



## Florida Panther Research, Management and Recovery Update

November 2016

Fish and Wildlife Research Institute

Division of Habitat and Species Conservation

Florida Fish and Wildlife Conservation Commission



Picture of GP232 at his release on Kissimmee Prairie State Park, 1/7/2015.

All pictures are MyFWC photos unless otherwise stated.

## Presentation Outline

- FWC Focus Areas and Budget
- Research
- Management
- Panther Recovery Implementation Team (PRIT)
- Dr. Erin Myers, USFWS



Photo Credit: Brian Garrett, SFWMD

## FWC Focus Areas for Panther Research and Management

- Focus on the breeding population in south Florida
- Minimize human-panther conflicts
- Restore habitat on public lands
- Work with FDOT to reduce panther road mortality
- Incentives for private landowners
- Align research with management



At their September 2015 meeting, the Commission approved a position statement that directed FWC staff to focus on the six panther conservation elements above to guide allocation of management and research resources. The Commission further requested that staff provide an update based on the Panther Recovery Implementation Team (PRIT) process.

## Florida Panther Research and Management Trust Fund FY 2016-17 Appropriations



FWC was appropriated \$1.3 million from the FL Panther Research and Management Trust Fund for this fiscal year (FY 2016-17).

The Division of Law Enforcement has \$349,923 in salary budget. This funds 5 positions within the Division.

The Division of Habitat and Species Conservation salary appropriation is \$234,289, and funds 3 FTEs.

Fish and Wildlife Research Institute salary is estimated to be \$245,447 and funds 3 FTEs.

## Federal Expenditures for Panthers



### US Fish and Wildlife Service

- Ecological Service FY 2015 panther expenditures (Recovery Tasks and Consultations): **\$500,000**
- FL Panther NWR budget for FY 2016 (includes Partners Project Funding): **\$1,300,000**



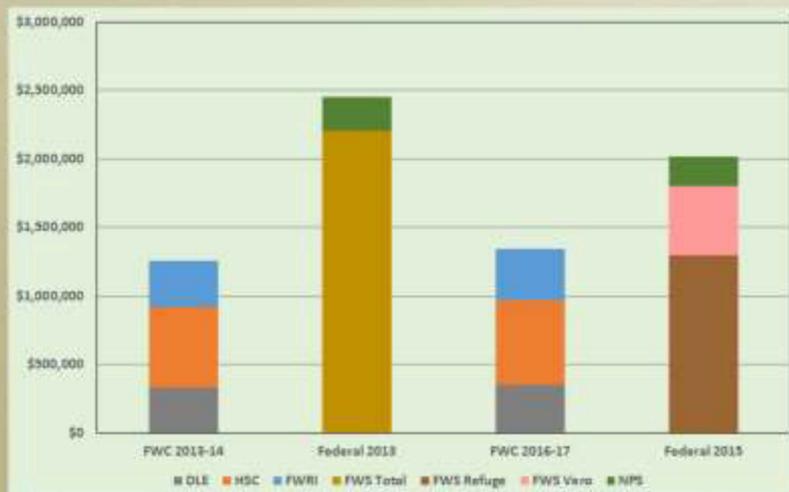
### National Park Service

- **\$213,000**



Figures provided by USFWS and NPS.

## Panther Expenditures



This graph compares expenditures from the Panther Trust Fund with federal expenditures related to panther conservation. We provided the information that constitutes the 2 bars on the left (2013/14 time frame) back at the June 2014 Commission meeting. The information for the 2 bars on the right, (2015-2017) is from the previous two slides. The federal expenditures between years are estimates and may not reflect the same assumptions. Therefore comparison between these time periods should be made with caution. Also, the federal expenditure include the cost of operating the Florida Panther Refuge as well as the Partners for Wildlife Program. The cost of operation of FWC managed lands that support panthers are not included and FWC land owner assistance costs are not included.

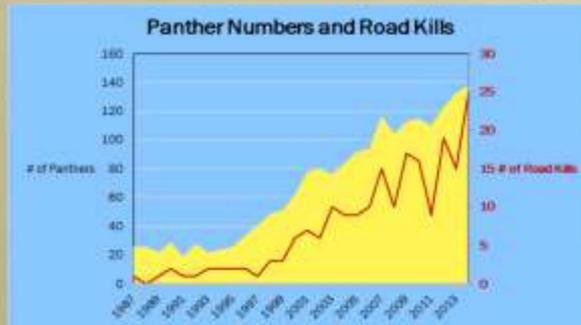
# Research



The next several slides focus on research.

## Panther Population Size: Density Approach

- Data show trend of increasing population
- Using density to estimate population size
- FWC : Web site indicates 100-180; Needs to be updated



It is clear from all data that the panther population has grown substantially since 1995. While that trend of population growth shows the success of our conservation efforts, a reliable, precise population estimate still has not been established. The FWC has relied on various indicators and best professional judgment to provide a possible population range rather than a true scientific estimate. That population has been updated several times but has been stated as between 100-180 for the last few years. Once the FWS provides an updated panther count for 2015, the FWC range can be updated again.

This approach relies on estimated density of a small sample area, and then applies that density as if it were the same across the panther range. There are a few problem with this. First, wildlife is not typically found at the same density across habitat types and habitats of unequally quality. Secondly, the size of the area that you multiply the density by will effect the population number.

