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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, but due to conflicts with other job responsibilities and duties, the first technical draft was not submitted to the U.S. Fish and Wildlife Service until September 1978. During this period, additional data were obtained on the presently occupied range of the subspecies. The plan was then revised and expanded and resubmitted to the U.S. Fish and Wildlife Service for agency review in December 1979. The present plan is a further revision based on consideration of comments received from that review. This plan is intended to serve as a guide that justifies, delineates, and schedules those actions required by agencies with jurisdiction over the Florida panther and/or its habitat for restoring the panther as a viable self-sustaining member of its ecosystem. It is brief and very general in its nature due to a lack of information on the animal's distribution and population level and critical aspects of its life history or ecology. There is also a high degree of uncertainty surrounding promising but largely untried techniques.

FLORIDA PANTHER RECOVERY PLAN

Prepared by
the Florida Panther Recovery Team
January 1981

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THIS IS THE COMPLETED FLORIDA PANTHER RECOVERY PLAN. IT HAS BEEN APPROVED BY THE U.S. FISH AND WILDLIFE SERVICE. IT DOES NOT NECESSARILY REPRESENT OFFICIAL POSITIONS OR APPROVALS OF COOPERATING AGENCIES AND IT DOES NOT NECESSARILY REPRESENT THE VIEWS OF ALL RECOVERY TEAM MEMBERS, WHO PLAYED THE KEY ROLE IN PREPARING THIS PLAN. THIS PLAN IS SUBJECT TO MODIFICATION AS DICTATED BY NEW FINDINGS AND CHANGES IN SPECIES STATUS AND COMPLETION OF TASKS ASSIGNED IN THE PLAN. GOALS AND OBJECTIVES WILL BE ATTAINED AND FUNDS EXPENDED CONTINGENT UPON APPROPRIATIONS, PRIORITIES, AND OTHER BUDGETARY CONSTRAINTS.

LITERATURE CITATIONS SHOULD READ AS FOLLOWS:

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PREFACE

Because of the diversity and, to a large extent, the mutual exclusiveness of the types of knowledge available on the Florida panther, and even more by the extreme discordance between opinions on the status of the subspecies, The Florida Audubon Society convened a Florida Panther Conference in Orlando, Florida, on March 17-18, 1976, in order to compare notes and attempt to develop some consensus on the status of the subspecies and the most desirable strategy for its conservation (Pritchard 1976). It was primarily from the list of participants for this conference that candidates were selected for nomination to the Florida Panther Recovery Team (Henry 1976).

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This plan is intended to serve as a guide that justifies, delineates, and schedules those actions required by agencies with jurisdiction over the Florida panther and/or its habitat for restoring the panther as a viable self-sustaining member of its ecosystem. It is brief and very general in its nature due to a lack of information on the animal's distribution and population level and critical aspects of its life history or ecology. There is also a high degree of uncertainty surrounding promising but largely untried techniques.

PART I

INTRODUCTION

At one time, the panther (*Felis concolor*) ranged from British Columbia throughout the United States and in South America southward to Patagonia. In the United States today, sizable populations are found only in the remote regions of the western mountains.

The Florida panther (*F. c. coryi*), one of 30 subspecies presently recognized, originally ranged from eastern Texas or western Louisiana and the lower Mississippi River Valley east through the southeastern states, including Arkansas, Louisiana, Mississippi, Alabama, Georgia, Florida and parts of Tennessee and South Carolina (Goldman 1946). This is essentially the area mapped (Fig. 1) by Hall and Kelson (1959).

The Florida panther was first described as a separate geographic race of *Felis concolor* by Charles B. Cory in 1896. He assigned it the name *F. c. floridana*. Bangs (1899) pointed out that this name was untenable because *F. floridana* had previously been used for a bobcat. He also believed that the Florida panther had been restricted to peninsular Florida and could no longer integrate with any other form, and he doubted it ever had. For these reasons Bangs assigned the animal full specific rank with the name *Felis coryi*.

