

The Florida Panther

Introduction

If the population continues to decline, the Florida panther could be extinct in 10 to 15 years. Panthers are still found in Florida because of a few, large, undeveloped wilderness areas that provide suitable habitat. Today, even these remote areas are threatened. Intensive efforts by many government agencies and private groups have been directed at saving the panther, which has become a symbol of the wilderness that once made Florida a wild and special place.

Common Names

The scientific name of the cougar is *Felis concolor*, but regionally it is called a variety of common names. In the Rocky Mountain states, "mountain lion" is often used; in the Pacific northwest and California you are likely to hear "Cougar." "Puma" is another frequently used name. East of the Mississippi, any of the following means the same thing: "panther," "cougar," "painter," and "cata-mount." "Eastern Cougar" is the common name of the extinct subspecies once found in the northeastern United States and Canada.

No one really knows why the subspecies found in Florida, (*Felis concolor coryi*), is called panther, but the name has been used for centuries around the world as a name for big cats, especially black ones. Spanish settlers may have used the name, or early settlers seeing large cats in the shadows at night may have mistakenly thought they were black and called them panthers. There is no evidence that black Panthers ever existed in Florida. Whatever the origin, panther is now the accepted common name for the endangered animal in Florida. In this booklet, "cougar" refers to the species in general and "panther" refers to the Florida subspecies.

Description

A panther is a large cat with a muscular, compact, deep-chested body. The long, cylindrical tail is almost two-thirds the length of the head and body. The ears are short and rounded, which adds to the alert expression of the face. Males and females look alike, although males are larger and tend to have more massive, angular skulls.

Coloration

Adult panthers have a uniform tawny color along the back. The animal's underside, along the lower chest, belly, and inner legs is lighter. The uniformity of color provides camouflage in open range land. The tip of the tail, back of the ears, and parts of the face are highlighted with dark brown or black. The dark markings on the face emphasize facial expressions.

Panther kittens have spotted fur, enabling them to be camouflaged in the dappled shade of the den. These markings fade by the end of the first year when the young panthers are on their own. A mother panther will flick her black-tipped tail as a signal for her kittens to follow her. Newborn panthers have indigo blue eyes that change to yellowish brown; in adults the irises are yellow.

Specialized Hunter

The panther is a highly specialized meat eater and, like all cats, it is adapted to hunt. The skull is short and rounded with powerful jaws and strong teeth. The heavy bones of the jaw and the strong neck and shoulder muscles absorb the shock when the Panther is attacking large prey. The tongue is covered with tiny, sharp, horny points for tearing meat and holding food in the mouth. A Panther has 16 teeth in the upper jaw and 14 in the lower jaw. The first Set of teeth is shed before the permanent teeth grow in. Sensitive, motion-detecting whiskers on the cheeks, upper lip, and above the eyelids provide sensory information to help a panther bring down prey.

A panther's feet are adapted for stealthful movement, essential for capturing prey. Like all cats, they walk on their front toes with the back of their feet raised and the claws retracted. Sometimes they sharpen their claws by standing on their hind feet and dragging their front claws down a tree. The front paws have four toe pads in front of a smooth, callused, three-lobed heel pad. Higher up on the foot are a fifth pad and a non-retractable claw used to anchor the front claws into the flesh of prey. The hind paws are slightly narrower and less flexible than the front paws, with only four toes. Webbed skin and fur between the toes muffle the sound as a panther walks and, when walking, the hind feet step in the tracks of the forefeet.

Characteristics of the Florida Panther

The Florida panther is distinguished from other subspecies by its darker color, longer legs, smaller feet, and lighter weight. Mature males weigh from 100 to 150 pounds, measure almost seven feet from the nose to the tip of the tail, and stand about two feet tall at the shoulder. Females weigh about 65 to 100 Pounds and are about six feet in length.

A Florida panther has other distinctive features too. Its nose is broad and flat with unusually arched nostrils and the fur is short and rather stiff as compared with subspecies in colder climates.

A Florida panther usually has a whorl of hair, or cowlick, in the middle of its back; white flecking in the fur of the head, nape, and shoulders; and a right angle crook at the end of the tail caused by an abnormality in the last three tail vertebrae.

