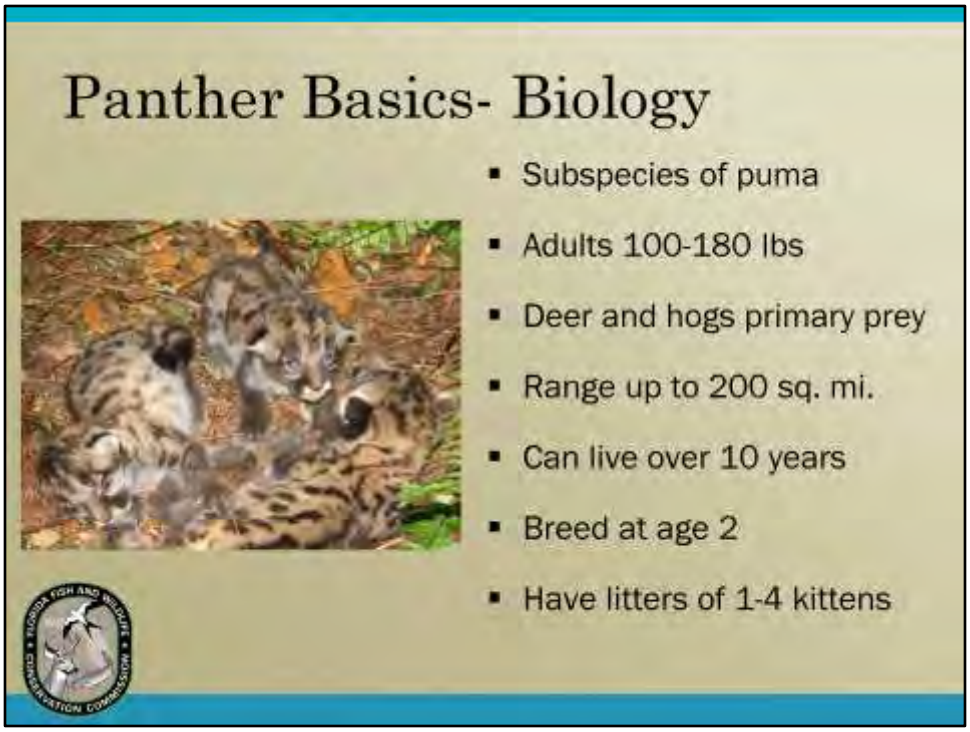
At the September 2011 Commission meeting, an overview of panthers and the FWC panther program was presented.

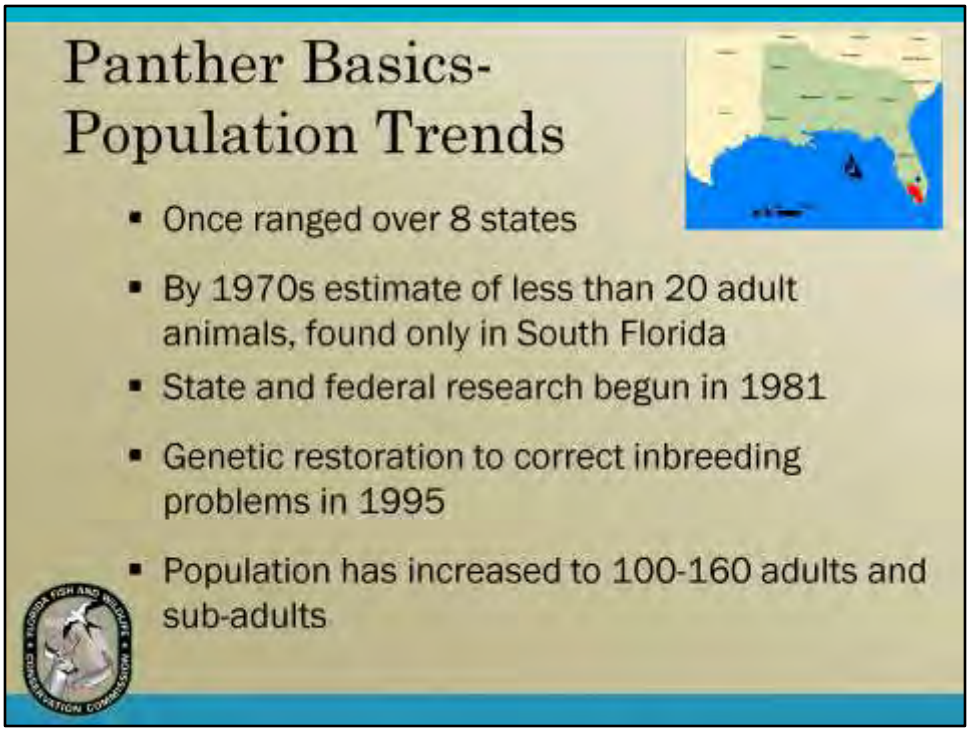
That presentation was broad and was intended to provide a general overview.

Today's presentation is intended to provide more detailed information regarding a few critical aspects of the panther conservation program, with a look towards the future.



The species that we call the Florida Panther (*Puma concolor coryi*) is a sub-species of puma, also called cougars, or mountain lions.
They are tawny in color (never black), are over 6 feet in length and can weigh over 150 lbs. Males are about one third larger than females. They are carnivores that eat a wide variety of prey but deer and hogs are the most common prey species in most areas. They have very large ranges; females around 80 sq. miles and males up to 200 sq. miles (or 128,000 acres). They are territorial and males will fight and kill other males. Occasionally, male panthers will kill females.

They can live over 18 years but the average lifespan is 10-12 years. They can breed at two-three years of age, gestation is about three months and they have 1-4 kittens. Kittens are spotted when born.