After analyzing practically all available material in North American collections, Nelson and Goldman (1929) revised the taxonomic classifications of the *Felis concolor* group and assigned the Florida panther subspecific status with the designation *F. c. coryi* Bangs. This designation included *Felis arundivaga* which had been designated by Hollister (1911) from specimens collected in Louisiana. The most recent taxonomic review of the species, as well as detailed descriptions of each subspecies, including *F. c. coryi* (based on 17 specimens), is given by Goldman (1946).

The Florida panther is a medium-sized, relatively dark subspecies with short and rather stiff pelage. It is distinguished from the other subspecies by its long limbs, small feet, and a rich ferruginous color (Bangs 1899), particularly in the middorsal region. The skull has a relatively broad, flat frontal region with remarkably broad and high arched or upward expanded nasals. Practically all specimens have the head, neck, and shoulders irregularly flecked with patches of white hairs. This white flecking may be seen in other individuals from any part of the range, but is much more prevalent in *coryi* (Goldman 1946).

The decline of the Florida panther has been under way at least since the arrival of white man. The species does not live in concentrations, and requires a large area to support each individual. Therefore, when only one or two of the animals are killed, the panther population over many square miles may be affected. The elimination process started with early settlers who attempted to destroy panthers at every opportunity because of losses of livestock and fear of the animal.

The present status of the Florida panther over most of its historical range is poorly known and depends to a large extent upon the reliability of sighting reports, most of which are questionable. Consistent groupings of sighting reports which may indicate the presence of the species have been reported for Arkansas, Florida, and Louisiana (Layne and McCauley, 1976; Lewis, 1969, 1970; Lowery, 1974; McCauley, 1977; Sealander, 1956, 1979; and Sealander and Gipson, 1973). Other reports indicating the possible presence of the animal in other areas have been summarized by Jenkins (1971) and Nowak (1974). However, consistently documented evidence of the animal's presence is available only from the Fakahatchee Strand, Big Cypress National Preserve, Everglades National Park (Belden, 1978), and Collier-Seminole State Park (Belden, 1979, Florida Panther Survey, Job I-E-1 Performance Report, Florida Endangered Wildlife Project E-1-03) in Collier, Dade, and Monroe Counties, Florida (Fig. 2). Today, although the Florida panther receives full legal protection, illegal killing continues and human population growth and development are increasingly encroaching upon remaining panther habitat.

Part II Recovery

A. Recovery Objective

The recovery objective is to prevent the extinction and to reestablish viable populations of the Florida panther in as much of the former range as feasible. The recovery team has deferred establishing a quantified recovery goal until more information is available on the panther's distribution and population dynamics.

B. Step-down Outline

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.
 112. Determine habitat requirements by studies or movements, food habits, and population dynamics.
 - 112-11 Locate and delineate present populations and/or frequented areas.
 - 112-12 Set up clearinghouse for obtaining and compiling Florida panther records.
 - 112-13 Conduct field searches for panther sign in likely looking areas within the former range.
 12. Monitor populations and habitats.
 121. Develop methods and monitor populations.
 122. Monitor habitat.
2. Improve public opinion and behavior regarding the management of Florida panthers.
 21. Educate the public concerning the need for management.
 211. Publish available technical data.
 212. Produce and distribute movies, television program slide series, and popular literature.
 22. Enforce regulations.
 221. Enact needed regulations for the protection of the Florida panther.
 222. Evaluate present regulations designed for the protection of the Florida panther.
3. Reestablish populations where feasible.
 31. Reintroduce Florida panthers into areas of suitable habitat.

- 311. Maintain a captive breeding program.
 - 311-1 Obtain breeding stock.
 - 311-2 Determine the best raising and breeding techniques to be used to insure survival and acclimation of released animals.
 - 311-3 Develop criteria for identifying subspecific status of potential captive breeding stock.
- 312. Develop a restocking plan on an area priority system.
 - 312-1 Determine whether reestablishment is socially and ecologically sound.
 - 312-2 Evaluate particular tracts of land that are large enough to contain a viable population of Florida panthers and determine why a population is not present.
- 32. Monitor results of reintroduction program.

