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RH: FLORIDA PANTHER RECOVERY PLAN IMPLEMENTATION · Belden

FLORIDA PANTHER RECOVERY PLAN IMPLEMENTATION -- A 1982 PROGRESS REPORT¹

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Abstract: The Florida Panther Recovery Team was appointed by the U.S.
Fish and Wildlife Service in July 1976 for the purpose of preparing and
assisting in coordinating the implementation of a recovery plan for the
Florida panther. The step-down outline for the plan was completed in
October 1976. The goal of the plan is to prevent the extinction and
re-establish viable populations of Florida panthers in as much of the
former range as is feasible. Three objectives are identified to attain
this goal: to find and maintain any existing populations of Florida
panthers, to improve public opinion and behavior regarding the existence

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of Florida panthers, and to re-establish populations where feasible. Progress has been made in the past six years in working toward the accomplishment of these objectives, and has involved the operation of a Florida Panther Record Clearinghouse, investigating sighting reports, field searches for panther sign, radio-telemetry studies to determine movements and habitat preferences, food habits studies, taxonomic studies, public education programs, and evaluation of present regulations and land management policies.

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Key words: distinguishing features, endangered species, Felis concolor coryi, field sign, Florida panther, food habits, habitat preferences, land management policies, movements, public education, regulations, sighting reports.

The Florida panther (Felis concolor coryi) was included as endangered on the U.S. Department of Interior's first list of endangered and threatened wildlife issued in March 1967 (FR 48:4001). A Florida Panther Recovery Team was appointed by the U.S. Fish and Wildlife Service in July 1976 for the purpose of preparing and assisting in coordinating the implementation of a recovery plan for the Florida panther. The step-down outline for the plan was completed in October 1976, and the first technical draft was submitted to the U.S. Fish and Wildlife Service in September 1978. The plan was revised, expanded, and submitted for agency review

in December 1979. The final Florida Panther Recovery Plan was submitted in January 1981 and approved by the U.S. Fish and Wildlife Service in December 1981. The Florida Panther Recovery Team was disbanded in July 1982.

The primary goal of the Recovery Plan is to prevent the extinction of the Florida panther and to re-establish viable populations in as much of the former range as feasible. The three main objectives to be accomplished in order to reach this goal are to (1) find and maintain any existing populations, (2) improve public opinion and behavior regarding their existence, and (3) re-establish populations where feasible. In October 1976, the Florida Game and Fresh Water Fish Commission's Wildlife Research Laboratory initiated a Florida panther investigation following the step-down outline of the Recovery Plan. Following this outline (Figure 1), this paper discusses the progress that has been made in the past six years in working toward the accomplishment of these objectives.

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1. MAINTAIN EXISTING POPULATIONS

111-111. Clearinghouse Establishment

A "Florida Panther Record Clearinghouse" was established in 1976 at the Florida Game and Fresh Water Fish Commission's Wildlife Research

Laboratory to collect and analyze panther reports. All reports are separated into "confirmed" and "unconfirmed" groups and assigned to one of five categories (Belden and Williams 1976).

"Confirmed Records" are either (1) dead or live-captured specimens or (2) plaster track casts, photographs of panthers or their tracks, or other sign that is positively attributable to a panther. While both types of evidence indicate the presence of the species, only the first (specimen) is available for examination as to subspecies. This is particularly important in view of the significant numbers of western mountain lions held in captivity, some of which are known to escape from time to time, and some even intentionally released. There is no way to distinguish tracks of wild Florida panthers from tracks of other subspecies.

"Unconfirmed Reports" lack documentation (photographs, measurements, etc.). These are divided into categories (3) visual observations by specially qualified observers such as wildlife biologists, naturalists, and foresters; and (4), observations from less qualified persons.

The last category (5) includes investigated reports that were unfounded, and the many completely unbelievable reports, such as panthers in mid-city, eating from garbage cans, black panthers, etc.

In order to advise the public as to what to report for each panther sighting, an article was written for Florida Wildlife Magazine and interviews were held with reporters that resulted in several newspaper

articles. Meetings were held with all Game and Fresh Water Fish Commission wildlife biologists and many Department of Natural Resources personnel to explain the investigation and solicit their cooperation. Record forms were given to each regional biologist for distribution to people reporting panthers.