## Where to Estimate Panther Populations: Comparison of Panther Habitat Maps



Kautz et. al, 2006  
2.27 million acres



Frakes et. al, 2015  
1.38 million acres

In determining a population estimate the area covered is important. The population estimate is only for the breeding range of the Florida panther. Breeding range is currently considered to be suitable habitat south of the Caloosahatchee River. While there are a few panthers outside of this range in other parts of Florida, they are dispersing males and do not contribute to the breeding population due to the absence of females.

Not all land south of the Caloosahatchee river is panther habitat. While panthers sometimes are found in close to people, neighborhoods, towns, and developed areas are not considered habitat. There are other areas that are either agricultural, disturbed, or natural but lack the necessary components that constitute panther habitat.

In 2006 a published paper (Kautz et al) estimated an area in south Florida that they determined based on the information at that time represented panther habitat. That map is shown on the left and amounts to approximately 2.27 million acres.

A more recent published model (Frakes et. al 2015) provides new insights into what constitutes panther habitat. That model is shown above on the right. The new model removes significant areas that are typically too wet or open to constitute suitable panther habitat. The area of the Frakes habitat model is 1.38 million acres.

FWC and FWS are working together to develop a hybrid approach that would provide the best current estimate of occupied panther habitat in south Florida. That area will be used in calculating the panther population estimate.

## Panther Population Size: Roadkill Approach

- Published as techniques paper in 2015
- 269 adults (143-509)
- Wide confidence interval reduces utility
- Merits additional work and study



In 2015, a peer reviewed paper described a technique for generating a scientific population estimate for panthers based on the proportion of the total number of panthers killed by vehicle collisions that were previously captured and radio collared. Additional variables used in this technique include road density and traffic volume. This published paper was intended as a methodology paper to see if this technique holds promise, but was not intended to represent a final population estimate. The *roadkill technique* estimated a panther population size for 2012 at 269 adults and subadults ( $\geq 1$  year old) with a margin of error between 143 and 509. Scientists and managers that have studied panthers agree that the lower bound of this estimate is consistent with other indicators assessed via long-term monitoring and research. However, the upper bound of the range is not consistent with puma densities (the number of puma in an area of given size) reported by studies in other parts of their range. Scientific staff with FWC and FWS lack confidence in this estimate and agree that the very large variance reduce its usefulness. Nevertheless, this novel approach merits further study and possible refinement.

# Goal: Joint Agency Statement on Florida Panther Population Status

- Provide a unified assessment that scientists from both agencies support
- Updated with 2015 data
- Address:
  - Reasons for assessing population
  - Challenges
  - Panther age classes
  - Research to get a *scientific population estimate*.



## FWC Focus area: Breeding population in south Florida.

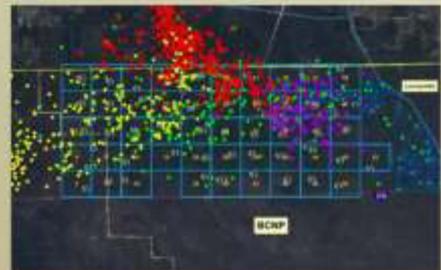
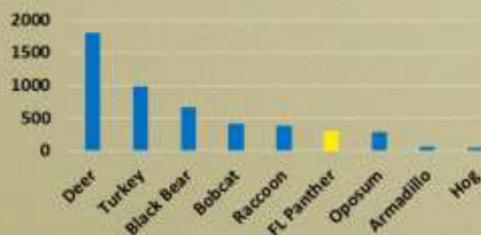
FWC and FWS have been working to develop an outreach document on Florida panther population size range. Once finalized it will be posted to each agency web page and is intended to give a clear statement of the latest thinking in regards to panther population size. It will explain why a population estimate is important, the challenges associated with obtaining an estimate for panthers, what panthers are counted and where. Since 2014 the FWC has used the range of 100-180 adult and sub-adult panthers in south Florida. This needs to be updated and use the latest data on panther density and also incorporate the latest information of the size of panther breeding range.

## Research: Camera Study

- Assessing use of camera traps to provide statistically robust *scientific population estimates*
  - Project on public land completed
  - Density estimates within expected range
  - Currently focused on private land
  - Captures data on other species



BCNP-Addlands Unique Photo Events

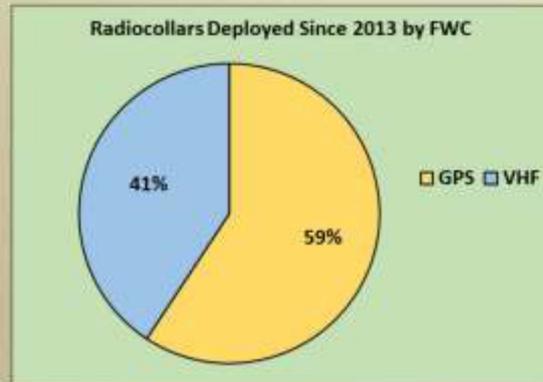


### FWC Focus area: Align research with management

We believe that the camera grid methodology is promising and could provide better estimates of density along with correlations of habitat types that would allow it to be used more effectively across the range to produce more precise and accurate population estimates. In 2014, FWC and collaborator at USGS initiated a camera trap study in South Florida to determine if this technique held promise to derive a scientifically robust population estimate for FL panthers that could supplant the use of minimum count data to derive the current population range. Analyses on phase I of this study, which involved camera grids deployed on the Addition Lands of BCNP and the FPNWR, was completed in summer 2015. We told you last year that it was our intention to conduct a second test of this methodology on private ranch land. Unfortunately, the record winter high water event caused us to scrub last winter's capture season for this study. This year, weather permitting, we plan to capture panthers on the Immokalee Ranch and set up a camera grid to begin to get panther density estimates on private ranch land.