These distinctive characteristics have resulted from inbreeding caused by genetic isolation and the extremely small size of the population. Other genetically linked abnormalities appearing in recent years are threatening the viability, of the remaining population. A few panthers lack some of these odd traits because they are descended from captive panthers of another subspecies released into the wild in the 1950s and 1960s.

Similar Species

From a distance, dogs, bobcats and house cats are sometimes mistaken for Florida panthers, but panthers are larger, more uniform in color, and have longer tails than these other animals. The tracks of a large dog can be distinguished from those of a panthers because dog tracks have claw marks, whereas panthers walk with their claws retracted. The best evidence of a panther sighting is a photograph of the animal or its tracks, a plaster cast of the tracks, or the remains of a panther kill, which are characteristically covered with leaves and brush.

Danger to Man

Cougars are secretive animals that avoid humans. In the western states, cougars occasionally follow hikers or enter a town or city. Unfortunately, there have been a few attacks, especially where human activities and cougar habitat overlap.

Range

The cougar is extremely adaptable. Subspecies are found from the high snow-covered mountains of the Yukon to the hot deserts of the American Southwest and the humid tropical swamps and forests of South America. Cougars are still found in many western States but east of the Mississippi, they are only in Florida. Scientists have identified 30 subspecies. Variations in size, color, skull shape, and tooth structure are adaptations to local climate, terrain, and prey.

Before the arrival of Europeans in the New World, the many subspecies intermixed at the boundaries of their ranges, enhancing genetic variability throughout the vast range of the species. After two centuries of hunting and habitat disruptions, however, several subspecies are extinct and many of the remaining ones are fragmented or isolated.

The Florida panther once intermixed to the north with the Eastern cougar and with two other subspecies to the west and northwest. Its range extended throughout Florida and from the lower Mississippi River Valley east through Arkansas, Louisiana, Mississippi, Alabama, Georgia, and parts of Tennessee and South Carolina. For at least the past century, however, it has been genetically isolated. Today, the last few panthers are spread over an area of about 2.2 million acres. In particular, they may be found in the Fakahatchee Strand area, the Big Cypress National Preserve, the Florida Panther National Wildlife Refuge and adjacent private lands to the north. State Road 29 bisects the heart of panther habitat north to south and Alligator Alley (Interstate 75) bisects it east to west. Additional panthers live in the large tracts of privately owned lands in Charlotte, Collier, Hendry, Lee, and Glades counties.

Legal Protection and Panther Programs Administration

The Florida panther was given endangered species status in 1973 under the federal Endangered Species Act and is protected under the Wildlife Code of the State of Florida and the Florida Panther Act of 1978. In 1976, a Panther Recovery Team was appointed by the U. S. Fish and

Wildlife Service. The team prepared the "Florida Panther Recovery Plan," which identified and outlined the steps needed to save the panther. This plan was revised and updated in 1987. In 1994, the "Florida Panther Habitat Preservation Plan" was completed.

In 1982, the panther was designated by the legislature as the official Florida state mammal. In the following year, the Florida Panther Technical Advisory Council was established by the state legislature to provide advice on technical issues. The Florida Game and Fresh Water Fish Commission has the primary responsibility for panther research and management. The Florida Panther Interagency Committee, set up in 1986, coordinates the diverse research and management programs and increases communication between the many groups involved in panther research and recovery. This committee consists of representatives from the U.S. Fish and Wildlife Service, the National Park Service, the Florida Game and Fresh Water Fish Commission, and the Florida Department of Environmental Protection.

Research

Studying these secretive animals is difficult and time consuming. Researchers spend more of their time tracking and searching for and interpreting signs rather than observing panthers first hand.

In recent years, the most effective method of research has been to fit panthers with radio collars and track their movements electronically. To capture a panther, a team, including a veterinarian and an experienced tracker, uses dogs to locate, follow, and tree an animal. Often researchers, carrying up to 60 pounds of medical equipment, must battle thick brush and wet terrain. Once treed, the panther's fitness is assessed. If it seems in poor condition or is overheated, the capture attempt is abandoned.