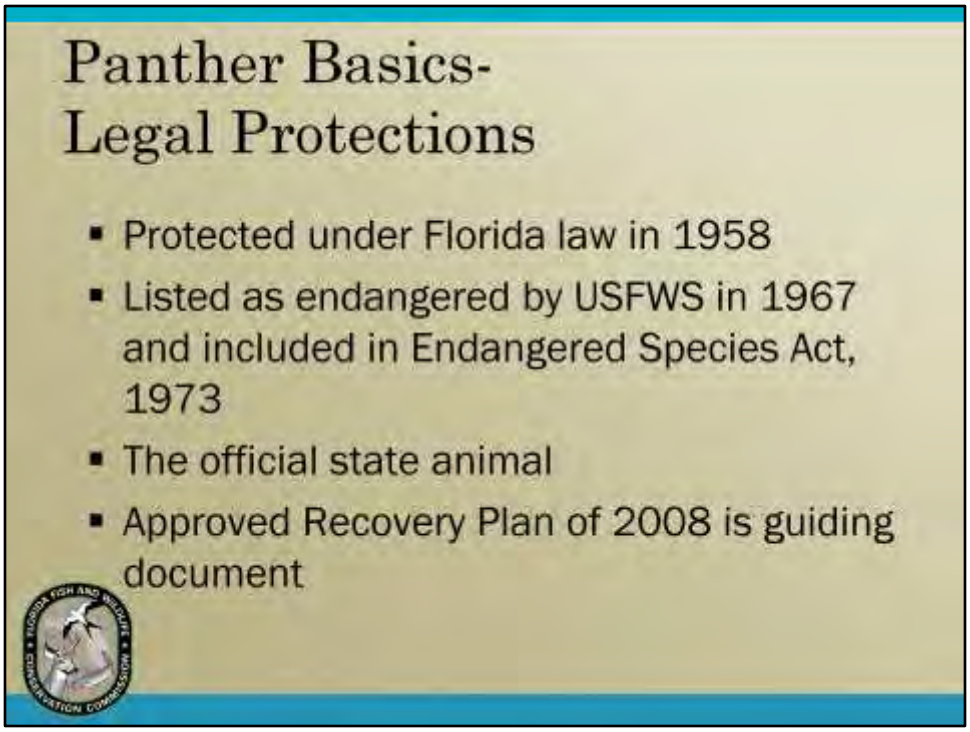


The sub species called the Florida panther once ranged over 8 states. Long-term persecution and hunting reduced the numbers down to perhaps less than 20 adults by the 1970s, all in extreme south Florida. The Game and Fresh Water Fish Commission (which became the Fish and Wildlife Conservation Commission), the U.S. Fish and Wildlife Service (USFWS) and the National Park Service began research efforts in 1981.

A genetic restoration plan was implemented in 1995 to address inbreeding. Genetic vigor was improved and the population has been growing.

Today, the FWC believes there are 100-160 adult and sub-adult panthers in South Florida. (Sub-adults are young panthers that have left their mothers but have not yet become sexually reproductive or established home ranges)

Today, males range into Central and North Florida, but since the 1970s, we have no evidence of a breeding population north of the Caloosahatchee River or Lake Okeechobee.



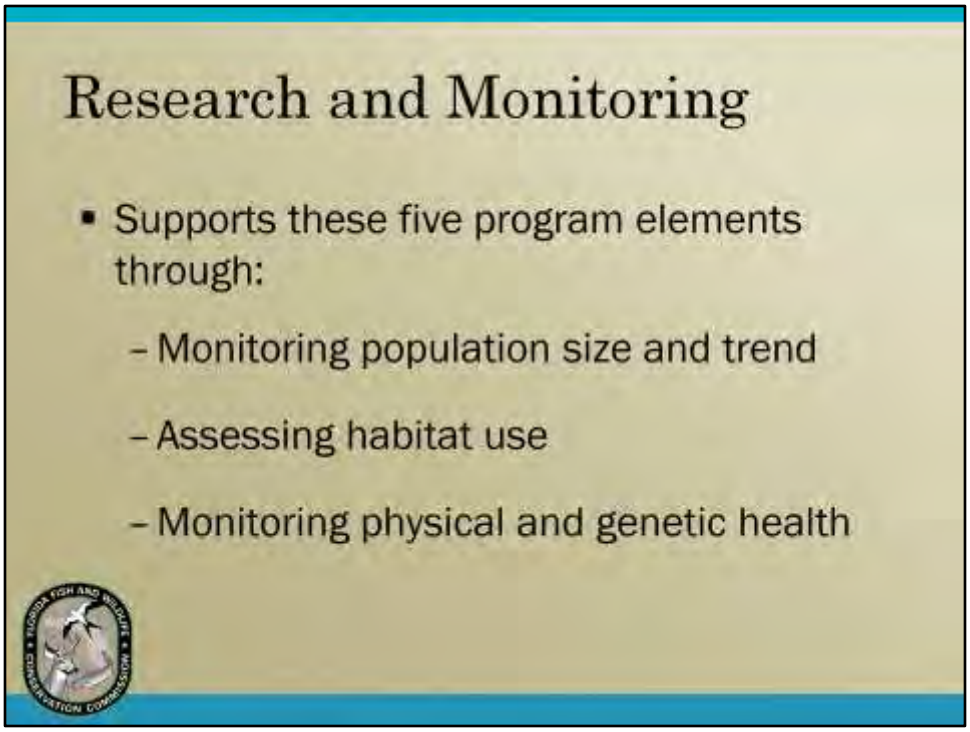
The panther was completely protected under state law in 1958. It was first listed as endangered by the USFWS in 1967 and was included under the Endangered Species Act as amended in 1973.

It is one of Florida's most popular species: it was selected by Florida's school children as the official state animal, and the Protect the Panther license plate is the 5th most popular specialty tag with over 57,000 plates in circulation.

The guiding document for recovery of the panther is the third revision of the Florida Panther Recovery Plan, approved in 2008.