Panther reports are investigated either by evidence that is submitted to the Clearinghouse or, when a "fresh" report is received that is in any way convincing, it is field investigated as soon as possible and the observer interviewed.

As of 30 June 1982, the Clearinghouse had received, categorized, and filed 1,244 panther records from within Florida (Table 1). Category 1 records are more fully detailed in Table 2. One-hundred-forty-five of these reports were investigated. Of those, 32 (22%) provided conclusive evidence of panthers. Based on sign present and other information gained during investigations, 43 (30%) records were determined to have been made by dogs, 31 (21%) by bobcats (Lynx rufus), two (1%) by otters (Lutra canadensis), two (1%) by raccoons (Procyon lotor), one (1%) by a small bear (Ursus americanus), and one (1%) by a deer (Odocoileus virginianus). In 33 (23%) instances no sign could be found to identify the animal in question.

111-112. Field Searches

Extensive field searches for panther sign have been made in the Big Cypress National Preserve in Collier County, Conservation Area 3A in

Broward and Dade Counties, Everglades National park in Dade and Monroe Counties, the Fakahatchee Strand in Collier County, Fisheating Creek Wildlife Management Area and Refuge in Glades County, the Seminole and Miccosukee Indian Reservations in Hendry and Broward Counties, Lake Butler Wildlife Management Area in Baker and Union Counties, Loxahatchee National Wildlife Refuge in Palm Beach County, Myakka River State Park in Sarasota County, Ocala National Forest in Marion County, Spring Hammock in Seminole County, and Tosohatchee State Preserve in Orange County. Suitable roads, trails, firelanes, levees, and tree islands were searched for tracks, scats, scrapes, kills, or other sign mainly by walking. Horseback, swamp-buggy, all-terrain cycles, and a slow-moving pickup truck with an observer on the hood were also utilized. Eleven weeks of intensive field searching with specially-trained dogs was conducted in the Fakahatchee Strand and Big Cypress National Preserve areas of Collier County.

111-11. Population Distribution

With only three exceptions, all valid evidence of the panthers' presence has come from Lake Okeechobee southward. One of those was a panther shot by a deputy sheriff in Citrus County in 1968, the hide of which is in the Ocala Game and Fresh Water Fish Commission Regional Office. That hide, however, does not possess any of the distinguishing features which characterize the Florida panther and probably represents a released or escaped captive. Likewise, all the evidence available

from the remains of another panther found by Commission officers in a garbage dump in the Ocala National Forest in 1967 indicate that this too was probably a captive animal. The third report from outside southern Florida also came from Ocala National Forest. This report was a photograph of a panther sitting in a firelane. It was made during a 1975 environmental impact study and panther sign was not found in the area prior to the report nor has it been found since.

Consistently valid panther sign comes from three specific areas of south Florida -- the Fakahatchee Strand area, the eastern edge of the Big Cypress National Preserve and southwestern portion of Everglades Conservation Area 3, and the Hole-in-the-Donut area of Everglades National Park in Broward, Collier, Dade, and Hendry Counties (Figure 2). Isolated evidence of panther presence has been documented in other areas of Collier, Hendry, and Glades Counties. The three specific areas are apparently population centers and reports outside these areas are probably transients.

111-1. Habitat Requirements

Movement/Habitat Assessment -- A study was initiated in February 1981 to determine the feasibility of capturing, radio-instrumenting, and tracking panthers in Florida, and a full scale radio-telemetry project was subsequently begun in January 1982. Two adult male Florida panthers were captured in the Fakahatchee Strand in February 1982. The captures were made with the assistance of Roy McBride, a professional

mountain lion hunter from Texas, who used dogs to tree the animals and then used a dart gun to tranquilize them with a combination of Ketamine and Acepromazine. They were tattooed in both ears, weighed and measured, and fitted with Telonics radio-transmitter collars. These transmitters were powered with lithium batteries and had a theoretical life-span of two years.