If it seems healthy, the panther is immobilized with a tranquilizer dart. This is a tricky procedure, especially with an animal that may be 30 feet up in a tree. Then an agile team member climbs the tree and lowers the panther with ropes and a harness. A safety net and a catch bag are used to cushion accidental falls. Working quickly, scientists record vital statistics, fit a tracking collar, and collect samples of blood, feces, urine and skin, as well as swabs for viral and bacteriological studies. Immunizations and vitamins may also be given while the cat is still under the anesthetic. The panther recovers in a specially designed tent, which is fitted with a remote, quick-release cord to free the animal once it is fully alert.

Captive breeding programs have been implemented in the past few years, and scientists are studying the genetics of panthers and other subspecies to determine how best to preserve and enhance the remaining population.

Population Estimates

Scientists estimate there are only 30 to 50 adult Florida panthers, making this subspecies one of the rarest and most endangered mammals in the world. Population viability data indicate that a

minimum of 50 adult panthers is needed for a self-sustaining population. Panthers inhabit public lands administered by state and federal agencies and private landholdings. Over the past few years, the population has stabilized in the northern Fakahatchee Strand area but declined in the southern Fakahatchee Strand and eastern Big Cypress area.

Reasons for Population Decline

Today, habitat loss is the primary reason for the continued decline of many cougar populations. Over the past two centuries, however, hunting greatly reduced or eliminated many local populations. The indigenous people of North America hunted cougars and used the strong skin for quivers and rugs and the teeth and claws for ornamentation. Before the arrival of Europeans, however, the number of cougars killed by hunting was insignificant. European settlers saw cougars as a threat to livestock and hunted them aggressively. Nationwide, hunting was encouraged through a bounty system. In the late 1800s, a \$5.00 reward was paid for each Florida panther pelt. This bounty was discontinued in the 1950s. In 1970, Arizona became the last state to end the bounty system. Today most western states with cougars permit the killing of cougars that prey on livestock.

The Florida panther's journey to extinction began over a century ago when the remnants of the subspecies became genetically isolated. The remaining population gradually shrank as Florida's human population grew and the vast expanses of wild lands in which panthers lived were drained, fragmented, and developed. Seemingly inconsequential events also took their toll. In the late 1930s and early 1940s, thousands of deer were slaughtered in a misdirected attempt to eradicate the Texas cattle fever tick. This undoubtedly reduced the panther population. During the next ten years, much of south Florida was logged. The loss of the big trees and many wildfires created ideal deer habitat. Deer and panther populations expanded for a while until the forest canopies again began to close over in the mid- 1960s. Freezes in the 1980s caused the citrus industry to shift further south in the peninsula. This agricultural expansion further reduces the region's ability to support panthers.

Habitat Preferences

Panthers need large expanses of unbroken habitat, preferably with hardwood hammocks, pine flatlands and mixed swamp forest. Places where two habitats meet, such as the border between woodlands and prairies, are particularly important because game animals, including deer, are found here. These habitats provide concealment for cougars and proximity to large prey feeding on grasses. Corridors, such as the vegetation along streams, provide important passageways for traveling from one area to another. Much of the panther's southern range is flooded for part of the year. The Florida panther is more closely associated with wetland habitats than any other North American cougar subspecies.

Panthers tend to travel at night and, when the sun rises, seek secluded resting sites in dense saw palmetto, hammocks, and willow thickets. Once they have found a suitable spot, panthers rarely

move during the day in the heat of summer. They are most active at dawn and dusk when prey is moving about.

Home Ranges

Structure

Panthers maintain large territories or home ranges for hunting, mating, and raising their young. Home ranges vary in size from roughly 70 to 80 square miles for females to 200 square miles or more for males. In an undisturbed population, a resident male will maintain a large home range that overlaps with the smaller home ranges of several females. Male home ranges, however, seldom overlap. A panther may travel 20 miles overnight or stay in the same area for a week or more.