While the FWC undertakes many tasks and specific activities as part of our responsibilities to conserve panthers, these can generally be put into five broad management categories:

1) Reduce human-caused deaths: examples include coordination of roadway wildlife crossings and enforcement of reduced nighttime speed limits.
2) Monitoring and improving panther health including genetic health: includes inoculations for disease such as feline leukemia, de-worming kittens, and checking genetic diversity.
3) Maintain and manage habitat: examples include identification of key habitat for long term preservation; habitat management of state-owned wildlife management areas to increase prey availability and to conserve patches of habitat types that are preferred for panther dens.
4) Address human-panther conflicts: for example investigation of depredations and providing property owners with technical assistance to reduce conflicts.
5) Monitoring population to assess progress towards recovery: this includes such things as surveys for panther signs conducted by the FWC houndsman which are used to help monitor trends, documenting and analyzing mortality, assessing changes in the extent of occupied panther range.



The Fish and Wildlife Research Institute supports the five program elements on the previous slide through monitoring panther population size and population trends, assessing habitat use to support habitat management decisions, and monitoring the physical and genetic health of the cats.

Monitoring the population trend is important for tracking the health and status of the population.

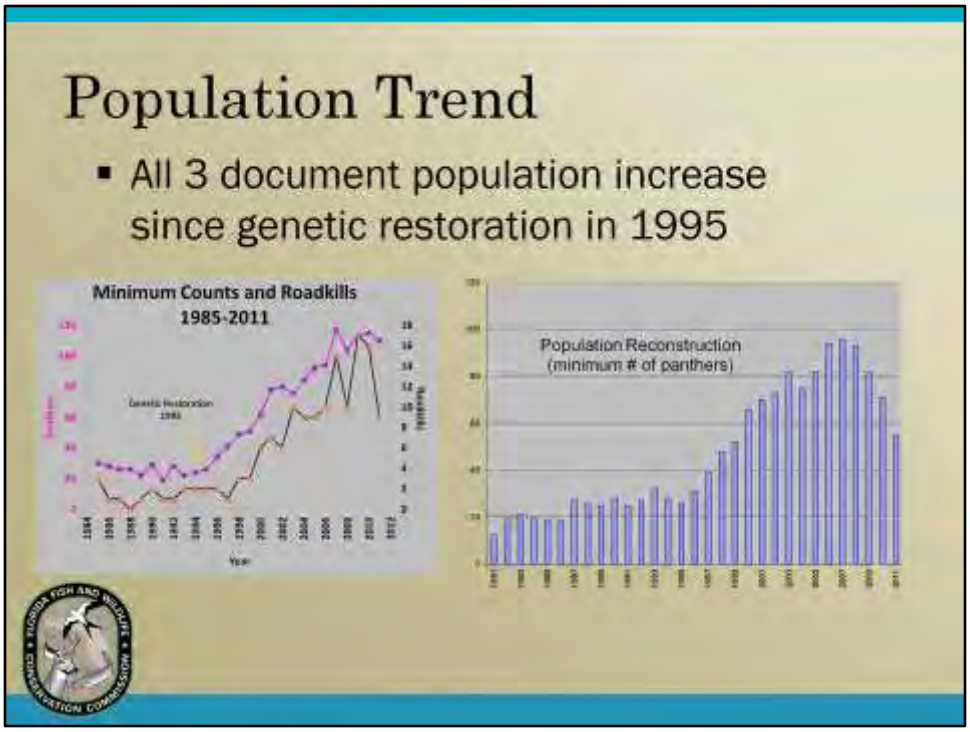
Assessing population size allows us to monitor progress toward achieving federal recovery plan goals.

We can monitor population trends through three sources of information:

Minimum counts – determining the minimum number known to be alive in a given year based on radio-collared cats and panther sign observed in the field.

Population reconstruction – determining the number known to have been alive in the past based on cats captured and found dead and their age at death or capture.

Road mortality – assuming cat movements and vehicle use remain relatively constant from year to year, the number of panthers found dead on roads can provide an index to population trends.



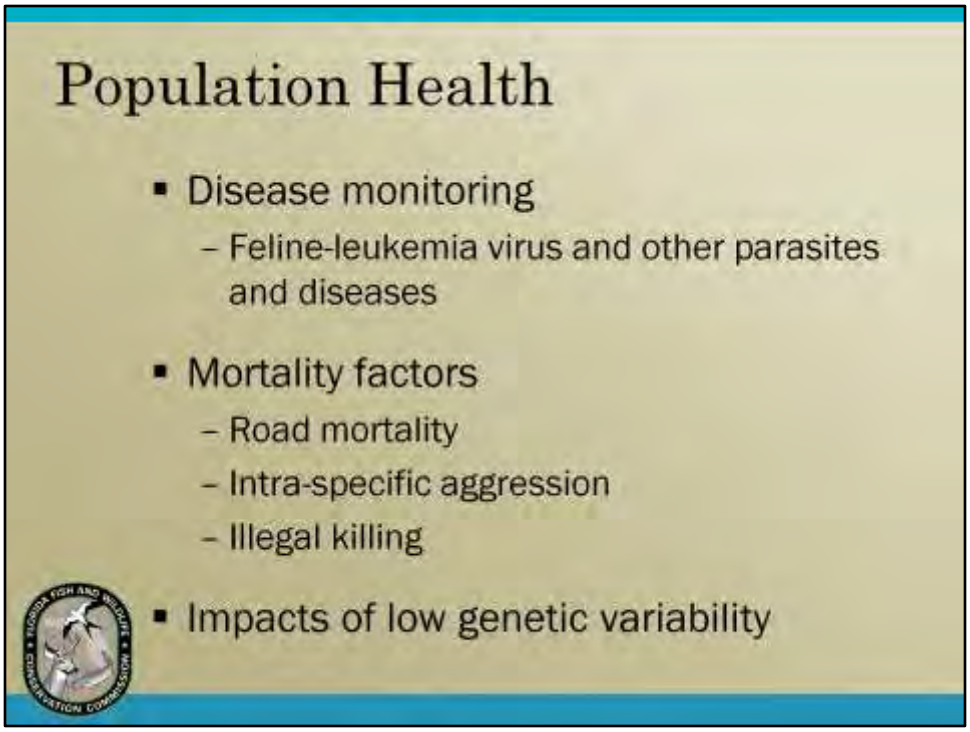
All three of these trend indicators indicate a population increase since genetic restoration in 1995. (The apparent decline in panther numbers in the last three or four years in the graph on the right [blue bars] is an artifact of the time-lag in the population reconstruction method. Panthers encountered in the future will add to the totals in the last few bars depending on their age at capture or death.)