The instrumented panthers were subsequently monitored twice daily from the ground through the middle of May. By that time relocation success rate had dropped off steadily until it was 10% or less. At that time we were spending approximately six hours and driving approximately 200 miles per search with two searches per day. All components of the receiving system were checked and re-checked many times. It was finally determined that our problem was a combination of the spring vegetation growth interfering with the range of the signal, the external antennas being broken off of the transmitters, and damaged battery packs on the transmitters that caused them to short-out at various times. Consequently the panthers were monitored from the air using a Telonics "H-antenna" mounted on each wing strut of a Cessna 172. They were monitored once per week and for a 10 consecutive-day period each quarter. Radio-contact was lost with one in August 1981.

In January and February 1982, a second capture effort was undertaken in the Fakahatchee Strand and Big Cypress National Preserve. Four adult males and two females were captured. One adult male was a recapture of

one of the 1981 animals, with the still functioning radio-collar. All were instrumented with improved radio-collars and are presently being monitored from the air 14-16 days each month on an every other week basis. Our relocation success rate using aerial monitoring techniques is near 100%.

As of 30 June 1982, these seven panthers had been relocated a total of 584 times (Table 3). Preliminary results indicate the home ranges of males average 301 sq. kilometers (range = 181 to 583) and of females 104 sq. kilometers (range = 78 to 129). There is considerable overlap in ranges, but the animals have never been located together with the exception of one female that was located with two males during February. She would be located with one male for two or three days and later with the other male for two or three days, both of which occurred on several occasions. During the winter they appeared to move as much in the daytime as at night, but in the summer they normally did not move at all in the daytime. Individuals moved as much as 20 miles overnight or stayed in the same location for a week or more. They frequently crossed highways and swam canals or from one tree-island to another. When approached by humans they either remained still or tried to circle around behind the approaching people. They appeared to become accustomed to continual noises in their environment such as rock-quarrying operations, highway traffic noise, or air-traffic noise. They tended to move toward wild fires and stayed around recent burns for several days.

The key habitat used by the radio-instrumented panthers was generally mixed swamp forests. These subtropical forests are composed of trees, shrubs, vines, ferns, and epiphytes that usually occur as elongated strands that follow low drainage areas. The primary vegetation is cabbage palm (Sabal palmetto), red maple (Acer rubrum), wax myrtle (Myrica cerifera), cocoplum (Chrysobalanus icaco), sweet bay (Magnolia virginiana), and red bay (Persea borbonia). Cypress (Taxodium distichum), willow (Salix caroliniana), pop ash (Fraxinus caroliniana), and pond apple (Annona glabra) occur in the deep water areas and hammock vegetation, such as laurel oak (Quercus laurifolia), dahoon (Ilex cassine), wild coffee (Psychotria undata), myrsine (Myrsine guianensis), and occasionally live oak (Quercus virginiana) and slash pine (Pinus elliottii), occur on the higher land (McPherson 1973). Most of this habitat is seasonally flooded for months.

Food Habits -- In order to determine panther food habits, a hair key was developed for the mammal hairs most likely to be found in panther stomachs or scats. Hair samples were taken from specimens in the mammal collections at Florida State Museum. These samples were primarily secondary guard hairs from the mid-dorsum. Characteristics and measurements taken during gross microscopic examination included length, color, thickness (diameter), shape of cross-section, condition of root, condition of tip, configuration, longitudinal shape of shaft, and condition of surface. For examination of the medulla, the hair was

mounted in a clearing agent and covered with a cover glass. Scale casts were made in polyvinyl acetate. Photomicrographs of the medulla and scale casts were taken with a 35mm single-lens reflex camera mounted on a light transmission microscope.

The contents of four panther stomachs have been analyzed. The stomach contents were washed through three consecutive sieves of decreasing mesh size to separate the food items according to size as well as to remove the very fine food particles of little value in identification. The size of the mesh openings in the sieves was coarse (0.078"), medium (0.0328"), and fine (0.0164"). Material remaining on the screens was identified to the lowest taxon possible. The volume of each food item was determined by water displacement in a graduated cylinder. The percentage volume (category volume divided by total volume) was determined for each food item. The most important food item based on the four stomachs analyzed was armadillo (Dasypus novemcinctus). Also, all of the stomachs contained 3-6g of grass (Graminae) (Table 4).