A female with newborn kittens will restrict herself to a portion of her home range but, as the young grow, their demand for food requires the mother to hunt in a much larger area, often leaving her cubs alone for extended periods. In the Bear Island Unit of the Big Cypress National Preserve, a radio-tracked panther with two kittens reduced the size of the area in which she traveled by 70 percent following the birth of her kittens. After six months, however, she again began traveling in all of her home range.

Young Adults

Once young panthers become independent they establish their own territory. A young female may roam an area that includes part of her mother's home range, but a male will disperse well beyond the territory of his mother. Young males roam widely, moving freely through the territories of other panthers but avoiding confrontations. Even if space is available locally, such as from the death of a resident, the young usually disperse beyond the vicinity of their birthplace.

Maintenance of Home Ranges

Panthers maintain home ranges through mutual avoidance. Confrontations are rare in a stable population where each panther knows and respects the boundaries of other panthers in the area. Young males seeking to establish a territory may confront older, established males, occasionally resulting in the death of one of the animals.

Panthers advertise the boundaries of their territories and communicate with each other through smell, sight, touch, and sound. One of the most important forms of communication between panthers is a "scrape" made by scratching soil, leaves, and pine needles into a pile with the hind feet and depositing urine and/or feces on the pile. Scent from the panther's anal glands may also mark the scrape. Panthers make scrapes where territories overlap or meet, along pathways, beside food caches, or at prominent topographical features.

The scrape is a visual cue alerting a passing panther to the scent, which, in turn, reveals the sex and identity of the cat that left it. The strength of the scent indicates how long the mark has been there. The passing panther may leave its mark there too. Most scrape sites are not reused but some permanent stations are maintained in each territory. Besides warning other panthers that a territory is occupied, the familiar scent of an animal's own mark may be reassuring. Males with territories are most likely to make scrapes, but transient males and females without kittens also make marks. Females with young often cover their feces to avoid detection by males who may harm kittens.

The size and shape of home ranges can change as new panthers arrive, residents die or conditions change. If a panther with an established territory dies, neighboring residents redistribute the space and eventually a transient may claim part of the area. The size of a territory and the degree of overlap depends on topography and vegetation, as well as the density and availability of prey.

Function of Territory

Panthers are solitary predators and, by maintaining territories, each one has a large enough area in which to hunt. Each panther is familiar with the habits of the prey in its territory as well as the terrain. This makes for more efficient hunting. Territories serve to partition the food resources and avoid excessive pressure on prey populations.

Breeding success also is enhanced by the maintenance of territories. Resident males and females know each other's whereabouts and habits, which facilitates mating. The increased efficiency of hunting in a known territory helps a female provide food for her kittens. In an undisturbed population, the panther's system of territory is the primary factor regulating population size. The number of panthers in an area cannot increase indefinitely. If a young panther cannot establish a territory, it will rarely breed.

Diet

The panther is adapted to catching large prey, often bigger than itself. The preferred food is deer and hogs, but where these are not plentiful panthers eat raccoons, armadillos, rabbits, cotton rats, birds, and even alligators. Large prey provide more nutrition for the energy expended. Panthers that feed on large prey weigh more and are in better physical condition than those relying on small prey.

An adult panther needs 35 to 50 deer-sized animals per year and females raising young may require twice that amount. It takes about ten raccoons to equal the food value of one deer. These food requirements demonstrate why panthers need large territories and healthy prey populations.

Hunting Methods

A hunting panther zigzags through its territory, scanning side areas for movement, avoiding open areas, and hiding in cover. Once potential prey is sighted, a panther may wait patiently for hours,

hidden from view, until the right moment to strike. A panther often adopts a watching posture in which the body is flat against the ground and the elbows are above the shoulder blades. The head is forward, the whiskers wide, and the ears to the front. When the prey moves, it triggers attack behavior in the panther, which is why many prey animals "freeze" when a predator is in the vicinity. When the moment is right, the panther moves in for the kill and can spring from over 15 feet away to seize its quarry.

Prey is killed with a bite to the spinal cord where the head and neck join. The canine teeth enter the spine between two vertebrae, forcing them apart and breaking the spinal column. This distinctive bite readily identifies a panther kill.