## Align Research with Management: Telemetry

- Both VHF and GPS collars are important tools
- Type of collar depends on research needs
- Staff continues to test new technology



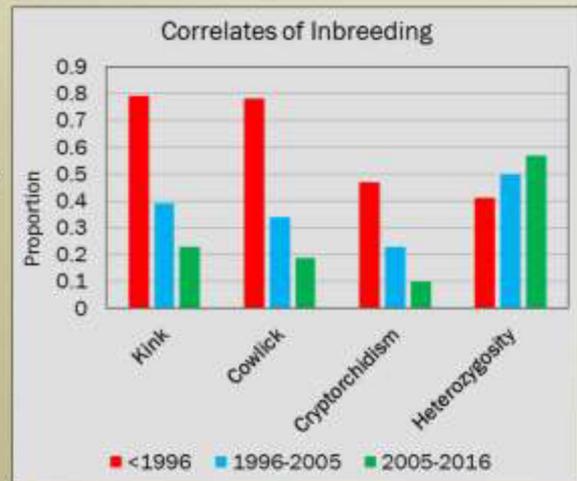
### **FWC Focus area: Align research with management**

Previous presentations have provided information of the pros and cons of using VHF radio transmitters vs. GPS collars. Since 2013 FWC have deployed more GPS than traditional VHF collars. But VHF collars are still important for cases where we desire the transmitter life to be more than 1 year. In other cases, the more frequent and around the clock capabilities of GPS collars are the tool of choice. As the battery life performance of GPS collars continues to improve we anticipate using that technology more and more.

## Research: Genetics

### Florida Panther Genetics

- 35 years of genetic and morphometric data showed:
  - Consistent declines in attributes associated with inbreeding depression >20 years after genetic restoration
  - Heterozygosity levels sustained above pre-1996 levels



### FWC Focus areas: Breeding Population in south Florida

Recently, a comprehensive review of morphometric and genetic data was initiated to assess the endurance of the benefits of genetic restoration on the fitness of the population. This includes a comparison of cohorts of panthers born  $\leq 1995$ , those born in the first 10 years post introgression (1996-2005), and those born in the most recent decade. Most all of the morphological correlates of inbreeding have continued to decline since 1995 (kink, cowlick, crypto). Heterozygosity remains significantly higher than it was prior to genetic restoration. In summary, these results demonstrate that the panther population likely continues to reap the benefits accrued from genetic restoration, a management initiative that basically mimicked gene flow that use to historically occur between panthers and other puma populations prior to their isolation in south Florida.

# Research: South Florida Deer Study

## Why study deer in south Florida?

- Concerns over reported deer population declines
- Need for better monitoring tool
- Changes in the landscape



## Research Objectives

- Understand the effects of hydrology, hunting and predation on deer population dynamics
- Develop a camera monitoring study for large-scale investigation and monitoring of deer populations



## **FWC Focus areas: Align research with management; breeding population in south Florida**

Deer are panthers primary food source. While panthers consume many types of meat, research has shown that deer makes up 23-29% of their diet.

Deer are also an important species for recreational hunting. Knowing more about deer in south Florida and the impacts of panthers, hunting, and water levels on deer will be valuable to inform management dissensions.

## Research: South Florida Deer Study

**Study Areas:** FL Panther National Wildlife Refuge, Bear Island and North Addition Land Units, BCNP

**Participants:** FWC, UGA, Jones Center, USFWS, NPS

### Progress/Update:

- 200 deer captured and fitted with GPS
- 350,000 GPS locations
- 180 remote sensing cameras
- 291,000 images cataloged by species
- Capture 60 more deer January 2017



The South FL Deer Study began in 2014 with the overall goal of better understanding of deer populations in South FL today. One of the main objectives is to understand how, for example, hydrology and predation impact deer population dynamics, including survival, habitat use, and movement. Another main objective of the project is to develop a monitoring system using remote sensing cameras that allow us to obtain scientifically sound population estimates. This is key for long term monitoring and management of deer in South FL, and elsewhere.

The project is multi-agency project, with University of Georgia and FWC leading. Funding is largely provided by FWC, with some funding and substantial in-kind services provided by FWS and NPS.

This on-going project is currently in the data collection phase, with significant amount of data being collected. To date, the researchers have collared over 200 deer which has yielded approximately 350,000 locations. In addition, they are monitoring 180 remote sensing cameras and have to date processed and cataloged close to 300,000 images of wildlife. This is the largest white-tailed deer project ever conducted in Florida and is among the largest in the country.

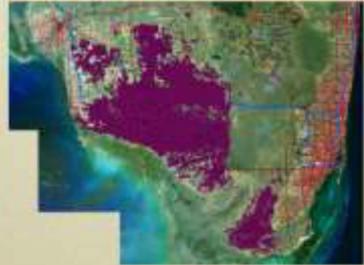
## Need preliminary data on deer mortality