A fourth means of determining population trend is through demographic analysis and population modeling. This entails measuring kitten production, recruitment to the adult population, and adult and sub-adult survivorship, and using those measures in statistical models to determine direction and rate of change in the population. Given current birth and mortality rates, the population has the long-term capacity to grow at approximately 5 percent per year assuming other conditions (habitat quantity/quality, prey availability, etc.) remain constant.

Federal recovery plan goals for down-listing the Florida panther from endangered to threatened are based on target population sizes (see slide 15). Given the size of the panther range in South Florida and the species' low population density and large individual home ranges, getting an accurate estimate of numbers is difficult. We currently estimate the range-wide population to be between 100 and 160 adults and sub-adults. This estimate is based on the minimum number known to be alive determined from radio-collared cats and panther sign observed in the core of their range and subsequent extrapolation to other areas where breeding panthers occur.

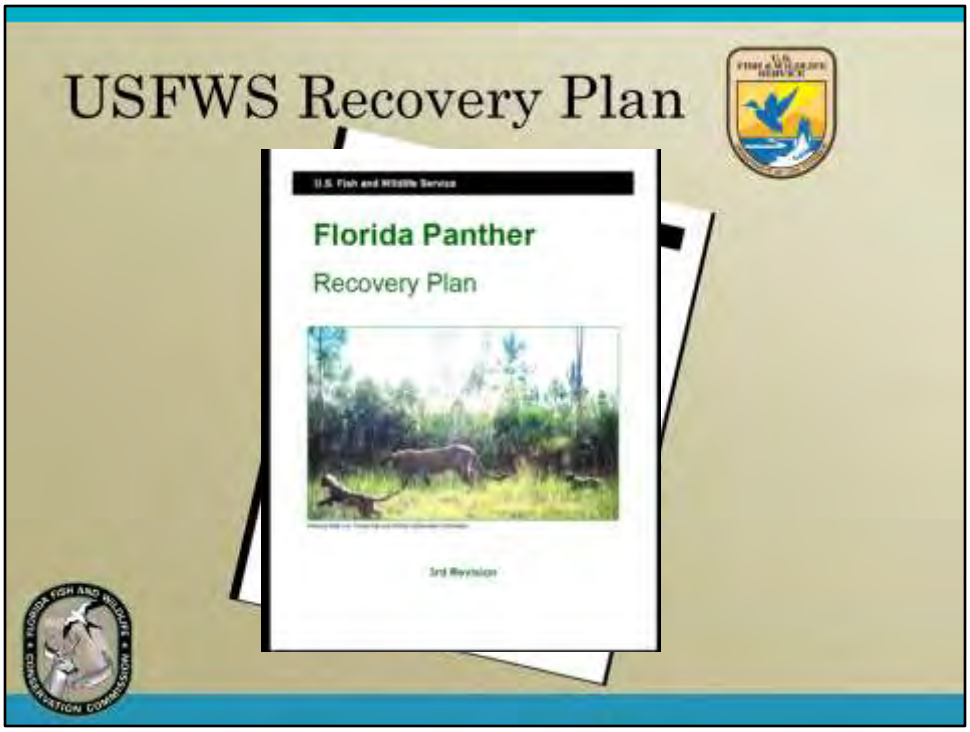
We are investigating two other methods for estimating panther numbers, both of which rely on ratios of marked and unmarked cats in a sample:
• the ratio of collared/un-collared cats in photos taken by remotely triggered cameras, and
• the ratio of cats previously captured and marked to those not marked in cats found dead on roads
• both of these methods have sample-size and logistical hurdles that need to be overcome.

Data from our capture and radio-tracking work, supplemented with GPS collar data, have allowed us to determine characteristics of habitat used by panthers throughout the 24-hour period. Radio-tracking data have also been used to assess the impacts of off-road vehicles on habitat use and to document the panther's range expansion. Our current efforts are emphasizing habitat use at the urban/wildland interface, assessing the potential for females to move north of the Caloosahatchee River, and panther use of private lands and predator/prey relationships.



Our capture and radio-tracking work has also allowed us to monitor diseases, causes of mortality, and physical effects of low genetic variability. As a result of this work, we were able to detect an outbreak of feline-leukemia virus and control it before it had major population impacts. Frequent tracking allows us to detect mortalities in time to determine cause of death, allowing us to assess impacts of road mortality, intra-specific aggression, and illegal killing on the population. Capturing cats enables us to measure genetic diversity in the population and tell when inbreeding is becoming a problem. Long-term monitoring, particularly of females, can also enable us to track reproductive success over time. Poor reproduction can be a product of genetic inbreeding.

Continuing our radio-tracking work will allow us to meet the needs identified above. Frequent flights to locate radio-collared cats is particularly important for locating dens to monitor kittens, detecting mortalities in time to determine cause of death, and determining predation rates and prey species. In addition, we are continuing to evaluate the potential for GPS collars to replace VHF radio-collars. GPS has the significant advantage of recording locations frequently throughout the day and night and with greater precision than radio-collars. They also allow retrieval of data from the ground, which would eliminate the need for our biologists to continue dangerous, low-level flying. Although GPS collars are useful for answering certain questions, to date the GPS technology available has not proven to have the reliability and longevity required to meet all our needs.