A large prey animal must be immobilized quickly to prevent it from escaping or injuring the attacker. Hunting large prey is dangerous and cougars have been seriously injured or killed by falling, running into trees, or being kicked or gored by their intended victims. When hunting large animals, a panther pounces with its claws extended, grasps the prey's shoulder and neck with the front paws, and digs its back claws into the prey's flanks. The action that unsheathes the claws also doubles the size of the paws by spreading the toes.

After the kill, the panther first feeds and then drags the carcass under a tree or bush or covers it with dirt and leaves. Some cougars bite or scratch off tufts of hair from their prey so that the carcass is almost buried in hair. Panthers can drag carcasses weighing several times their own weight.

Panthers usually open the abdominal cavity of large prey and eat the liver, heart, kidneys and lungs first. These organs provide essential vitamin A and other nutrients. Panthers crouch while feeding and use their teeth as shears to cut meat into pieces small enough to swallow whole. Once a panther has eaten its fill, the carcass is covered to hide it from scavengers. The panther may return several times to feed and often remains in the area of the kill to ward off scavengers. Panthers fast for several days between kills.

Social Behavior

As solitary animals, panthers usually avoid one another. Newly independent siblings, however, may stay together for a few days before heading off on their own, and males and females stay with each other briefly during the breeding season.

Females with kittens under a year old avoid adult mates because of the threat to kittens. Adult males have been known to kill and eat young as large as 50 pounds. A female becomes more tolerant of other adults as her kittens approach independence and she nears her phase of sexual receptivity. Once a female is in heat she mates with a nearby resident male or, occasionally, with a transient male.

Reproduction

Sexual Maturity

Male Florida panthers reach sexual maturity at about three years of age, but females reach maturity as early as two years of age. In the wild, breeding may be delayed until a female is socially mature and has established a permanent territory.

Breeding

Most breeding takes place between resident males and resident females with overlapping home ranges. If more than one male is attracted to a female, the males may fight. A male may mate with several females and occasionally a female will mate with more than one male. The female's receptive period lasts for about 10 days. Females generally breed every other year but, if a litter is lost, she may come into heat and produce another litter within a few months. The life span of panthers in the wild is about 10 to 12 years.

Most panthers conceive sometime between November and March and pregnancy lasts about three months. Females give birth in simple dens in dense vegetation, under cover from heavy rains or hot sun. Dens are used for about two months until the kittens are weaned. Litters usually consist of one, two, or, less frequently, three kittens, but a female panther killed by a car was carrying four full-term fetuses. Litters of six have been reported in captivity.

The helpless newborns weigh about one pound each, and their eyes do not fully open until a week or two after they are born. The young are nursed for about two months and at about six weeks begin eating fresh meat brought to the den by their mother. Teeth begin appearing about 10 to 15 days after birth.

Raising Kittens

The first six months of a kitten's life are risky because young may be left unattended for up to two days while the mother hunts. During this time kittens are vulnerable to accidents and predators. At least half of all young panthers do not survive their first year. The early months are stressful for the female who is the sole provider for her growing kittens. Kittens stay with their mother for up to two years, following her through her territory and learning to hunt and survive.

When the young have become independent and the female is ready to mate again, she will leave her offspring at a kill and not return. The siblings will stay together for a few days and then go their separate ways. Young males, in particular, are at risk if adult males enter the mother's territory for breeding. A young male Florida panther found dead may have been killed by an adult male that had mated with the young panther's mother.

The first weeks and months of independence are a time of increased risk because the young are inexperienced hunters and do not have established territories. If a suitable area with enough food and little competition is found, the animal will restrict itself more and more to that area. Eventually the young panther may settle in the new territory, and become a reproductive adult.

Adaptations of a Predator

A panther's eyes are well adapted for seeing at night and detecting motion. The large pupils in the large eyes gather light, and special cells in the retina reflect even small amounts of light. A panther can detect the slightest movement and small glimmers of light. To protect the sensitive eyes in bright light, the pupils contract, but, unlike most cats, they remain round instead of forming a slit. As with all cats, cougars see in shades of gray and not colors.