The analysis of panther scats for food habits information is presently underway. The major problem encountered so far has been the identification of scats so that only panther scats are used in the analysis. Both panthers and bobcats often deposit scats in scrapes and there is overlap in scrape and scat size between the species. Because visual identification of scats is not always

conclusive, especially if scats are weathered, an attempt was made to determine if thin layer chromatographs of fecal bile acids could be used to identify panther scats.

For that study known scats from ten bobcats and ten panthers were used to prepare standards for comparison with unknown scats. A sample of 144 scats were then analyzed. This sample included 14 and 24 scats from known bobcats and panthers, respectively. Both the bobcat and panther scats contained the same bile acids, with the only differences being greater concentrations in the bobcat scats. Since bile acids are soluble in water, weathering becomes a major problem when using this technique to identify scats because the probability is greater that a bobcat scat will be incorrectly identified as a panther scat than vice versa.

Since no errors were made when visual and chemical identifications matched for known samples and data for 75% of known panther scats matched, it is reasonable to assume that field collected samples were also correctly identified when the techniques agreed. During the food habits analysis of these scats tentatively identified as panther, records are being kept on consistency, separations, diameter, and the presence or absence of panther or bobcat hair as further means of identification.

Population Dynamics -- The field search data indicated the presence of three adult males and two adult females in the Fakahatchee Strand;

three adult males, one adult female, and one subadult female in the Big Cypress Preserve; and two adult males, two adult females, and one subadult female in Everglades National Park. Based on this data and available habitat, it is estimated that there are 20 panthers remaining in south Florida.

The sex ratio of the Florida panther population appears to be between 50:50 and 60:40, favoring males. The sex ratio of five dead animals (4 roadkills and 1 illegal kill) was 60:40, of eight live captured animals was 62:38, and based on field sign of 15 animals this year is 53:47. One road-killed female contained four unborn kittens--two males and two females. Eighty to ninety percent of the population is in the adult age class between 6 to 12 years old. Based on one female observed with two kittens and the road-killed female with four fetuses, litter size is between two and four. Back-dating the fetuses and kittens, observations of a captured female in estrous and monitoring subsequent behavior, and observation of a captured pregnant female, lead us to believe that the peak breeding season is December through February.

During the investigation six animals are known to have died. Four were roadkills, one an illegal kill, and one died of blunt trauma from an unknown source. During his taxonomic review of the species, Goldman (1946) noted "a number of cranial contusions....apparently due to mishaps in bringing down prey". One mortality per year has been documented over the past five years (a mortality rate of approximately 5% per year).

Based on this or a slightly higher mortality rate, the Florida panther population is probably stable and the primary threat to this stability is habitat loss.

111. Manage and Protect Present Populations

Based on a review of the literature, interviews with knowledgeable residents of south Florida, and the results of ongoing research, it appears that the panther has been eradicated by advancing civilization since white man came to this country, and now, the only places it exists are extreme south Florida and the remaining wilderness areas of the western states. Probably the only reason the panther still remains in south Florida is that until relatively recently the Big Cypress Swamp/ Everglades Region was virtually impenetrable to man. Only the most hardy individuals who could build and maintain specialized equipment went into this area. Due to the effort it took they usually stayed for several days or weeks, and their range was limited by the amount of fuel that could be carried on their specially made swamp-buggies.

The first road through the area was the Tamiami Trail (U.S. Hwy. 41), built in 1928 to connect Miami with Naples. However, the majority of the area remained inaccessible to man. In the late 1940's and early 1950's virtually the entire region was logged. This, associated with accompanying wildfires, created ideal habitat for the white-tailed deer. The deer herd expanded until the forest canopy began closing again in the mid 1960's, at which time die-offs occurred. It is reasonable to

assume that the panther population reached its highest point during this period and that the majority of our present panthers are offspring of the animals born in this period. With the construction of Alligator Alley (State Hwy. 84) through the middle of the area in 1966-67, the area became easily accessible. It now takes only a matter of hours to reach places that used to take days.