C. Narrative

The first factor limiting the conservation and management of the Florida Panther is lack of information on status and distribution. The decline of the subspecies was brought about by persecution by man, thus the three main objectives to prevent the extinction and reestablish viable populations of Florida panther in as much of the former range as is feasible are:

1. Find and maintain any existing populations of Florida panthers.
2. Improve public opinion and behavior regarding the existence of Florida panthers.
3. Re-establish populations where feasible.

In order to maintain any existing populations of Florida Panthers (1), it is first necessary to locate and delineate these populations (112-11.). The only way to locate and delineate panther populations is by field searches for recognizable sign (e.g. tracks, scats, scrapes, kills, etc.). These field searches should be conducted in areas with the greatest probability of producing sign (112-13.), and can be determined by gathering and reviewing all available information and by investigating reports of panther sightings. A Florida Panther Record Clearinghouse consisting of a central filing system for reports of panthers should be established in each state within the former range of Florida panthers (Alabama, Arkansas, Florida, Georgia, Louisiana, and Mississippi) with a central Clearinghouse in Florida (112-12.). Criteria along the lines developed by Belden and Williams (1976, Appendix A) should be used for judging the validity of reports for the purpose of permitting maximum effort to be put into field investigations that are likely to be productive while screening out the less likely reports. This procedure should include appropriate publicity inviting observers to report sightings; instructions for making track measurements, photographs, and casts; and dissemination of observational information to outlying field cooperators for preliminary

verification. Especially credible reports of panthers and their sign should be investigated by qualified biologists and/or other well qualified field cooperators. When positive evidence indicates the presence of the species, an intensive field search should be made to ascertain the limits of the habitat being utilized. Based primarily on field sign within the delimited area, an effort should be made to determine the population "viability" as indicated by the number, sex, size, and age classes.

When existing populations are located and delineated, habitat necessary to maintain these populations should be set aside or acquired (111.), and studies should be conducted to obtain specific information necessary for managing and protecting these populations and their habitat (112.). At the present time, the Fakahatchee Strand and surrounding area should be acquired and the needs of the Florida panther considered in the management decisions for this area as well as the Big Cypress National Preserve and Everglades National Park (1.) (see Discussion and Recommendations section). Research should be implemented that will yield information on specific habitat needs of the subspecies in these areas, particularly movements, food habits, and population dynamics. Much of this information may be obtained from analysis of field sign; however, radio-telemetry may be the quickest way of determining specific habitat needs. Methods need to be developed for monitoring these populations (121.), which along with their habitat, should be monitored regularly to be certain that they are maintained (122.).

Since the present status of the Florida panther has probably been brought about by shooting and general persecution by man, public opinion and behavior concerning the management of Florida panthers must be improved (2.). This, hopefully, can be done by educating the public concerning the need for management (21.) and by enforcing protective regulations (22.). In order to educate the public, technical data will need to be published (211.), and movies, TV programs, slide series, posters and popular literature need to be produced (212.). Present regulations designed for the protection of the Florida panther need to be re-evaluated (222.) and new regulations enacted where necessary (221.). These regulations will need to be strictly enforced (22.).

In order to re-establish populations where feasible (3.), Florida panther stock may have to be introduced into areas of suitable habitat (31.) where re-establishment is socially and ecologically sound from the standpoint of the human population (312-1.). To do this, many areas must be evaluated (312-2.), and a restocking plan developed on an area priority system (312.). If surplus animals are not available from existing populations; a captive breeding program may need to be set up (311.) that will produce stock that is properly conditioned to insure survival and adjustment (311-2). Criteria must be developed for identifying live panthers as to subspecies (311-3.) to insure that only Florida panther stock (*F. c. coryi*) (311-1) is used for restocking purposes. These reintroduced populations will have to be monitored (32.) and maintained by methods devised for accomplishing objective 1.

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PART III.

IMPLEMENTATION SCHEDULE

Priorities within this section (Column 4) have been assigned according to the following:

Priority 1 – Those actions absolutely necessary to prevent extinction of the species.