# Management

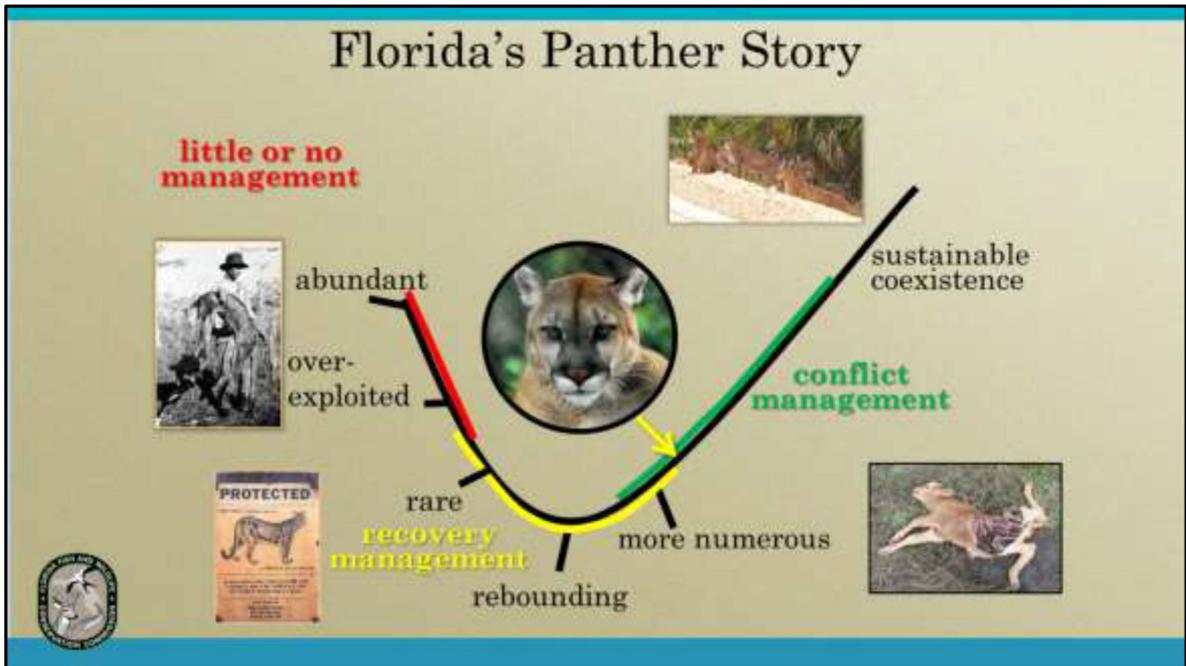
A guide to living with  
**Florida  
Panthers**



MyFWC.com/panthers



The next slides focus on management.



Prior to 1950, Florida panthers were unprotected

Florida first protected panthers in 1950 when the Commission listed them as a game species

In 1958, the Commission fully protected the Florida panther from take.

Listed as Endangered under ESA and included in the Act in 1973.

Unlike some species, it is not expected that the panther will ever increase in number to the level that once existed.

## Management: Panther/Human Conflicts

Number of Depredation Events (Pets, Hobby Livestock and Ranch Losses)



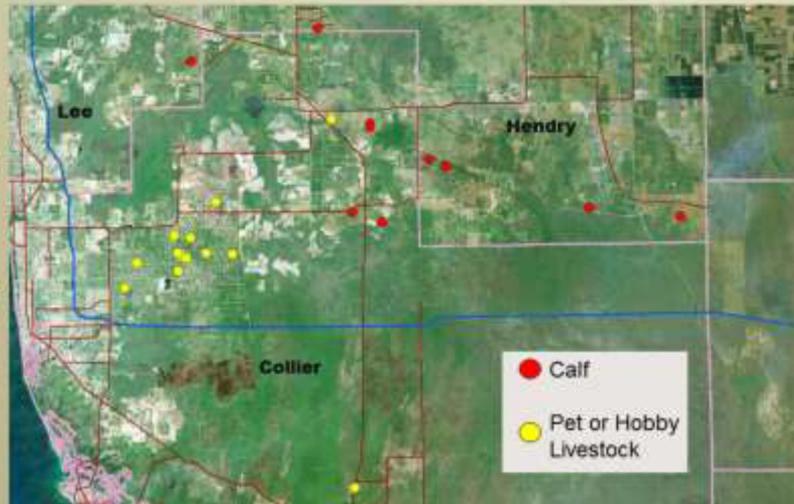
### **FWC priority focus area: Minimize Conflicts**

This bar graph shows the number of depredation incidents that have occurred each fiscal year since FY03-04. Also of note is that the data have not been collected equally over the years. For example, the data include a IFAS calf study in 2011-2013 which likely resulted in an increased awareness of depredations during those years. Typically, because of the size of ranches and the type of habitat, depredated calves are not found. Another factor may be an increased awareness by homeowners regarding who to report depredations to. We have stressed the importance of reporting these cases as part of our public outreach. Regardless of the possible affect of reporting bias, the fact remains that during the past 11 years, the 6 highest years on record were the most recent 6 years. Accordingly, investigation of depredation reports has become a much more significant part of the FWC panther team's job duties and take greater resources.

## Management: Depredations FY 2015-16

### Depredation Events:

- 10 calf (all fatal)
- 13 pet/hobby livestock
  - 16 goats killed
  - 10 sheep killed
  - 4 dog depredations



### **FWC priority focus area: Minimize Conflicts**

A panther depredation is the term used when a panther kills either a pet or domestic livestock. This map shows the locations for depredations for FY2015-16 (ending 30 June 2016). The yellow dots are cases of depredation of a pet, or “hobby” livestock. The red dots represent depredations of calves from cattle ranches. There were 23 depredation events investigated last fiscal year and a total of 34 different domesticated animals were either killed, injured or reported missing.

## Management: Non-Government Assistance for Citizens Impacted by Depredations

- Conservancy of Southwest Florida
  - Program established in 2011
  - Paid \$5870 to hobby livestock keepers
  - Paid \$9880 to cattle operations with < 300 head
- Defenders of Wildlife
  - Program established in 2007
  - Paid nearly \$8500 in pen build cost sharing



### FWC priority focus areas: Minimize Conflicts; Incentives for private landowners

There are programs run by non-government organizations intended to help offset a portion of the cost of depredations to livestock owners and pet owners.