Panthers have a wide visual field and can accurately judge distances within a range of about 50 to 100 feet. This is essential for a predator that must lunge at prey from a distance. The eyes are particularly adapted to detecting motion, even at the edges of the visual field. Because of a blind spot in the center of the eyes, it is more difficult for a panther to detect a stationary object.

The hearing of panthers is well developed and they can hear sounds that humans cannot. The cup-shaped rounded ears can move together or independently in the direction of a sound to further aid hearing. Cougars have a keen sense of smell and can easily follow scent trails.

Sounds

Cougars make a surprising variety of sounds including chirps, peeps, purrs, growls, moans, and whistles. Young kittens when frightened emit a series of short, high-pitched peeps, and imitating these sounds causes kittens to hide. Kittens communicate with chirping noises and whistle to tell their mother where they are. People who work with captive cougars say these cats have distinctive greeting sounds for individuals they recognize.

Body Language

A panther can communicate through the posture of its body. When a panther is content, the ears are straight up but when threatening another animal the ears are held halfway down against the head. Ears wandering in all directions and rapidly changing facial expressions indicate confusion or frustration. A panther about to attack holds its ears flat against its head and growls or hisses, revealing the black lining of the lips that accentuates the teeth.

Endurance

Panthers are sprinters that can run up to 35 miles per hour but only for about 200 yards. The hunting strategy of a panther is to lunge at prey from a short distance. Panthers are good swimmers and often cross canals and sloughs in south Florida. Cougars have been reported to cross rivers a mile wide.

The Role of Predators

The ecological value of predators has only been recognized in the past few decades. Traditionally, wherever man settled, predators were the first to be exterminated from an area because they were considered a threat and competitor of man. Most land management programs, including many administered by governmental agencies, did not extend protection to predators and "control" programs were the rule. Species were considered "good" or "bad" and the policy was usually to eliminate snakes, wolves, coyotes, bears, cougars, and poisonous plants, while encouraging "good" species, which were usually game animals.

During the 1960s sentiments began to change and the approach adopted by agencies such as the National Park Service was to attempt to "recreate" the land as it was when Europeans arrived. During the following decade, it was realized that management intervention often does more harm than good. The goal today is to restore and maintain natural processes, including predators.

The relationships between predators and prey and the habitats that support them are complex, and many factors regulate population size over time. Predators have little effect on the number of individuals in healthy prey populations but may help regulate stressed prey populations that are at high densities. Eventually the numbers of predators will decrease if there is not enough prey to support them.

Cougars keep prey moving and this helps to distribute animals and prevents overgrazing in one area. Because cougars use an ambush method of hunting, both healthy and weak prey may be subject to attack.

Natural Threats

Being a top predator is a dangerous life and death can occur from many causes. Birds of prey, black bears, and adult male panthers all claim unguarded kittens. Old panthers may starve to death because worn out teeth and splintered claws make it difficult to catch food. Older panthers also are more vulnerable to accidents. Even healthy adults may be injured by prey, poisonous snakes, or during mating or territorial fights. Fires, floods, and starvation also take a toll.

Health Problems

Florida panthers have an unusually large number of health problems. Most are related to poor habitat conditions and genetic defects resulting from inbreeding. The health and weight of panthers vary depending on where they live. Panthers living north of Alligator Alley (Interstate 75) tend to be heavier and in better physical condition than those to the south. This disparity can be attributed to differences in prey resources. Deer and hogs are plentiful to the north but not as abundant to the south where the habitat is less diverse and wetlands predominate. Panthers in the southern part of the range rely more on raccoons and other small animals that provide less food value for the energy expended than large prey. Poor nutrition is reflected in a low reproductive rate, the loss of many young, and an increased susceptibility to disease and parasites.

Blood tests show that many of Florida's panthers have been exposed to feline distemper or a closely related parvovirus. Feline distemper is a devastating and highly contagious viral disease known primarily in domestic cats. Young panthers are most susceptible to distemper just after weaning, particularly if they are malnourished.

Other health problems include calcivirus, an upper respiratory disease, and pseudorabies, a viral disease lethal to domestic cats. Although the susceptibility of panthers to pseudorabies is unknown, the virus is of concern because it is prevalent among wild hogs in Florida. Several other parasites and diseases, including rabies, have been detected in recent years.

