegetation, credit: Vince Lamb.

Gopher tortoises east of Mobile Bay were added to the list of candidate species eligible for Endangered Species Act (ESA) protection. While candidate species receive no statutory protection under the ESA, inclusion on the candidate list promotes cooperative conservation efforts for these species.

We determined the gopher tortoise east of Mobile Bay is facing many of the same problems and challenges as the western population, which is already listed as threatened. We hope increased protection and conservation efforts in the next few years by private landowners and state and federal agencies in Alabama, Florida, Georgia, Louisiana, Mississippi and South Carolina can reduce those threats.

In making this determination, we completed a comprehensive review – known as a 12-month finding – and found sufficient scientific and commercial data to propose listing the species as threatened or endangered throughout its range. However, we're precluded from beginning work immediately on a listing proposal because its limited resources must be devoted to other, higher priority actions.



A loggerhead sea turtle returns to the Atlantic Ocean, credit: Vince Lamb.

However, we can provide technical assistance and competitive matching grants to private landowners, states and territories undertaking conservation efforts on behalf of candidate species. We can also work with interested landowners to develop Candidate Conservation Agreements.

These voluntary agreements allow citizens to manage their property in ways that benefit candidate species. These agreements also can be developed to provide regulatory certainty for landowners should the species become listed under the ESA.

Threats to the gopher tortoise include habitat loss, fragmentation and degradation, predation, inadequacy of regulatory mechanisms, and incompatible use of herbicides in forest management. Any future proposal to place the gopher tortoise in the eastern portion of its range on the federal list of threatened and endangered species will include a formal proposed rulemaking process with ample opportunity for public review and comment.

First Privately-Funded Wildlife Crossing Opens

A ground-breaking habitat conservation plan (HCP) for a 240-acre mixed use development in Collier County called City Gate paved the way to the completion of Florida's first privately-funded wildlife crossing in May 2011.

The HCP offers strategies to mitigate the impacts to endangered Florida panthers and red-cockaded woodpeckers (RCW) posed by City Gate. Under the terms of the HCP, the developers (850 NWN, LLC and CG II, LLC) agreed to:

- Substantially fund a study to identify wildlife crossing sites to reduce Florida panther vehicular mortality in Collier County;
- Build a privately-funded wildlife crossing along County Road 846 in the Okaloachoochee Slough (eastern rural Collier County), a location known for high Florida panther vehicular mortality;
- Acquire, manage for a five-year mitigation period and preserve in perpetuity 102 acres of Florida panther and occupied red-cockaded woodpecker habitat; and
- Restore 324 acres of Florida panther and red-cockaded woodpecker habitat in south Florida where five RCW recruitment clusters will be established.

The privately-funded wildlife crossing is the result of an unprecedented and creative public-private partnership. It shows what can happen when developers, conservation groups and government agencies work together. The county had no plans to modify this road, which has been very deadly for panthers. The crossing wouldn't have happened without the forging of creative partnerships that emerged from the HCP.



Wild turkeys use the underpass developed as the first privately funded wildlife crossing in Florida. Since turkeys are among the prey base for Florida panthers, it's likely that panthers will also use this underpass, too, credit Roger B. Rice.

The wildlife crossing uses a multi-plate metal arch culvert. The 7' high x 24' wide wildlife crossing has a dirt floor at surrounding-grade elevation. Fencing was installed to encourage wildlife (i.e. panther) movements through the wildlife crossing rather than avoid the structure and continue crossing the road through traffic. The fencing is standard 10' high wildlife-proof wire fence with outriggers.

Groups such as the Florida Wildlife Federation and Collier County Audubon Society, as well as agencies such as the Florida Fish and Wildlife Conservation Commission, the South Florida Water Management District and Collier County worked with us and the developers to coordinate this plan. Barron Collier Companies, owner of the conservation land on both sides of the road, provided essential cooperation for the installation of the wildlife crossing. In addition, Tom Logan of Breedlove, Dennis and Associates and Roy DeLotelle of DeLotelle and Guthrie, were instrumental in the success of the HCP.