The Conservancy of Southwest Florida program began in 2011 as a pilot program and continues today (<https://www.conservancy.org/panther-compensation-program>). Payments covered a portion of the value of the lost animal, a portion of the cost of pens and other deterrents. This program only focuses on small farms, and undoubtedly covers only a portion of the cattle lost from panthers during this time period.

Defenders of Wildlife established a cost-share program for predator resistant pen builds in 2007 and to date has paid nearly \$8500 for these pen builds. Over the last year, the pace of the program has increased with \$4100 in cost-sharing payments. Defenders part-time coexistence coordinator and Panther Citizens Assistance Taskforce volunteers attend festivals and fairs (some of which attract up to 50,000 visitors) and give presentations about living safely with panthers. Defenders has organized door-to-door community outreach days in key rural neighborhoods to distribute information to up to 2,000 households, helped design and pay for "Florida is Panther Country" magnets and other outreach materials, and given talks on living responsibly with panthers to school children and adults (e.g. neighborhood associations).

## Management: Efforts to Reduce Depredations

- Canvassed neighborhoods
- "Preventing Conflict with Wildlife" workshop
- Distribute Depredation Reports
- "WIMS" data base
- Hiring part-time Outreach Specialist



Public safety is paramount importance to FWC and depredation reports provide us with clear evidence that panthers are in suburban neighborhoods. We believe it is important that people in these areas are made aware when a depredation occurs, so they can take steps to protect their livestock or pets and also to remind them of safety precaution to take when living in panther country. To that end, we send out via email "Panther depredation updates." to those people who have signed up via our Gov delivery system of notifications. Currently over 8000 people receive a notification that a depredation has occurred and to check our web site for the details.

Depredation information can be viewed at: <http://www.floridapanthernet.org/index.php/pulse/>

People can protect pets and other backyard animals from panthers and other predators by following the advice available at:

[http://www.floridapanthernet.org/index.php/handbook/LivingInPantherCountry/.](http://www.floridapanthernet.org/index.php/handbook/LivingInPantherCountry/)"

A community workshop focused on preventing wildlife conflicts was held on 21 November 2015 in lieu of the Florida Panther Festival. The workshop, organized by wildlife and conservation agencies, NGOs, and the Collier 4H program, was held at the UF/IFAS Collier County Extension Office in Golden Gate Estates and attracted a targeted audience of about 50 people. Hands-on demonstrations provided attendees with practical experience to resolve and prevent their own wildlife conflict issues.

WIMS = Wildlife Incident Management System; cloud based database that holds calls from the public about human-wildlife interactions (ranging from benign sightings to animals killed by wildlife); in addition to calls from the public it also contains biological data on individual animals handled by FWC (e.g., bear found killed by a vehicle collision, panther kitten caught as part of workup); programs using the system: Bears, Panthers, WIM (non-natives, natives, pet amnesty); staff now has the majority of human-wildlife interactions in one central database and this allows for patterns and trends to be identified and potentially a more pro-active approach to some

species where we had  
to be more reactive in  
the past.

## Human-Panther Conflict at Farmworker Village Immokalee, FL

- January 2016: Numerous sightings, encounters, depredations
  - Attracted by feral cats and raccoon
  - Brazilian pepper provided cover for panther
- Outreach efforts conducted at Village
- April 12, 2016: Panther captured and quarantined
- May 25, 2016: Released in southern Big Cypress
- July 2016: Resumed behavior of staying in residential areas at Seminole Reservation, depredations
- July 21, 2016: Permanently removed from wild



4/12/2016  
Captured

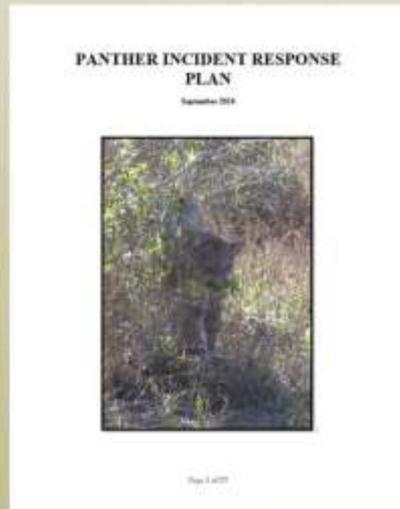


In January 2016, FWC was first contacted by a resident of Farmworker Village, a Collier County Housing Authority complex in Immokalee, Florida, regarding a panther encounter she had in her backyard. The resident shared a video taken a few days prior to the encounter that clearly showed a panther was present earlier. Beginning in March, a pattern of frequent sightings and depredations of feral house cats in the community began. Trail cameras deployed by FWC showed at least 2 different panthers using the Village with a young male panther being the more frequent visitor. FWC worked with the Collier Housing Authority to deliver Living with Panthers/Bears to the residents in the form of printed material and town hall meetings. Panther conflicts continued leading and based on the behavior of the panther and the totality of all factors, a decision was made by the Interagency Panther Team to the capture and removal of the offending panther. This panther was held in quarantine to test for feline leukemia and after testing negative, was released into southern Big Cypress National Preserve about 50 miles from the capture site. Within 2 months post-release, the panther began frequenting a residential community on the Big Cypress Seminole Indian Reservation and a decision was made to permanently remove the panther from the wild.