Some panthers suffer from anemia caused by inadequate food and chronic blood loss from hookworms and ticks. Anemia is of particular concern for pregnant animals and females with young kittens. Kittens get hookworms through their mother's milk.

High levels of mercury have been found in the tissue of panthers in the Shark River Slough area of Everglades National Park, and mercury may have contributed to the death of the last remaining female panther in the Park. Panthers living north of Alligator Alley have much lower levels of mercury in their tissue. The southern panthers may have accumulated mercury from the raccoons they ate. The raccoons, in turn, can be contaminated through fish and other aquatic animals in their diet. Panthers to the north feeding on deer and hogs are not as exposed to contaminants in the aquatic food chain. Research into the problem of mercury contamination is continuing.

Human-Related Mortalities

Highway Deaths

Concern over the loss of panthers hit by vehicles led to the installation of wildlife underpasses on Interstate 75 and, more recently, State Road 29. Since the installation of these crossings, the number of panthers and other wildlife killed has dropped dramatically. Prototypes of these box culvert underpasses are being tested at additional trouble spots in panther territory.

Hunting

Panthers continued to be shot by hunters during the 1970's and 1980's, but hunting has not been as much of a problem in recent years. Conflicts with hunters, however, affect many habitat management issues. The use of all-terrain vehicles and dogs to hunt deer and hogs has been limited by regulations to control the pressure on prey populations as well as panthers. However, low prey populations cannot be attributed solely to hunting. The number of deer that can be supported by south Florida's habitats varies greatly between areas and seasons, and floods and drought can affect deer numbers.

Habitat Loss

Loss of habitat poses a great threat to the Florida panther. Each incidence of habitat change seems harmless in itself, but the cumulative impact is progressively degrading. Panthers need large tracts of undeveloped land with plenty of prey. If an area of a panther's territory is cut off from the remaining habitat by roads or developments, then panthers cannot find mates and newly independent young cannot disperse, establish territories, or become breeding adults. As a top predator, panthers are affected by changes throughout the food chain.

Panther habitat is under development pressure from ranching, lumbering, agriculture, mining, oil and gas, housing, commerce, and recreation. Oil and gas were discovered in south Florida in 1943 and since then many drilling sites and access roads have been cleared and developed. The mineral rights to most of the Big Cypress National Preserve and surrounding areas are privately owned and pressure continues to expand exploration. Sand and limerock are also extensively mined in panther habitat. Cattle ranching land in south Florida is increasingly being converted to citrus groves. Panthers can coexist with unimproved rangeland but not extensive citrus development.

Genetically Linked Abnormalities

Florida panthers show a wide range of abnormalities. These are the result of inbreeding and loss of genetic diversity caused by isolation and a dwindling population. Unlike the cowlick on the back and the crook in the tail, many of these genetically linked defects threaten the future of the population. In the African cheetah, inbreeding is associated with high mortality among the young and an increased susceptibility to disease. Male Florida panthers have an abnormal sperm count and many have only one functioning descended testicle. Most recently, heart murmurs of varying severity have been detected in an alarming percentage of kittens. The genetic problems of the remaining population are so severe that without genetic management, even if all habitat is protected, the Florida panther faces certain extinction.

What Can be Done?

The Florida panther is on the brink of extinction and the problems that need to be solved before its future is secure are complex, costly, and sometimes controversial. Unfortunately, the panther population cannot recover just by being left alone. Survival will require intensive human intervention. It is clear that the panther is in such a precarious position that action must be taken now. Broad public support is needed to carry out the programs essential to the panther's survival.

Management plans to save the panther fall into three areas: habitat preservation, genetic restoration, and reintroduction. For the panther population to recover, these three elements must proceed simultaneously.

Secure and Enhance Habitat

Habitat preservation is essential to prevent the extinction of the Florida panther. About 3.4 million acres of public and private conservation lands in south Florida are now being managed or are in

the process of acquisition. Additional areas have been identified. The most important public lands for the Florida panther include the Florida Panther National Wildlife Refuge, Big Cypress Seminole Indian Reservation, Fakahatchee Strand State Preserve, Miccosukee Indian Reservation, Everglades National Park, and Big Cypress National Preserve. Maintaining habitat linkages among protected areas is crucial so that panthers can disperse and interbreed.