The plan, which was approved in 2008, was developed by the USFWS with participation of state agencies, including the FWC, conservation stakeholder groups, and development interests. Once the plan was approved, the team was disbanded.

The recovery goal is to achieve long-term viability of the Florida panther to a point where it can be reclassified from endangered to threatened, and then removed from the Federal List of endangered and threatened species.

The recovery plan establishes numeric recovery criteria. In order to reclassify the panther from endangered to threatened, the plan calls for two sub-populations of 240 adults and sub-adults, for a period of at least 12 years. To remove the panther entirely from the list (delist) the plan calls for three sub-populations of 240 adults and sub-adults for a period of at least 12 years.

The target of 240 was set based on a published population viability analysis that indicates a population of 240 panthers would be required to provide 95% probability that the population would persist for the next 100 years.

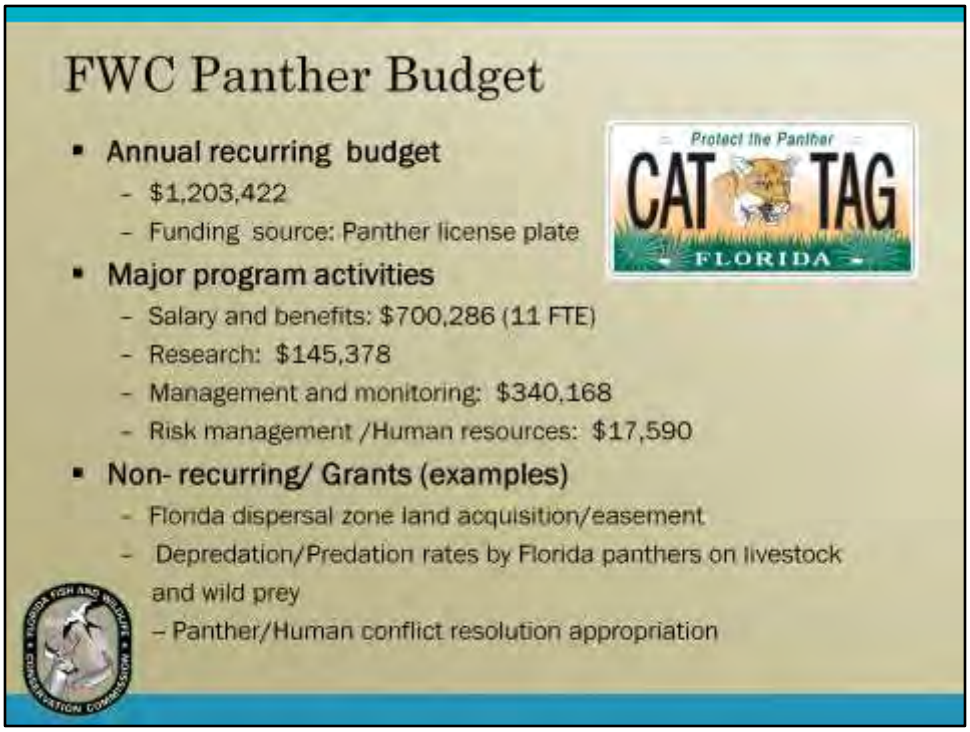
Panther conservation and recovery relies heavily on Federal-state partnerships. In South Florida federal lands such as Everglades National Park, Big Cypress National Preserve and the USFWS Panther Refuge provide a contiguous block of protected habitat nearly 1 million acres in size. Big Cypress staff have an active panther research program that involves radio tracking panthers on portions of these federally managed lands. The USFWS also has a panther recovery coordinator based out of the Vero Beach field office. This field office coordinates the federal review of proposed land use changes to assess possible impacts on panthers, they take a leadership role in the development of Habitat Conservation Plans for panthers and they are active in the acquisition of essential panther habitat.

FWC also works closely with other state agencies including Florida Department of Environmental Protection, Florida Department of Transportation, and Florida Department of Agriculture and Consumer Services. FWC also works in partnerships with non-governmental organizations, environmental advocacy groups, sportsman's groups, private land owners, and agricultural and development interests.

The FWC works closely with federal partners to meet both long-term and short-terms goals.

Cooperation and collaboration are essential in dealing with human-panther interactions. To address this increasing concern, an interagency Florida Panther Response Plan was developed in 2008. The plan creates a unified approach to human-panther interactions and created a Response Team and an Oversight Committee that includes Regional Directors for both the National Park and Fish and Wildlife Services, the FWC Executive Director, Superintendents of Everglades Park and Big Cypress Preserve, and the Manager of the Panther Refuge. Each year the agencies work together to distribute the Interagency Florida Panther Response Team Annual Report.

The FWC, USFWS and NPS meet annually to coordinate the winter capture season. The FWC and NPS work cooperatively to ensure that telemetry data is collected as efficiently as possible. FWC and NPS both collect genetic samples that are entered into the master data base. Federal agents and FWC officers work collaboratively to investigate cases of suspicious panther mortalities.



For fiscal year 2012-13, the Legislature appropriated $1,203,422 in recurring funds for panther conservation. This funding comes from the Florida Panther Research and Management Trust Fund – which is funded entirely through the voluntary sales of panther license plates.