Priority 2 – Those actions necessary to maintain the species' current population status.

Priority 3 – All other actions necessary to provide for full recovery of the species.

GENERAL CATEGORIES FOR IMPLEMENTATION SCHEDULES

Information Gathering – I or R (research)

1. Population status
2. Habitat status
3. Habitat requirements
4. Management techniques
5. Taxonomic studies
6. Demographic studies
7. Propagation
8. Migration
9. Predation
10. Competition
11. Disease
12. Environmental contaminant
13. Reintroduction
14. Other information

Management – M

1. Propagation
2. Reintroduction
3. Habitat maintenance and manipulation
4. Predator and competitor control
5. Depredation control
6. Disease control
7. Other management

Acquisition – A

1. Lease
2. Easement
3. Management agreement
4. Exchange
5. Withdrawal

6. Fee title
7. Other

Other – 0

1. Information and education
2. Law enforcement
3. Regulations
4. Administration

* (Column 1) – Primarily for use by the U.S. Fish and Wildlife Service.

Part IV Appendix
DISCUSSION AND RECOMMENDATIONS

Fakahatchee Strand, Big Cypress Freshwater Preserve, Everglades National Park

During the preparation of this plan the Florida Game and Fresh Water Fish Commission's Wildlife Research Laboratory initiated an investigation with the primary objective of finding and delimiting geographically at least one population of Florida panthers. During this investigation panther sign has been found consistently in the Fakahatchee Strand and the eastern portion of the Big Cypress National Preserve (Belden 1978). Also during this period, researchers of the National Park Service's South Florida Research Center have documented panther sign fairly consistently in the Everglades National Park as well as the eastern portion of the Big Cypress National Preserve.

Everglades National Park consists of 1,300,000 acres which is totally protected. Acquisition of the Big Cypress National Preserve is presently underway, and eventually 547,000 acres will come into public ownership. Hunting is allowed in this area. These two areas are under the management of the National Park Service. In 1974, under the Florida Environmentally Endangered Lands Program, the Department of Natural Resources began acquiring the Fakahatchee Strand for a state preserve. At the present time approximately 44,000 acres of an approximate 60,000 acre preserve has come into public ownership.

The land within the boundaries of the proposed Fakahatchee Strand State Preserve presently under public ownership is in a checkerboard pattern with hundreds of private inholdings. This, coupled with the fact that the boundaries were drawn with preserving the central strand and its rare plant life as the primary concern while not including the bordering prairies, makes management and protection of the Fakahatchee difficult to impossible. Agricultural activities with their associated heavy applications of pesticides and chemical fertilizers; the ditching, diking and back pumping of water; and the removal of native vegetation pose the greatest threat to the area. The continuing growth of South Florida will undoubtedly cause the Fakahatchee prairies to be cultivated in the not-so-distant future. Also, the plant communities bordering the Fakahatchee are ecological fire types and will require a regularly scheduled program of burning both to maintain the diversity of habitats that make the Fakahatchee Strand and its environs such a valuable wildlife area and to eliminate the possibility of a dangerous fuel buildup that would allow wildfires to sweep into the strand during periods of drought. Intensive hunting using off-the-road vehicles in the surrounding prairies while running dogs through the Strand may also pose a threat to the existing panther population.

The Florida Panther Recovery Team feels that it is vital to acquire the remainder of the Fakahatchee Strand and the prairies and cypress forests adjacent to it to insure that a unified management strategy can be effected for the area and to provide an extremely important permanent

corridor of natural habitat between the Fakahatchee Strand, the Big Cypress National Preserve, and the Everglades National Park.

Although hunting is prohibited in the Everglades National Park, the Fakahatchee Strand and Big Cypress National Preserve are heavily hunted. In light of the recent illegal panther killing which occurred in the Big Cypress (Belden and Forrester 1980) and the fact that these areas may hold the only hope of saving this endangered species, the Florida Panther Recovery Team recommends that hunting be discontinued in the Fakahatchee Strand and that portion of the Big Cypress National Preserve where panthers are presently known to occur (Figure 4) until such time as we know more about panther management and how to prevent people from shooting them.