Land must also be preserved in other areas of the panther's historical range so that panthers can be reestablished into new areas in the future. Some of these sites could be in neighboring states. The panther's future will not be secure until additional self-sustaining populations have been established.

The amount of land the government or private agencies can buy for panthers is limited. Much of the panther's territory is on private land and many of these areas provide better habitat than the land under state or federal management. In recent years, government agencies and private conservation groups have been working in partnership with landowners on management issues through a variety of land-sharing programs. Methods being used to preserve habitat include conservation easements, land stewardship programs, landowner incentives, tax reforms and enforcement of existing regulations.

Besides simply being preserved, many areas are being actively managed to increase the number of deer and hogs and to reduce human related impacts. Deer populations can be expanded by controlling exotic vegetation, burning to improve forage, providing salt licks, and planting forage crops. Managing habitat also includes reducing the number of highway deaths, closing certain areas to hunting and all terrain vehicles and providing better law enforcement. In addition to helping the panther, protecting habitats will ensure a future for many other threatened and endangered plants and animals.

Restore Genetic Variation

Until recently it was thought that preservation of the existing genetic variation within the panther population would be sufficient to stabilize the subspecies. However, genetic restoration of the subspecies is now considered essential to the panther's survival. Recent studies have shown there is less genetic variation between cougar subspecies than once thought. With advances in genetics over the past decade, it is now possible to genetically restore panthers and improve their genetic fitness. Using the Texas subspecies as a model for genetic diversity, scientists are hoping to turn back the extinction clock 100 years and restore the Florida panther to where it was before it was isolated from other stocks. This will be done by introducing Texas cougars into wild and captive populations under a carefully planned and monitored program. With renewed genetic vigor, the Florida panther will be healthier, successfully reproduce more, and have a better chance of avoiding extinction.

Reintroduce Panthers into Suitable Habitat

Reestablishing additional populations of panthers within their historic range would protect the species if the south Florida population were to be decimated by a severe disease outbreak or other unforeseen catastrophes. Feasibility studies conducted in north Florida using sterilized Texas cougars have shown introduced panthers can successfully establish territories and survive in the wild. Broad local support, however, is crucial to achieve the goal of establishing permanent, self-sustaining populations.

What Can You Do?

Ensuring a future for the panther will require continued public support. The sale of panther vehicle license plates now generates over \$1 million a year, which pays for all of the state's panther research and recovery programs.

Besides buying panther plates, you can let your elected public officials know how important it is to preserve habitat and enable the panther to recover. Among the conservation groups actively supporting panther programs are the Florida Audubon Society, the Florida Wildlife Federation, and the Florida Defenders of the Environment. Become involved, or the chance to save the remainder of Florida's wilderness and the endangered Florida panther may be lost.

Acknowledgments

We gratefully acknowledge the help of Tom H. Logan, Chief, Bureau of Wildlife Research, Florida Game and Fresh Water Fish Commission and Dennis B. Jordan, Florida Panther Coordinator, U.S. Fish and Wildlife Service for their review of a draft of this manuscript.

Florida Power & Light Company, in its concern for the environment, has funded a series of educational booklets, including this one, as well as many other educational and research projects.

The illustrations for this booklet draw on photographs and illustrations from many sources. They include photographs provided by the Florida Game and Fresh Water Fish Commission, courtesy of Robert C. Belden and Thomas M. Goodwin, as well as the following publications: Anonymous. 1981. Lion of the Americas. *National Geographic World* 72:4-9; Ladd, E. 1982. Canyon cubs. *Ranger Rick Magazine* 16(3):3-8; Parfit, M. 1985. Its days as a varmint are over, but the cougar is still on the run. *Smithsonian* 16(6):68-79; Thomas, S.T. 1981. The what, where and how of the kingdom of the cougar. *Defenders* 56(3):3,8; Turbak G. 1982. The cougar's new cloak. *National Wildlife* 20(3):46-55.

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