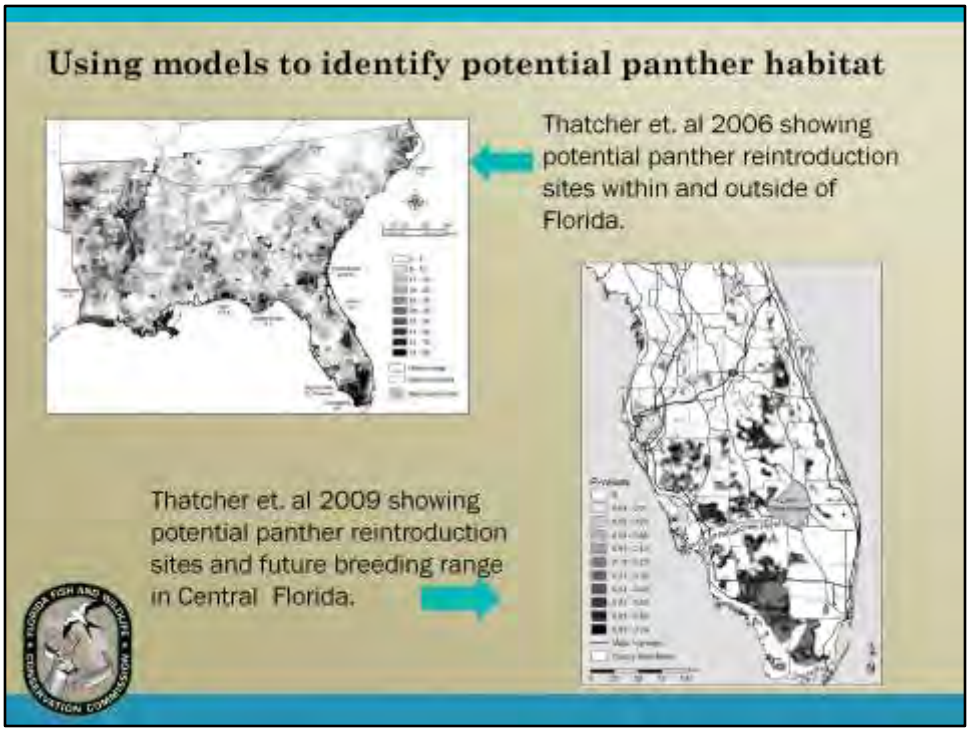
Reoccurring program elements include salaries (11 FTEs). After salaries, the three largest single items are: the contract for year-round houndsmen and tracking services ($82,000); flights to support the telemetry research and monitoring ($69,000); and, the rent of the Naples Field Station ($42,000). Other expenses include all operational cost of supplies; fuel; replacement and repair of equipment; and, several smaller contracts.

Non-recurring funding varies from year to year. Recent examples include:
• $1,548,966 from the USFWS (FY 2011-12) to secure vital habitat known as the panther dispersal zone near the Caloosahatchee River
• $95,000 grant from USFWS to study panther prey selection on ranch lands (three-year grant over 2011-12 to September2014)
• FY 2012-13 Legislature appropriated $401,800 non-recurring from the Panther Trust Fund to focus on panther conflict issues and improve population assessment capabilities.

Given the impressive population growth of panthers that has occurred in South Florida, and keeping the Recovery Plan's interim and long-term goals in mind, it is apparent that the next steps in panther recovery should focus on panther range expansion.

Panthers once ranged over all of Florida and into seven other states. An important component of recovering this species is to expand its breeding range back into areas that were occupied historically. This will allow for total population growth beyond the carrying capacity of the land in South Florida. In addition, having a wider breeding range provides greater insurance against catastrophic events or risk from disease outbreaks.

Males currently are found in Central and North Florida, but we have not had proof of breeding north of the Caloosahatchee River since we began studying panthers.

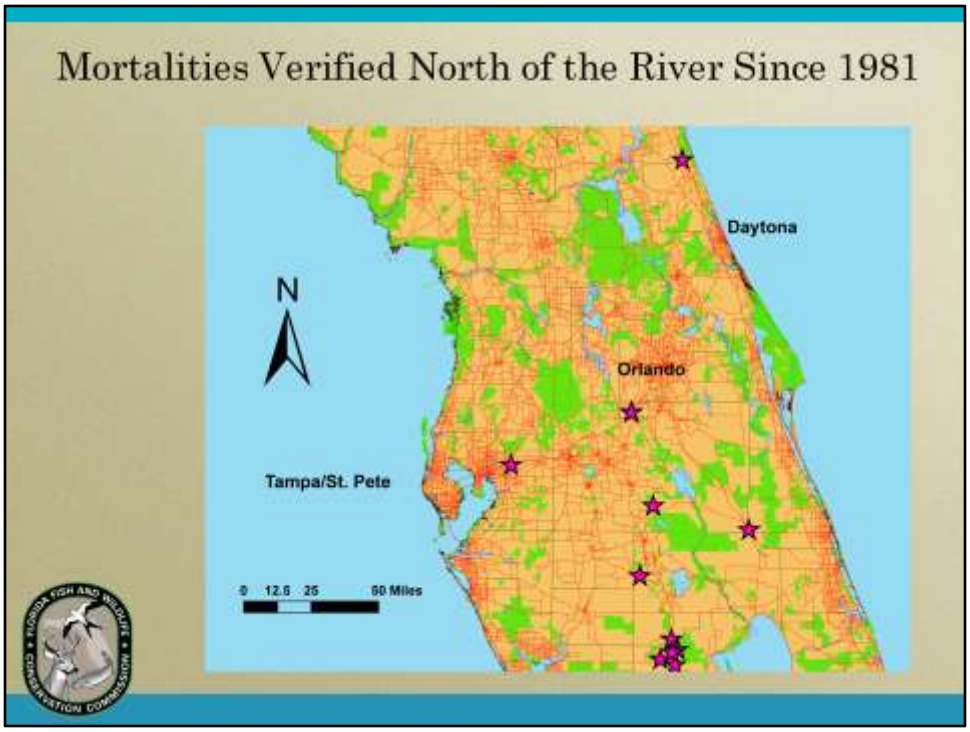


A number of scientists and managers have been looking at the possibility of panther range expansion. Two published papers (Thatcher et. al. 2006 and Thatcher et. al. 2009) looked at a number of factors such as distance from roads, patch size, vegetation cover, and panther home range sizes, and developed models that showed potential reintroduction sites both within Florida and outside the state. Interestingly, some of the sites rated the highest outside of Florida are in Arkansas. Within Central Florida, Thatcher et. al. 2009 indicated that areas including Avon Park, Babcock Webb, Duette Park, and Fisheating Creek may all provide some limited, although disconnected, habitat. Based on their model they suggest that building the population up to the target of 240 within Central Florida will be difficult.