FWC and FWS continued to work with the Collier Housing Authority to control the feral cats, reduce trash attractants for raccoons and bears and to remove Brazilian pepper from the perimeter of the Village. This vegetation was used by the panther as resting cover that was in close proximity to residences.

## Panther Incident Response Plan

- FWC's plan deals specifically with how we will respond to a panther attack on a person.
- This plan provides guidance for FWC response and documentation of a report that **physical contact has occurred between a wild panther and a person** which resulted in a person being injured or killed by a wild panther.
- Borrowed heavily from approved Bear Incident Response Plan



Because of the increasing probabilities of panther/people interactions, an interagency Florida Panther Responses Plan was developed in 2008. Details of this interagency plan have been provided at previous Commission updates. FWC staff use this plan in dealing with reports of panther depredations, encounters, or other possible conflicts. However, FWC also needs a detailed agency plan to deal with potential future incidents. HSC, LE and FWRI staff have developed a DRAFT Panther Incident Response Plan to provide guidance in the event of a panther attack on a person. This plan was developed from the approved Bear Incident Response Plan. The only significant differences between the two plans relates to the Federal protections afforded panthers under the Endangered Species Act. As a result, this plan includes coordination with the USFWS.

# Management: Habitats, Hydrology and Restoration

- Hydrologic Requirements position paper (2013) provides biologically based guidance for water management in the Everglades and Francis S. Taylor Wildlife Management Areas
- Used as guidance during permit review processes
- Used as scientific support for decision processes
  - Referenced as agency input for an emergency deviation from the water control plan after record breaking rainfall during the 2016 dry season
- Effective communication tool
  - Position paper and criteria disseminated with State and Federal agency leadership and scientific staff



## POSITION PAPER: HYDROLOGIC REQUIREMENTS FOR THE EVERGLADES AND FRANCIS S. TAYLOR WILDLIFE MANAGEMENT AREA FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION November 28, 2013

### Purpose

A central goal of the Comprehensive Everglades Restoration Plan (CERP) is "to capture fresh water that now flows unused in the ocean and the Gulf and redirect it to areas that need it most. Most of the water is to be devoted to environmental restoration, reviving a dying ecosystem." The Florida Fish and Wildlife Conservation Commission (FWC) believes the guidelines currently being considered for management of water in and through the ecosystem may result in high and low water conditions that have an impact on fish and wildlife populations, habitats, and diversity, particularly certain state and federally listed imperiled species. Such concerns would be inconsistent with the goal of reviving a dying ecosystem, however, modifications are feasible to ensure water management guidelines are consistent with CERP goals. The purpose of this paper is to provide biologically based guidance for managing water levels in the Everglades to ensure restoration of fish and wildlife populations, habitats, and diversity such that CERP goals can be fully realized.

### Executive Summary

The FWC fully supports the stated goals of CERP. It is the position of the FWC that water levels in the Central Everglades should be managed in a manner that maintains and restores native fish and wildlife populations, habitats and diversity. To achieve this outcome FWC asserts that water levels in the Water Conservation Areas (WCA) should not exceed two feet in depth at the height of the wet season with a rise treatment and recession rates not exceeding 0.25 feet per week. The FWC has reviewed the regulations submitted to the U.S. Army Corps of Engineers for WCA 5A by its predecessor agency, the Florida Game and Fresh Water Fish Commission in 1961, and has reviewed the U.S. Fish and Wildlife Service's draft High-Species Treatment Strategy for Water Conservation Area 5A to limit this position on a biologically based water management strategy. Together, these two proposals explicitly take into account the hydrologic behaviors and limitations of a variety of species and communities that are characteristic of the Everglades. Other sources supporting this position include research on the relationship of water levels and the adverse, acute, and chronic impacts resulting from wetting beds (five of which are listed as a Species of Special Concern), and over three decades of telemetry data on movements of Florida panthers in the Everglades and Big Cypress region, which consistently indicates that white-tailed deer can access, to achieve, this position and findings in this paper have been informed by six decades of FWC staff experience in managing the Everglades and Francis S. Taylor Wildlife Management Area (TWMA).

The position paper provides biologically based guidance for managing water levels in the Everglades to ensure restoration of fish and wildlife populations, habitats, and diversity so that the Comprehensive Everglades Restoration Plan goals can be fully realized.

Staff are working to incorporate similar analyses as part of the ongoing planning efforts under the Western Everglades Restoration Project (WERP) which was launched by the state and federal partners in restoration in August 2016.

As we get closer to achieving the quality, quantity, timing and distribution (QQTd) goals of restoration, this large wildlife management area may support increased panther use.

## Management: Habitats, Hydrology and Restoration



### **FWC Priority Focus area: Restore habitat on public lands**

The animation above illustrates how the utilization of WCA 3A by radio-tagged panthers has changed over time.

1981-1989 – Radio telemetry data illustrates panther use of WCA 3A.

1990-1999 – Radio tagged panthers continue to utilize WCA 3A; however, many of the telemetry points are along levees.

2000-2010 – Radio Telemetry data suggests that panthers have decreased use of WCA 3A. It is interesting to note that during this same time period panther numbers, including radio-tagged individuals increased significantly.

2010 through 2012 – Telemetry data continues to illustrate low use of western WCA 3A.