Several major access roads have subsequently been built off Alligator Alley, off-road vehicles have become more efficient and easier to obtain by the general public, a vast system of canals has caused a general drying of the region which allows off-road vehicles to go more places, and the human population has increased several hundred percent. All of these factors, plus the continual chipping away of the remaining habitat by development, have resulted in a continual shrinkage of the wilderness character of the Big Cypress/Everglades Region to the point that there is relatively little wilderness left. In order to prevent the extinction of the Florida panther, those remaining areas will have to be managed to simulate wilderness conditions. This will involve controlling the number of people that can use the area and how, when, and where they can use it. At the present time, the Fakahatchee Strand and surrounding area should be acquired and the needs of the Florida panther preeminent in management decisions for the area as well as the Big Cypress National Preserve, Everglades Conservation Area 3, and Everglades National Park. Methods need to be developed for monitoring

panthers in these areas, which along with their habitat, should be monitored regularly to be certain that they are maintained.

2. IMPROVE PUBLIC OPINION AND BEHAVIOR

212. Information Dissemination

In order to educate the public concerning the panther and its management many interviews have been held with reporters which have resulted in newspaper and magazine articles; numerous talks and slide presentations have been made to various conservation organizations, garden and social clubs, and school groups; popular articles have been written for Florida Wildlife Magazine; video-tapes for news spots have been made; a 16mm film was made of the panther capture operation and aired on the nationwide Sports Afield syndicated TV program; and a slide-sound program was produced for use by Florida Game and Fresh Water Fish Commission regional information/education personnel. A panther brochure is presently being produced to be distributed through Florida's school systems and to the general public.

221-1. Protective Measures Evaluation

Present regulations designed for the protection of the Florida panther were evaluated. Florida panthers are legally protected through the Endangered Species Act of 1973, the Wildlife Code of the State of Florida, and the Florida Panther Act of 1978. The laws and rules set

forth in the Florida Statutes and Rules of the Florida Game and Fresh Water Fish Commission appear adequate as far as the legal protection of the Florida panther goes. However, Rules of the Commission also cover the permitting, caging and housing requirements for panthers of other subspecies held within the state. These animals pose a potential problem to the recovery of the Florida panther due to the confusion over the true status and distribution of the native population as a result of escapes and intentional releases. Some system of marking (such as tattooing) and careful record-keeping is needed to keep track of these captive animals and to make the owners responsible for the continued up-keep of them in captivity.

3. RE-ESTABLISH POPULATIONS WHERE FEASIBLE

311-11. Florida Panther Characteristics

The historical distribution of the Florida panther was thought to include most of the southeastern United States (Hall and Kelson 1959). The present status over most of this range is poorly known and depends to a large extent upon the reliability of sighting reports, most of which are questionable. To add to this confusion are the various specimens that crop up in the historic range from time to time. Due to similarities between races, the wide range of individual variation found within wild populations, plus years of hybridization in captivity,

subspecific identification can be difficult or impossible based on a single specimen.

Over the past 10 years, as new Florida panther specimens became available, it was noted that two characteristics not previously described by researchers consistently occurred. One was a ridge or whorl of hairs, similar to a cowlick, present in the mid-dorsal region of the back. The second was a 90 degree crook in the end of the tail. In order to determine the usefulness of these characters in subspecific identification we examined 480 Felis concolor museum skins in collections of the Field Museum of Natural History, the National Museum, Museum of Comparative Zoology and Florida State Museum. Twenty-four of these were F. c. coryi specimens including the type specimens F. c. floridana Cory (1896), F. coryi Bangs (1899), and F. arundivaga Hollister (1911). The remaining 449 skins represented 19 of the 30 recognized subspecies from North, Central, and South America. Additionally, seven live captured Florida panthers were examined during a capture and radio-tagging operation. All were examined for the whorl, the crooked tail, and for white flecks in the shoulder and neck region (a previously described characteristic).