This HCP provides so many benefits for Florida Panthers, red-cockaded woodpeckers and other wildlife. The developers' outreach efforts to the environmental community were exemplary. They worked hard to include them in the planning process and kept them in the loop on a regular basis.

The developers decided to work with the environmental groups and us early on because of the woodpeckers at the site. Later, they discovered the development could also pose potential impacts to Florida panthers. But that didn't deter them. The developers agreed to incorporate conservation and mitigation measures for Florida panther into their HCP.

The crossing is significant as private mitigation monies may well be the only source of future funds to build panther crossings needed on less-traveled roads not scheduled for widening or related improvements.

Recovery Efforts for Garrett's Mint – A Lake Wales Ridge Endemic Plant Species



Garrett's mint flower, credit USFWS/ Dave Bender.

The South Florida Ecological Services Field Office is partnering with two non-profit organizations, Archbold Biological Station (ABS) in Lake Placid and Bok Tower Gardens (BTG) in Lake Wales, to implement high priority conservation measures for a plant species only found in Central Florida — the endangered Garrett's mint.

Over the past couple of years, we surveyed three of the four known populations and embarked on an ambitious reintroduction program.

Garrett's mint is a woody mint known from only four occurrences on the Lake Wales Ridge. The ridge is a north-south oriented sandy upland that extends across five Central Florida counties. These ancient sand dunes are home to many endemic plants, reptiles, birds and arthropods.



Garrett's mint is an endangered plant species found in the scrub of central peninsular Florida, credit: USFWS/ Dave Bender.

Garrett's mint is protected at a single site, the Lake Wales Ridge National Wildlife Refuge (LWRNWR). Three other populations occur on private land and face an uncertain future. Eighty-five percent of scrub habitat on the Lake Wales Ridge has been lost to development and citrus production.

Our first objective was to document the status of Garrett's mint populations on private land which had not been surveyed in more than a decade. BTG contacted the land owners and were granted permission to survey three of the four populations and collect seeds and cuttings. Nearly 1,000 plants were counted at the private sites and another 4,000 plants were counted at LWRNWR. BTG is now propagating Garrett's mint. Seeds from each population have been sent for long-term storage at the National Center for Genetic Resources Preservation in Colorado.

Our second objective was initiating a reintroduction program for Garrett's mint. With Service funding and oversight, ABS implemented the first-ever translocation of Garrett's mint in August 2010. The initial attempt focused on augmenting the protected population at the Flamingo Villas unit of the LWRNWR, where there are three sub-populations.

The augmentation was designed as an experiment, combining different planting materials, microsites and fire histories to increase knowledge of this species' response to management, gap dynamics, dispersal ability and microsite relationships. Three types of planting material were used for the augmentation: seeds (4,000); greenhouse-grown seedlings (160); and greenhouse-grown stem cuttings (40). The experiment was conducted in 40 gaps within the oak-hickory scrub. Gaps were enhanced by removing shrubby vegetation within and adjacent to gaps and a gravity-fed drip-irrigation system delivers water to each plant and array of seeds.

ABS is currently collecting demographic data for transplants and seed germination. The plants have experienced 80 percent survival rates so far. We also documented 34 seedling recruits, suggesting that the population will expand. Monitoring will continue in the coming years. In addition, we are conducting habitat suitability assessments at protected sites to plan for a second reintroduction. Thanks to this partnership and the cooperation of private land owners, the future is looking more hopeful for Garrett's mint.

Garrett's mint is one of 35 federally protected plant species found in the 16-county region we cover.

Beach Renourishment Process Simplified

The completion and implementation of the Statewide Programmatic Biological Opinion (SPBO) in April 2011 enhanced the ability of counties and cities looking to renourish beaches across the State of Florida more efficiently.

Developed by our office in coordination with the North and Northwest Florida Ecological Services Offices, the SPBO consolidates permitting requirements and specifies them up front, which expedites the process involved with getting approval for beach renourishment projects that could affect imperiled species found in coastal areas across Florida.