Essential Florida Panther Habitat

In the opinion of the Florida Panther Recovery Team, any area recommended as essential habitat should meet criteria by which all candidate areas can be evaluated. Since the habitat requirements for the Florida Panther (*Felis concolor coryi*) are virtually unknown, we suggest that at this time and until more is learned about panther habitat needs, that the presence of panthers (as determined by field signs—tracks, scat, scrapes, kills, etc.) in a given area be considered the major criterion for delineating its essential habitat.

Based on this criterion, we recommend the Fakahatchee Strand State Preserve and its environs, the Big Cypress National Preserve and parts of the Everglades National Park, in Florida, be designated as essential Florida Panther habitat. The continued presence of Florida Panthers in these contiguous areas has been recently determined by field sign. The documenting evidence is on file in the Florida Game and Fresh Water Fish Commission's Florida Panther Record Clearinghouse at Gainesville.

The boundary of these three areas is as follows: Beginning at a point where the northern boundary of Collier-Seminole State Park crosses U.S. Highway 41, thence east along the northern boundary of Collier-Seminole State Park to the northeast corner of the Park, thence east 1 mile along the boundary of the Big Cypress Area of Critical State Concern to the westernmost north-south drainage canal, thence south along the aforementioned canal for approximately 1 mile to a point where that canal turns to the east, thence along the east running canal to a point where the canal intersects a north-south canal, thence south along that canal to a point where the canal turns to the north, thence north along that canal for 1 mile to a point where a canal enters this north-south canal from the east, thence north along the canal to a point where a canal enters this north-south canal from the east, thence east along that canal to a point where it turns to the north, thence northward along this canal for a distance of 5 miles until the canal ends and continuing north in a straight line to a point 4 miles north of State Road 84 where the boundary of Big Cypress Area of

Critical State Concern runs east and west, thence east along this boundary for approximately 1 mile to a point where the boundary turns to the north, thence along this boundary for a distance of approximately 2 miles to a point where the boundary turns to the east, thence eastward along this line which becomes the northern boundary of the Big Cypress National Preserve and also the boundary between Hendry and Collier Counties to a point where the boundary of the Big Cypress National Preserve turns to the south, thence to the south and east along the boundary of the Big Cypress National Preserve to a point where it reaches State Road 84, thence to the east along State Road 84 to a point where it crosses the L-28 interceptor canal, thence to the south along this canal until it rejoins the boundary of the Big Cypress Preserve, thence to the south along this boundary to a point where it joins the boundary of Everglades National Park, thence to the south and east along the boundary of the Everglades National Park to Florida Bay, thence to the west and northwest along the mangrove fringe of the mainland to the western boundary of the Collier-Seminole State Park, thence to the north along the boundary of Collier-Seminole State Park to a point where the boundary turns to the east, thence to the east along that boundary to a point where it crosses U.S. Highway 41, the point of beginning.

The urban portions of Everglades City, Chololoskee, Ochopee, Copeland, Jerome, and Deep Lake are excluded from this recommendation.

FLORIDA PANTHER RECORD CLEARINGHOUSE CATEGORIES

(From Belden and Williams 1976)

Florida panther reports on file at the Florida Panther Record Clearinghouse in Gainesville are separated into confirmed and unconfirmed reports.

CONFIRMED REPORTS are in two categories: (1) dead or live-captured specimen, and (2) plaster track casts, photographs of panthers or their tracks, or other documented sign that is positively attributable to a panther. While these two types of evidence both 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 (pumas, cougars, etc.) that are held in captivity in Florida, some of which are known to escape from time to time and some are intentionally released. There is no way to distinguish the tracks of wild Florida panthers from tracks of any of the other subspecies.