The most distinctive feature of the skull is the shortened rostrum and correspondingly expanded and inflated nasals giving the animal the appearance of having a prominent or "roman nose". The outer margins of the nasals are often free and pushed upward and tend to overlap the maxilla and frontal bones (Goldman 1946). The pelage is relatively dark,

but variable, usually tawny brown, darkest along the middle of the back, becoming lighter or clay-colored along the sides and composed of short, black-tipped hairs. The face is very dark, but upper lips, chin and throat are white. Guard hairs on inner sides of limbs and belly are white, but mixed with light reddish-brown underfur giving the appearance of gray or "soiled white" becoming whiter toward the median ventral line. The tail is often very dark dorsally, ending in a black tip (Goldman 1946, Bangs 1899).

In addition to the general appearance of the skull and pelage coloration (both of which are variable), the flecks, whorl, and crooked tail are distinctive characteristics. Data obtained in our study suggest that these characteristics are carried in the gene pool of the species at a low frequency but are expressed at a high frequency in the Florida subspecies, probably due to isolation. Although these characteristics occur randomly in individuals of other subspecies, only in the Florida panther do they occur in combination. These traits allow positive identification of Florida panthers based on skeletal and pelage characters or with assurance on the pelage alone.

311-1. Breeding Stock

There are currently no known captive Florida panthers suitable for a breeding program. Until more is known about the status of wild Florida panthers, the Commission will not support or participate in the removal of Florida panthers from the wild for use in a captive breeding program.

If investigations indicate that surplus wild F. c. coryi are available for such purposes, the Commission will re-evaluate the need for a re-introduction program and define its role in implementing related tasks at that time.

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Table 1. Panther records in Florida by county and category as of 30 June 1982.

County	Category					
	1	2	3	4	5	Total
Alachua				33	23	56
Baker			1	1		2
Bay			1	1	1	3
Bradford				3		3
Brevard			3	10	2	15
Broward		2		5	2	9
Calhoun						0
Charlotte			1	12	3	16
Citrus	1		2	5	1	9
Clay			3	6	3	12
Collier	11	47	34	46	18	156
Columbia			4	3	1	8
Dade	1	10	49	118	25	203
DeSoto			2	9	5	16
Dixie			1	4		5
Duval			1	4	5	10
Escambia				2	2	4
Flagler				4	2	6
Franklin						0
Gadsden				2	2	4
Gilchrist				5	3	8
Glades	2	1	8	6	6	23
Gulf					1	1
Hamilton				1		1
Hardee			2	2		4
Hendry		1	4	7	2	14
Hernando				6	1	7
Highlands			14	34	12	60
Hillsborough			1	9	6	16
Holmes						0
Indian River			5	5	3	13
Jackson			1	1		2
Jefferson					1	1
Lafayette					1	1
Lake				1	6	4
Lee			1	15	6	22
Leon				9		9
Levy			6	11	6	23
Liberty				1		1
Madison					2	2
Manatee				7	2	9
Marion	1	1	3	25	11	41
Martin				18	3	21
Monroe			14	60	14	88
Nassau			1	4	2	7
Okaloosa			3	3		6
Okcechobee			1	7	2	10
Orange			1	6	11	18
Osceola			5	4	4	13
Palm Beach			9	52	18	79
Pasco			1	4	3	8
Pinellas				3		3
Polk			4	20	1	25
Putnam			1	7	3	11
St. Johns				5	3	8
St. Lucie			1	9	2	12
Santa Rosa			2	1		3
Sarasota			30	34	10	74
Seminole					4	4
Sumter				2		2
Suwannee			2	4		6
Taylor			5	3		8
Union		1	1			2
Volusia			1	4	3	8
Wakulla			1	5		6
Walton			2	1	3	6
Washington				4		4
Unknown				3	3	6
Total	16	63	233	681	251	1244

Table 2. Category 1 panther records on file at the Florida Game and Fresh Water Fish Commission's Wildlife Research Laboratory