With the new SPBO, both the U.S. Army Corps of Engineers (Corps) and the applicants have a much better idea of what's expected up front, which decreases the amount of back and forth between them and us and in turn, speeds up the permitting process.

Due to the increased frequency and sheer volume of beach nourishment projects in Florida, we and the Corps wanted to streamline the Section 7 consultation process. We met with the Corps, the Florida Fish and Wildlife Conservation Commission and the Florida Department of Environmental Protection to plan a strategy for developing and implementing a uniform statewide consultation for sand placement activities.



Workers use heavy equipment to replenish a Florida beach with sand. Thanks to a new streamlined and consolidated process developed by the Service and its partners, projects like this take much less time, while still providing all the necessary protections for threatened and endangered species, credit: USFWS/Jeff Howe.

Our efforts came to fruition in April 2011, when we completed the SPBO for the Corps planning and regulatory sand placement activities in Florida. This document analyzed the potential effects of those activities on the loggerhead, green, leatherback, hawksbill, and Kemp's ridley sea turtles, and the southeastern, Anastasia Island, Choctawhatchee, St. Andrews, and Perdido Key beach mice and their designated critical habitat. Proposed projects that "may affect" the piping plover or occur within piping plover critical habitat are not included in the SPBO and will be consulted on individually.

The shore protection activities covered in the SPBO include sand placement, sand placement as an associated authorization of sand extraction from the outer continental shelf by the Bureau of Ocean Energy Management, sand washed onto the beach from being placed in the swash zone, sand by-passing/back-passing,

operations and maintenance dredging of navigation channels with beach disposal, and groin and jetty repair or replacement.

The SPBO includes Corps Regulatory and Civil Works shore protection activities along the Atlantic and Gulf coasts of Florida, encompassing both the South Atlantic Jacksonville and South Atlantic Mobile Corps Districts. The SPBO consultation will be reviewed every five years or sooner if new information concerning the projects or protected species occurs. Re-initiation of formal consultation is also required 10 years after the issuance of this SPBO.

Partners Share Prestigious Coastal Conservation Award

The U.S. Fish and Wildlife Service and our partners across a four-county Florida coastal area formally received the nation's most prestigious coastal conservation award in a ceremony on March 10, 2011.

The 2010 Coastal America Partnership Award was presented to the Treasure Coast Cooperative Invasive Species Management Area Partnership at the St. Lucie Inlet Preserve Park by Eileen Sobeck, the Department of Interior's Deputy Assistant Secretary for Fish and Wildlife and Parks and Virginia Tippie, Director of the Coastal America Partnership. The Florida partners were recognized for efforts to fight invasive species. Before presenting the awards, Sobeck read a letter of congratulations from Secretary of the Interior Ken Salazar.

In 2008, the Service's Coastal Program funded a multi-year effort, currently totaling \$134,000, to remove *Scaevola taccada* and other invasive exotics in beach dune systems throughout Indian River, Martin, Palm Beach and St. Lucie counties on Florida's east coast.

Invasive plants are harmful to native ecosystems. They displace native plants, degrade or eliminate habitat for native wildlife, and also impact recreation, affect fire frequency, alter soil properties and decrease biodiversity.



Andy Flanner of the Florida Park Service leads USFWS's Debbie DeVore, DOI's Eileen Sobeck and others on a tour of St. Lucie Inlet Preserve State Park. He's showing them where invasive plants species were removed, credit: USFWS/Ken Warren.

The Treasure Coast partnership was established in 2007 to implement a comprehensive, cooperative approach across boundaries to address the threats of invasive species. More than a dozen active partners have provided technical expertise and coordination for on-the-ground habitat restoration. In addition to the counties and the Service, the partners include The Nature Conservancy, the Florida Park Service, the Treasure Coast Resource Conservation and Development Council and the University of Florida.

Ms. Tippie saluted the partners. "This is a striking example. You're a model for others across the country to emulate," she said.

Coastal America is a partnership of federal, state and local governments and private alliances dedicated to restoring and preserving the nation's coastlines. The group also praised the Treasure Coast partnership for its "innovative efforts to implement a comprehensive, cooperative approach" while protecting other natural resources.