UNCONFIRMED REPORTS are claims of visual observations of panthers or their sign when documentation is lacking (no photographs, measurements, etc.) and include all hearsay reports. These are also divided into two categories: (3) visual observations by especially qualified observers such as wildlife biologists, naturalists, and foresters, and (4) observations from less qualified persons. Yet a fifth "observation" category exists in the form of reports that were investigated by qualified persons and found to be unfounded, and there are many other completely implausible reports, such as panthers in mid-city, eating from garbage cans, black panthers, et cetera.

We consider "Confirmed Reports" as acceptable evidence of panthers in Florida. The "Unconfirmed Reports" are questionable and while they cannot be used to establish the survival status of the Florida panther, many warrant field investigation and confirmation. Category 5 records are of no known value.



Historic Range of the Florida Panther

Figure 1. Historic range of the Florida panther (*Felis concolor coryi*) from Hall and Kelson (1959).



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

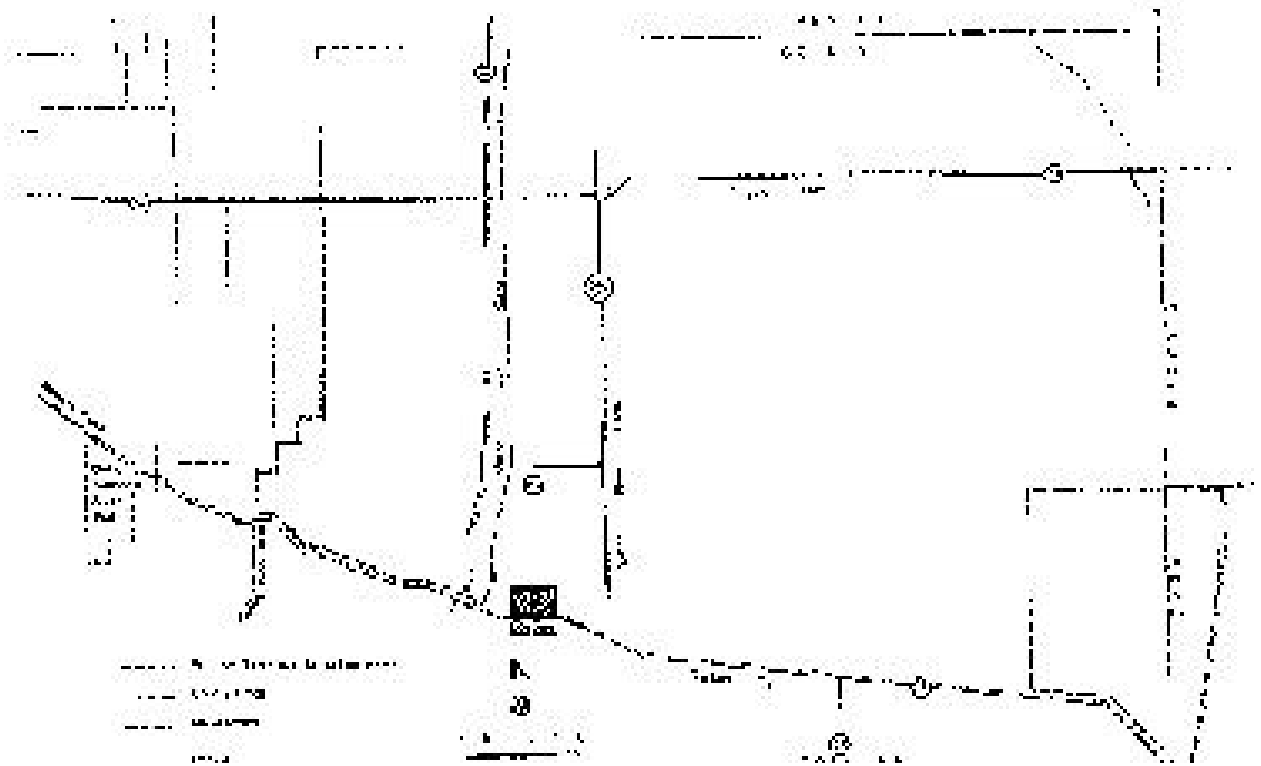


Figure 4. The Fakahatchee Strand and that portion of the Big Cypress Swamp where panthers are presently known to occur.