References:

Thatcher, C.A., F.T. van Manen and J.D. Clark. 2009. A habitat assessment for Florida panther population expansion into central Florida. Journal of Mammalogy 90:918-925.

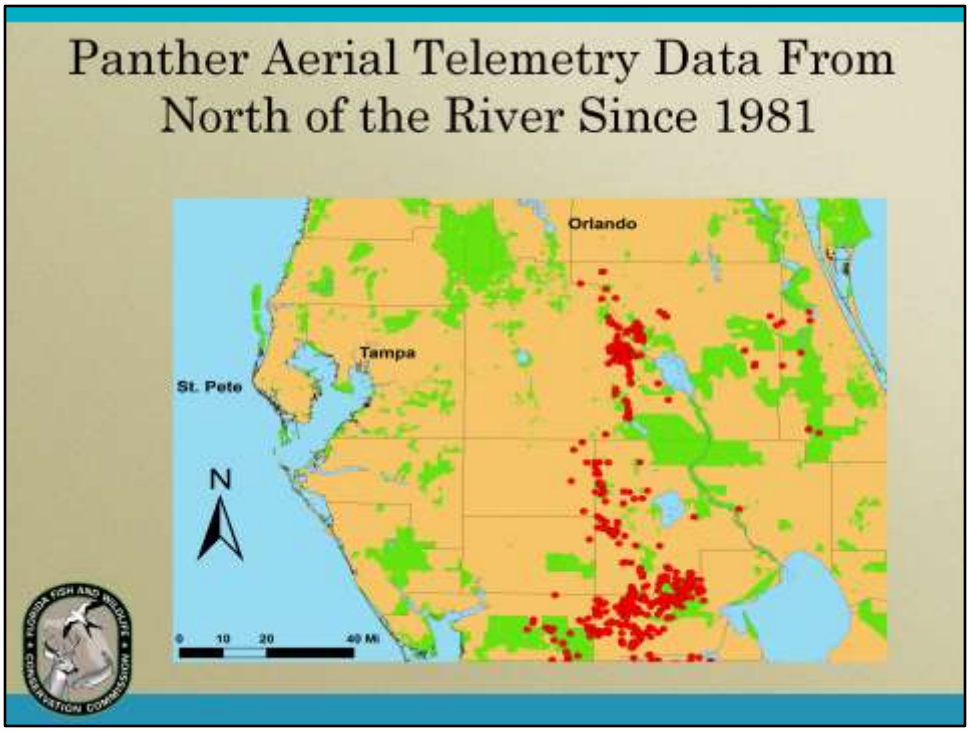
Thatcher, C.A., F.T. van Manen and J.D. Clark. 2006. Identifying suitable sites for Florida panther reintroduction. Journal of Wildlife Management 70:752-763.



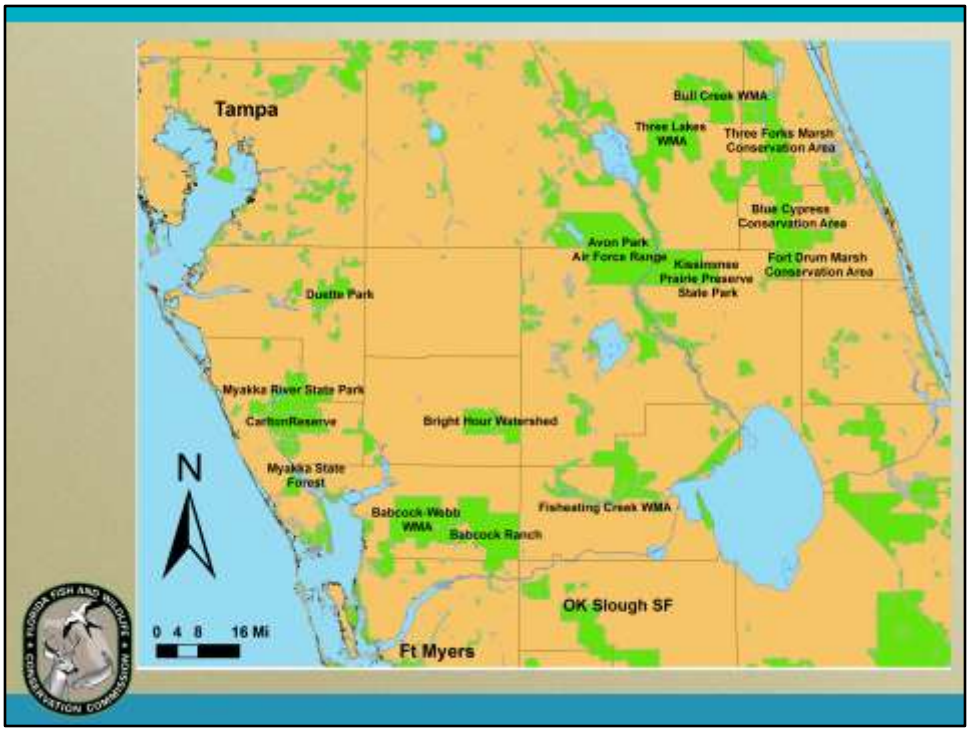
Occasionally we recover dead panthers north of the Caloosahatchee River. The stars show the location of these carcass recoveries, all of which have been males.

Not shown on this map was a male panther that was shot by a hunter near Columbus Georgia in 2008.

The green on this map shows the location of significant publicly owned lands.