Date and Location	Observer(s) and Evidence
1. Spring 1967 Ocala National Forest Marion County	Remains of an approximately 32 kilogram (70 pound) male found in a garbage dump by Florida Game and Fresh Water Fish Commission Officers
2. March 1968 Near Inverness Citrus County	45+ kilogram (100+ pound) adult male killed by Deputy Sheriff Lloyd Shelton (hide in Ocala Game and Fresh Water Fish Commission Regional Office)
3. February 1972 SR 25 south of Moore Haven Glades County	Large male Florida panther struck by an automobile and shot by a Highway Patrolman (hide in Florida State Museum)
4. February 1973 Lykes Fisheating Creek WMA Glades County	Nine to ten year old female treed by Roy McBride's pack of eight dogs
5. Winter 1974 Immokalee Collier County	Illegal hide sent to Wyoming to be tanned. Seized by Florida Game and Fresh Water Fish Commission and sent to National Museum for subspecific identification
6. March 1978 Big Cypress Preserve Dade County	44 kilogram (97 pound) subadult male Florida panther illegally killed. Arrest and conviction made by Wildlife Officer John Carter (skull and hide in Florida State Museum)
7. 23 December 1979 Near Fakahatchee Strand Collier County	31 kilogram (68 pound) adult female Florida panther killed on Hwy. 29 by vehicle (skull and hide in Florida State Museum)
8. 7 February 1980 Sunniland Collier County	50 kilogram (111 pound) young adult male Florida panther killed on Hwy. 29 by vehicle (skull and hide in Florida State Museum)

Table 2. Continued.

Date and Location	Observer(s) and Evidence
9. 10 February 1981 Fakahatchee Strand Collier County	54 kilogram (120 pound) adult male Florida panther live captured and radio-instrumented
10. 20 February 1981 Fakahatchee Strand Collier County	49 kilogram (108 pound) adult male Florida panther live captured and radio-instrumented
11. 19 April 1981 Near Fakahatchee Strand Collier County	38 kilogram (84.5 pound) adult female Florida panther pregnant with 4 kittens killed on Hwy. 29 by vehicle (skull and hide in Florida State Museum)
12. 23 January 1982 Fakahatchee Strand Collier County	31 kilogram (68 pound) adult female Florida panther live captured and radio-instrumented
13. 27 January 1982 Fakahatchee Strand Collier County	51 kilogram (113 pound) adult male Florida panther live captured and radio-instrumented
14. 23 February 1982 Fakahatchee Strand Collier County	44 kilogram (98 pound) adult female Florida panther live captured, and radio-instrumented
15. 27 February 1982 Big Cypress Preserve Collier County	55 kilogram (122 pound) adult male Florida panther live captured and radio-instrumented
16. 2 March 1982 Big Cypress Preserve Collier County	55 kilogram (122 pound) adult male Florida panther live captured and radio-instrumented

Table 3. Number of relocations by month for each panther radio-instrumented in Florida

[illegible]

Table 4. Percentage volume for each food item found in four Florida panther stomachs

Collection Date	Collection Method	Sex	Age Class	Weight (Kg)	Total Volume (g)	Percentage		Volume		
						Armadillo	White-Tailed Deer	Small Mammal	Grass	Other Vegetation
12 Mar 78	Illegal Kill	M	SA	44	770	39	59		1	1
23 Dec 79	Roadkill	F	A	31	32			69 ^a	19	12
7 Feb 80	Roadkill	M	A	50	2020	99			1	
19 Apr 81	Roadkill	F	A	38	50	86			12	2
OVERALL					2872	82	16	1	1	T

^aPicked up as carrion as determined by the presence of blow-fly eggs.

Figure 1. Block diagram of Florida Panther Recovery
Plan Goals and Objectives

establish viable populations of Florida panther in as much of the former range as feasible

1. Maintain any existing populations of Florida panther

11. Provide needed habitat and range

111. Set aside, acquire and/or manage and protect land necessary to maintain viable populations

111-1. Determine habitat requirements by studies or movements, food habits, and population dynamics

111-11. Locate and delineate present populations and/or frequented areas

111-111. Set up Clearinghouse for obtaining and compiling Florida panther records

12. Monitor populations and habitats

121. Monitor populations

121-1. Determine methods of monitoring populations

122. Monitor habitat

111-112. Conduct field searches for panther sign in likely looking areas within the former range