## 2015-16 Dry Season High Water Event

- Historic rainfall between November 2015 and January 2016
  - January rainfall was 582% above average
  - Most since record-keeping began in 1932
- High waters prompted EWMA closure
- Emergency Deviation from water control plan *for the purposes of providing high water relief in Water Conservation Area 3A...*
- High water impacted wading bird nesting success, white tailed deer recruitment, the hunting season, and panther capture plans



[Click - Video link](#)



Rainfall in the South Florida region from November 2015 through January 2016 was the wettest since records began in 1932. January 2016 alone was the wettest January on record since record keeping began in 1932. Rainfall over the Everglades Wildlife Management Area's (Water Conservation Area 3A; WCA-3A) in January 2016 was 582% of an average January's rainfall. The extreme rainfall event has been recorded by the local water management district as a 1 in 100 year rainfall event.

By late January, the average water stage in the northern sections of the EWMA had exceeded the 11.6 NGVD high water closure criteria and special regulations were enacted by Executive Order on January 30, 2016 and remained in effect for 90 days. These special regulations close access to the interior portions of the EWMA and restrict recreational uses for the protection of wildlife and wildlife habitats. This high water event has been particularly impactful to area wildlife due to its occurrence during the dry season and the onset of the breeding season for many wildlife species

We recorded a panther video from FWC camera trap was collected on at Hackberry Head, in Water Conservation Area 3A South (red star on map). This detection along with panther telemetry locations from the 1980's show that everglades ecosystems do have the capacity to support some panther use. If we can "get the water right" in these areas, we will increase the availability of panther habitat in south Florida which will be beneficial to panther conservation.

## Management: Panther Habitat on WMA's

### Dinner Island Ranch WMA

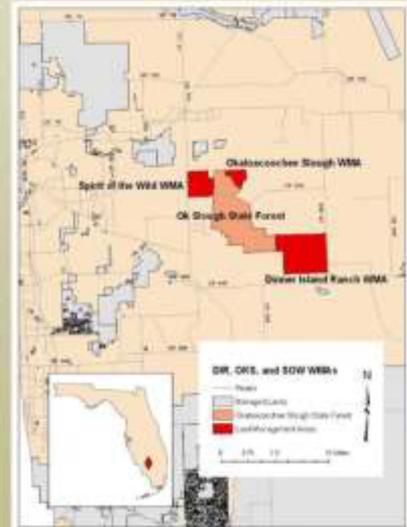
- Established a SMA for panthers
- Reforestation plan initiated in 2015
- Exotic vegetation treatment and fire annually

### Spirit of the Wild WMA

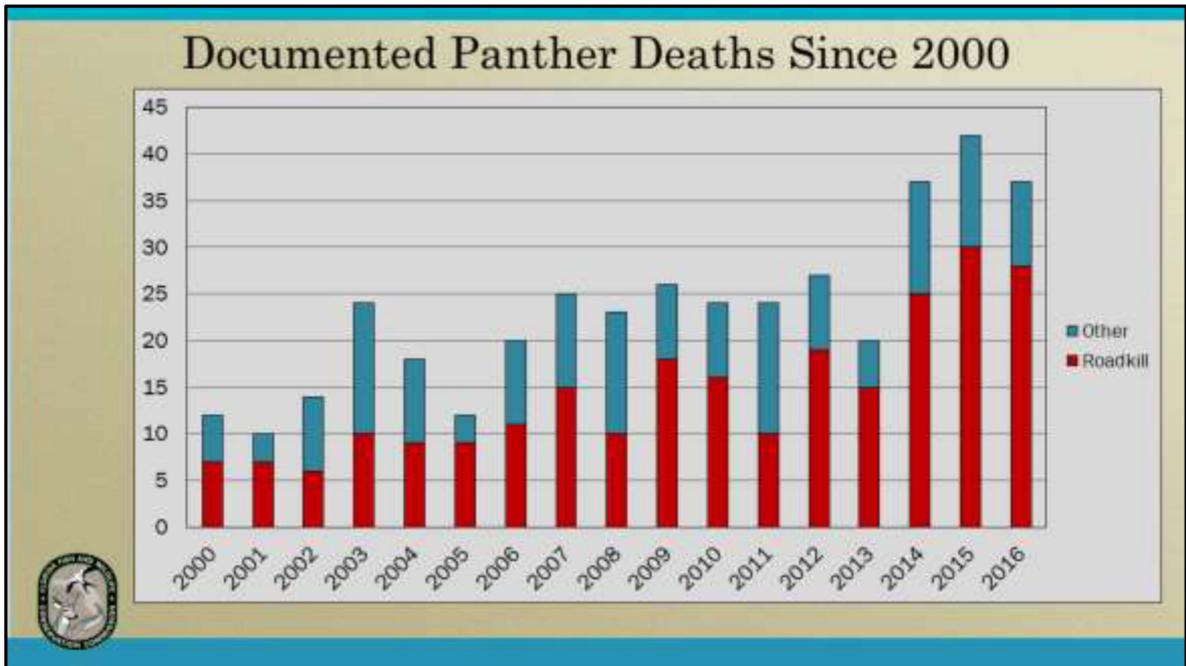
- Tree/shrub plantings
- Saw palmetto planting
- Exotic vegetation treatment and fire annually

### Okaloacoochee Slough WMA

- Establishing 4-5 year pine flatwoods burn rotation
- Mechanical vegetation treatment to reduce tree mortality during burns



These 3 WMA's are in Hendry County and are the only WMA's within the panther's breeding range that are solely managed by FWC. All three areas were managed as rangelands for cattle prior to acquisition by the State. Pastures are being restored to native vegetation including one area of ground cover restoration.