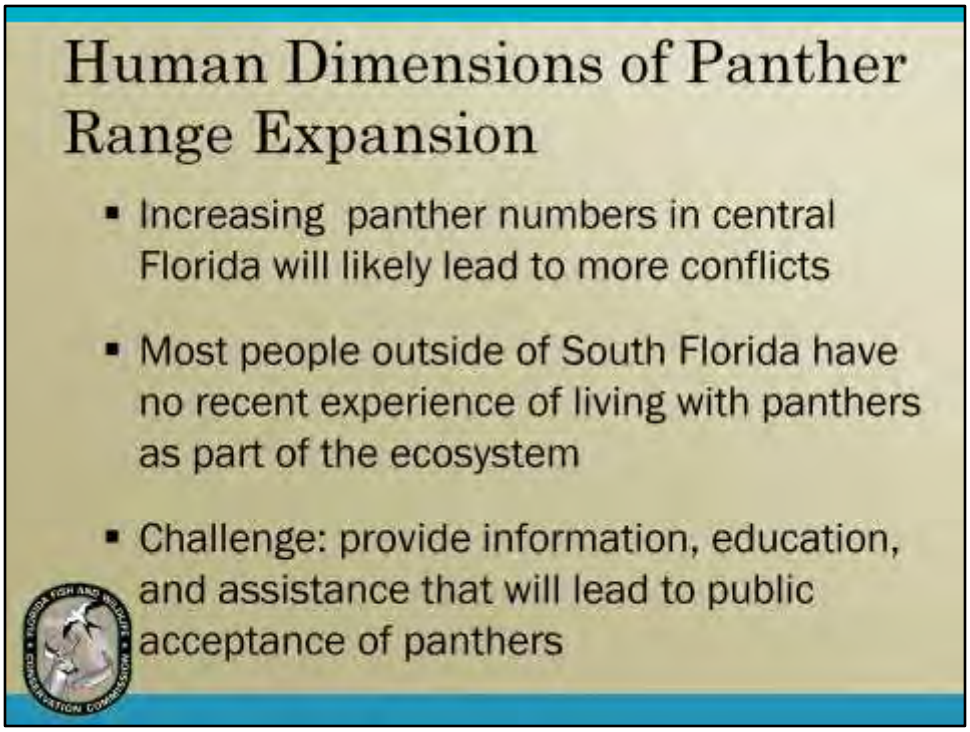
Several male panthers that have been radio collared have traveled north. The red dots on this map show locations for those study animals.



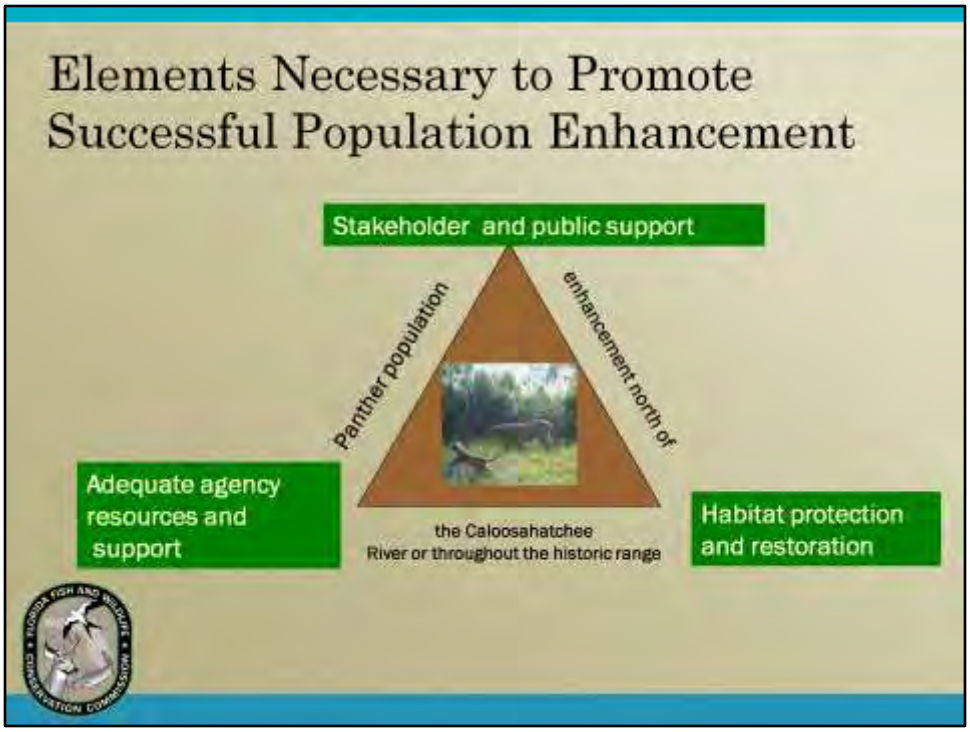
In South Florida, over 2.7 million acres of land is in public ownership. This includes large contiguous tracks of lands such as Everglades National Park, Big Cypress National Preserve, Florida Panther Wildlife Refuge, Picayune State Forest, and Fakahatchee Strand State Preserve. However, even with these vast quantity of public lands, private lands in South Florida are used extensively by panthers and are important habitat. Recent data show that panthers can in fact live in close proximity to people, and survive in a matrix of land types.

North of the Caloosahatchee River there is less total acreage of public lands, and those lands are spread out and less connected. This map shows in green some of the significant publically owned lands that could be important to panther northern range expansion. If panthers are to successfully expand into Central Florida, private land ownership linking these public lands will be very important.

We recognize that it is quite possible that panthers already are breeding north of the Caloosahatchee River, and that we just have not been able to provide sufficient documentation. To enlist the help of the public, we launched a new web page earlier this year. Because of the proliferation of trail camera technology, we are hopeful that some Floridian will be able to provide us with proof of panthers breeding north of the river. Even if that does not happen, the web site will enable us to learn more about verified sightings of male panthers.



Range expansion of panthers in Central and North Florida may occur with or without human intervention. We are aware that there are many human dimensions to this biological/ecological change.



Success of management actions to enhance the panther population north of the Caloosahatchee River will be dependent upon stakeholder support, habitat protection and restoration, and adequate agency resources to deal with issues as they arise.


Questions ?