2. Improve public opinion and behavior regarding the management of Florida panthers

21. Educate the public concerning the need for management

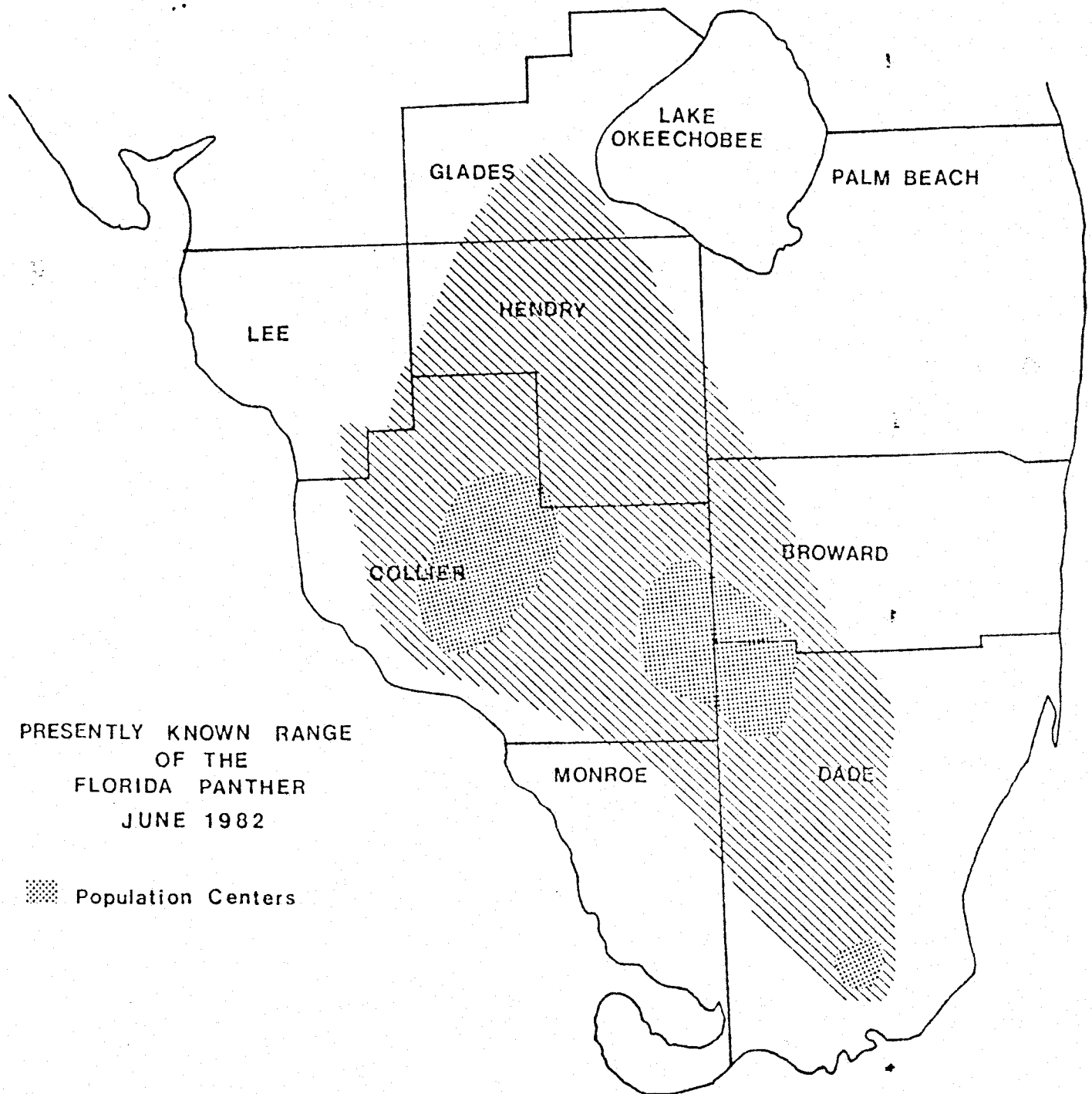
211. Publish technical data available

212. Produce and distribute movies, TV program slide series, and popular literature

22. Enforce regulation

221-1. Evaluate present re designed f protection Florida pa

Figure 2. Area where consistent documented evidence
of the presence of panthers occurs



PRESENTLY KNOWN RANGE
OF THE
FLORIDA PANTHER
JUNE 1982

 Population Centers