**FWC Focus areas: Breeding Population in south Florida, reduce panther road mortality.**

Each year FWC monitors the number of known panther deaths. The above graph shows this mortality trend. A common question from the public is how could a population of about 200 panthers withstand these numbers of deaths? The answer is in the panthers reproductive potential. For example, a population of 180 adult and sub adult panther could be expect to produced approximately 125 kittens each year. Our research indicates that many kittens that are born do not make it to adult breeding age and that kitten mortality appears to increase as the population gets larger. Nevertheless the relatively small size of the panther population can in fact produced enough new panthers to compensate for the currently known mortality. However, is not much margin for error. If reproduction success decreases, or if deaths increases greatly, then the panther population will likely begin to decline.

## Management: Actions to Reduce Panther-Vehicle Collisions

- FDOT improved 4 passageways on I-75 in Collier County
- FDOT plans a 9-mile extension for panther exclusion fence on I-75
- PRIT Transportation Sub-team finalizing panther collision hotspot map
- FWC and FWS identified gaps in existing fencing on SR 29 and I-75 that FDOT promptly corrected



### **FWC priority focus area: Work with FDOT to reduce road mortality.**

Road mortality is a leading cause of death for panthers. FWC has continued to work with FDOT to reduce panther mortalities. Much of the work on this is facilitated and enhanced by a sub-team of the PRIT. FDOT created 4 paths at 2 bridge sites on I-75 in Collier County. The pathways run through the boulder field that stabilize the canal banks. Panthers are known to use existing bridges as wildlife crossings but they have also been documented avoiding walking through the boulder fields. This avoidance forced panthers to venture onto the roadway. New fencing and these pathways will ensure that panthers will not be subjected to vehicle collisions. The new fencing will extend for 9 miles from the Naples toll booth eastward to where the panther fence currently ends and 15 panther deaths were recorded in this area. Construction is scheduled to begin in November 2016 and should be completed in mid-2017. The PRIT Transportation subteam utilized locations of panther-vehicle collisions to map collision hotspots on Florida roads. The subteam envisions this map serving as a screening tool that planners can use to see if there are any panther-highway issues within a project's footprint. FWC and FWS work continually with FDOT to identify any gaps or other problems with existing wildlife fencing that need to be fixed.

## Panther Recovery Implementation Team

- Established August 2013
- Representation: FWS, FWC, NPS, ranching interests, private land owner interests, hunting interests, environmental protection interests
- Purpose: to assist the Service with implementing the 2008 Florida Panther Recovery Plan
- Created sub-teams
  - Transportation Sub-team
  - Monitoring Sub-team
  - Recovery Criteria Sub-team

*Additional value: Provides a forum that improves communication among agencies and stakeholders and allows for dialog and sharing of diverse perspectives.*



The Panther Recovery Implementation team was established in 2013. The team consists of members representing the Service, National Park Service, Florida Fish and Wildlife Conservation Commission (FWC), and other stakeholders, with a mandate to facilitate those recovery activities most needed to progress toward the recovery goals identified in the Recovery Plan. The Implementation Team draws upon technical experts both within and outside of their respective organizations to develop the detailed plans and methods to accomplish actions of the Recovery Plan.

Team Leader: Larry Williams, U.S. Fish and Wildlife Service  
Team Liaison: David Shindle, U.S. Fish and Wildlife Service  
Robin Boughton, Florida Fish and Wildlife Conservation Commission  
Ron Clark, Big Cypress National Preserve  
Elizabeth Fleming, Defenders of Wildlife  
Kipp Frohlich, Florida Fish and Wildlife Conservation Commission  
Kevin Godsea, U.S. Fish and Wildlife Service  
Todd Hallman, Florida Sportsmen's Conservation Association; Florida Sportsmen Trust Group  
Tom Jones, Barron Collier Companies  
Gene Lollis, Archbold Biological Station

PRIT has established three sub teams.

Transportation sub-team has:

- Created panther-vehicle collision "hotspots" map
- Worked with FDOT to revise Wildlife Crossing Guidelines
- Working on compendium of existing wildlife crossings

The Monitoring sub-team was instrumental in the development of the joint agency position on panther population.

The Recovery Criteria sub-team is developing a framework for potential new recovery criteria.

## PRIT Focus Areas

- Public outreach and stakeholder engagement
- Focus on landowner incentives
  - Developed PES and help secured funding
  - Livestock Indemnity Program
  - Development of draft incentive concepts



One of the purposes of PRIT is to provide a way that agencies can communicate panther updates and information with stakeholders and hear their concerns. PRIT has organized and held a number of public meetings specifically for homeowners, ranchers, landowners, and hunters. The top priority for PRIT since its inception has been landowner issue. PRIT developed a concept for payment for Ecosystem Services (PES) and secured funding for a pilot program from NRCS. PRIT has also worked with FSA on LIP program and developed draft concepts for Safe Harbor Agreements and Experimental Non-essential Populations.

## Future Priorities/Activities or PRIT

- Improve and expand land owner incentives
- Develop new or additional recovery criteria
- Review panther taxonomy



Landowner incentives and compensation for impacts has been a priority of PRIT, but more progress and expanded programs are needed. A sub-team of PRIT is exploring possible new criteria for assessing progress toward recovery. This sub-team will report on its findings and make a recommendation to PRIT in 2017. Panthers are currently listed as a sub species of puma. However there is some disagreement on this within the scientific community. The USFWS plans to contract with scientist to fully explore current conclusions regarding panther taxonomy.

Dr. Erin Myers, USFWS, will present information on Payment for Ecosystem Service (PES) programs and Livestock Indemnity Programs (LIP).



Photo by: Brian Garrett, SFWMD