Reintroduction of Key Tree Cactus



U.S. Fish and Wildlife Service botanist Dave Bender digs a hole for a Key tree cactus plant, credit USFWS/Dave Bender.

In partnership with Fairchild Botanical Gardens and Florida State Parks, we reintroduced 72 Key tree cactus plants to an area of higher elevation in the Florida Keys on July 25, 2012. This effort was part of an “interim solution” to help reverse alarming negative population trends for this highly endangered species.

The numbers for this species dramatically declined over the past decade or so...by as much as 90 percent.

That prompted the partners to find a site where a new population can hopefully be established — somewhat insulated from the threat of sea level rise. This is the first time we’ve tried reintroducing this species. The chosen site is a publicly protected site where Key tree cacti previously existed, but haven’t been seen in many years. Also, plants were propagated from a population on a nearby Key, so we believe they’re genetically close to the plants that once existed at the reintroduction site.



These Key tree cacti are among the 72 plants reintroduced to a protected area on one of the Florida Keys in July 2012, credit USFWS/Dave Bender.

Topographic data was used to identify higher sites in order to help protect the newly reintroduced plants from the threats of sea level rise and high tides, which deposit large amounts of salt into the soil.

Hurricanes and tropical storms also increase salinity levels in the soil. The areas with the highest mortality rates are the same areas with the highest levels of soil salinity. Another problem is poaching. There are those who collect and sell plants, especially cacti and orchids, for commercial purposes. We’re

not publicizing exactly where this new population is because we don’t want to give potential poachers a treasure map.

Representatives from the state and Fairchild Botanical Gardens will monitor the newly reintroduced plants at least monthly for the first year, and then on an annual basis. This new population takes us from seven to eight. As of July 2012, there are only 300 to 400 plants left in all of the Keys. We’re trying to create a new home for the Key tree cactus, as well as trying to buy some time, as we anticipate the impacts of sea level rise.

South Florida Ecological Services Office Species Information*

<i>Number</i>	<i>Common Name</i>	<i>Scientific Name</i>	<i>Critical Habitat</i>	<i>Status</i>
Mammals (except whales)				
1	Florida panther	<i>Puma (= Felis) concolor coryi</i>		E
2	Key deer	<i>Odocoileus virginianus clavium</i>		E
3	Key Largo cotton mouse	<i>Peromyscus gossypinus allapaticola</i>		E
4	Key Largo woodrat	<i>Neotoma floridana smalli</i>		E
5	Lower Keys marsh rabbit	<i>Sylvilagus palustris hefneri</i>		E
6	Rice rat	<i>Oryzomys palustris natator</i>	Critical habitat designated	E
7	Southeastern beach mouse	<i>Peromyscus polionotus niveiventris</i>		T
8	West Indian manatee	<i>Trichechus manatus</i>	Critical habitat designated	E
Birds				
9	Audubon's crested caracara	<i>Polyborus plancus audubonii</i>		T
10	Bachman's warbler	<i>Vermivora bachmani</i>		E
11	Cape Sable seaside sparrow	<i>Ammodramus maritimus mirabilis</i>	Critical habitat designated	E
12	Everglade snail kite	<i>Rostrhamus sociabilis plumbeus</i>	Critical habitat designated	E
13	Florida grasshopper sparrow	<i>Ammodramus savannarum floridanus</i>		E
14	Florida scrub-jay	<i>Aphelocoma coerulescens</i>		T
15	Ivory-billed woodpecker	<i>Campephilus principalis</i>		E
16	Kirtland's warbler	<i>Dendroica kirtlandii</i>		E
17	Piping plover	<i>Charadrius melodus</i>	Critical habitat designated	T
18	Red-cockaded woodpecker	<i>Picoides borealis</i>		E
19	Roseate tern	<i>Sterna dougallii dougallii</i>		T
20	Wood stork	<i>Mycteria americana</i>		E
Reptiles				
21	American crocodile	<i>Crocodylus acutus</i>	Critical habitat designated	T
22	Atlantic salt marsh snake	<i>Nerodia clarkii taeniata</i>		T
23	Bluetail mole skink	<i>Eumeces egregius lividus</i>		T
24	Eastern indigo snake	<i>Drymarchon corais couperi</i>		T
25	Green sea turtle	<i>Chelonia mydas</i>	Critical habitat designated	E
26	Hawksbill sea turtle	<i>Eretmochelys imbricata</i>		E
27	Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>		E
28	Leatherback sea turtle	<i>Dermochelys coriacea</i>		E
29	Loggerhead sea turtle	<i>Caretta caretta (NW Atlantic Ocean DPS)</i>		T
30	Sand skink	<i>Neoseps reynoldsi</i>		T
Invertebrates				
31	Miami blue butterfly	<i>Cyclargus thomasi bethunebakeri</i>		E
32	Schaus swallowtail butterfly	<i>Heracles aristodemus ponceanus</i>		E
33	Stock Island tree snail	<i>Orthalicus reses (not incl. nesodryas)</i>		T



A wood stork flies with nesting material in its beak, credit: ©Vince Lamb.

Number	Common Name	Scientific Name	Critical Habitat	Status
Plants				
34	Avon Park harebells	<i>Crotalaria avonensis</i>		E
35	Beach jacquemontia	<i>Jacquemontia reclinata</i>		E
36	Beautiful pawpaw	<i>Deeringothamnus pulchellus</i>		E
37	Britton's beargrass	<i>Nolina brittoniana</i>		E
38	Carter's mustard	<i>Warea carteri</i>		E
39	Crenulate lead-plant	<i>Amorpha crenulata</i>		E
40	Deltoid spurge	<i>Chamaesyce deltoidea</i> ssp. <i>deltoidea</i>		E
41	Florida bonamia	<i>Bonamia grandiflora</i>		T
42	Florida golden aster	<i>Chrysopsis floridana</i>		E
43	Florida perforate cladonia	<i>Cladonia perforata</i>		E
44	Florida ziziphus	<i>Ziziphus celata</i>		E
45	Four-petal pawpaw	<i>Asimina tetramera</i>		E
46	Fragrant prickly-apple	<i>Cereus eriophorus</i> var. <i>fragrans</i>		E
47	Garber's spurge	<i>Chamaesyce garberi</i>		T
48	Garrett's mint	<i>Dicerandra christmanii</i>		E
49	Highlands scrub hypericum	<i>Hypericum cumulicola</i>		E
50	Key tree-cactus	<i>Pilosocereus robinii</i>		E
51	Lakela's mint	<i>Dicerandra immaculata</i>		E
52	Lewton's polygala	<i>Polygala lewtonii</i>		E
53	Okeechobee gourd	<i>Cucurbita okeechobeensis</i> ssp. <i>okeechobeensis</i>		E
54	Papery whitlow-wort	<i>Paronychia chartacea</i>		T
55	Pigeon wings	<i>Clitoria fragrans</i>		T
56	Pygmy fringe-tree	<i>Chionanthus pygmaeus</i>		E
57	Sandlace	<i>Polygonella myriophylla</i>		E
58	Scrub blazingstar	<i>Liatris ohlingeræ</i>		E
59	Scrub buckwheat	<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>		T
60	Scrub lupine	<i>Lupinus aridorum</i>		E
61	Scrub mint	<i>Dicerandra frutescens</i>		E
62	Scrub plum	<i>Prunus geniculata</i>		E
63	Short-leaved rosemary	<i>Conradina brevifolia</i>		E
64	Small's milkpea	<i>Galactia smallii</i>		E
65	Snakeroot	<i>Eryngium cuneifolium</i>		E
66	Tiny polygala	<i>Polygala smallii</i>		E
67	Wide-leaf warea	<i>Warea amplexifolia</i>		E
68	Wireweed	<i>Polygonella basiramia</i>		E

*Does not include species for which National Marine Fisheries Service has sole jurisdiction;
E=Endangered; T=Threatened

(Current as of: 12-12-2011)

U.S. Fish & Wildlife Service

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U.S. Fish & Wildlife Service
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*Florida panther kittens,
credit David Shindle.*