

C. Narrative

1. Identify, protect and enhance existing Florida panthers rangewide, and protect and manage habitats.

Although there are frequent reports of Florida panthers from many areas of the species' historic range, the only confirmed surviving population is in south Florida. The survival of the Florida panther depends upon the continued existence of this population.

11. Identify existing Florida panther populations and occupied habitat.

Areas inhabited or frequented by panthers need to be precisely delineated. Present search efforts within the historic range which primarily involve state agencies should be expanded to include appropriate Federal and private entities. Techniques and materials developed and utilized in Florida will be made available to assist others.

111. Determine population levels and habitat requirements for known inhabited areas.

Although considerable research has been, and is being, conducted on this task, much remains to be learned about the life history of the panther. Continue studies already in progress, and initiate new studies on panther movements, food habits, predator-prey relationships, energetics, reproduction, mortality, etc.

1111. NPS, in consultation with FGC and FWS, will conduct studies in EVER using radio-telemetry and will consider the need for additional studies in south Florida units of NPS.

EVER has remained virtually free of human development for the last 40 years. It is essential to radio-instrument panthers there and study this population segment for comparison with data from concurrent studies in areas of different vegetative types and known to be impacted by various human activities. Studies were recently initiated in EVER (11/86) to augment the panther and deer studies presently underway in BCNP and FSSP.

1112. FGC will conduct radio tracking studies in FSSP and BCNP.

FGC has radio-tracked panthers in FSSP and BCNP since 1981. Much has been learned from these studies. It continues to be important to study this segment of the population since it appears to be in poor health with little recruitment. Results from these studies will be compared with results from Task 1111.

1113. FGC will expand studies to private lands north of Alligator Alley in cooperation with landowners.

At the present, an estimated 20-50 panthers inhabit south Florida. About one-half of these are believed to occur on private lands which are managed differently than public lands. It is important to determine panther distribution and survival on these private lands. Radio-telemetry and intensive ground surveys will be required. These studies should be similar to those outlined in 1111 and 1112 for panthers on public lands.

1114. FWS will conduct population surveys to monitor panther activity in FPNWR.

This will be one of the first priority actions for the new FPNWR in order to develop and refine management actions.

12. Protect and manage existing panther populations.

With only a small remnant population of Florida panthers known to survive in south Florida, it is essential these animals be carefully protected and managed to secure their continued existence.

121. Protect panthers from vehicular traffic.

Vehicles striking panthers has become the major known cause of panther mortality in south Florida. The endorsement of measures being developed through the FPIC to address this problem by FDOT and Florida

Department of Highway Safety and Motor Vehicles (FDHS) is essential. Active participation from these Departments will be sought by the FPIC in the development of these measures.

1211. FDOT will post warning signs and reflectors, where practical, on Alligator Alley, S.R. 29, U.S. 41, and other roads as necessary.

Some areas where panthers cross roads or have been killed by vehicles have been posted with reduced speed limits. Checks should be made to insure all such areas are prominently posted. In addition, consideration should be given to posting all roads within known panther range. FDOT should initiate studies to determine if reflectors will help reduce the incidence of highway fatalities.

1212. FDOT will reduce nighttime speed limits where panthers may be vulnerable to vehicle collisions.

If necessary, reduced nighttime speed limits on additional segments of roadways will be posted. Strict enforcement shall be shared by the Florida Highway Patrol (FHP), local law enforcement officers, FWS and FGC enforcement officers.

1213. FGC will develop a plan to provide prompt emergency veterinary aid for injured panthers.

A contingency plan will be developed to assist panthers injured by vehicular accidents. Such a plan should include methods of rapid movement, temporary and long-term holding facilities, etc. Veterinary expertise should be available on short notice.

1214. FGC will develop a protocol for handling dead panthers.

The goal will be to maximize the biological, medical, genetic, and forensic information to be

gained from each animal.

1215. FDOT will physically alter segments of roadways determined to be hazardous to panthers.

Segments of SR-29 and plans for the proposed I-75 have been modified to protect the panther. As other roadways are scheduled for repairs or realignment, similar protective measures should be incorporated into the design. This includes moving the road bed to increase the size of the shoulder and other modifications.

122. FGC will identify and evaluate significant Florida panther diseases and parasites and means of prevention or protection, as appropriate.

Hookworms are known to infest Florida panthers; panthers are also susceptible to feline distemper (panleukopenia). Both may be factors in suppressing panther recruitment. Studies should be continued on panther diseases and their significance to wild populations. These studies should include an experimental evaluation of the pathogenicity of both of these agents in surrogate hosts, such as captive cougars. Consideration should be given to improving the health of wild populations. This may involve prey base enhancement, as well as prevention or protection, including capture and immunization. All panthers caught in the wild or held in captivity should be inoculated against panleukopenia.

123. FWS, with assistance from NPS and FGC, will develop a cumulative effects model for the south Florida ecosystem.

As human population growth continues in south Florida, it will be necessary to predict its impact on panther habitat. To accomplish this, a cumulative impact model, similar to one developed for the grizzly bear in Yellowstone National Park, should be developed. This model should address the impacts of hydrology, agriculture, air pollution, human population growth, roads, recreation, etc. The FWS will utilize input from all appropriate entities in this effort.

124. FGC will develop a genetic profile for Florida panther.

Genetic variability of the Florida panther should be assessed using blood and tissue electrophoretic evaluations and other techniques. Similar analyses of other subspecies of *F. concolor* should also be conducted for comparative purposes.

1241. FWS and FGC will identify biological and legal options if the genetic profile indicates low genetic diversity and subsequent detrimental effects on the population.

12411. FPIC will develop and implement a management strategy to restore and maintain the historic genetic character of the Florida panther.

A genetic profile describing the historic character of the Florida panther will be established and a management plan designed to achieve and maintain this profile will be developed and implemented. The plan will describe scientific controls to be utilized, genetic and morphological objectives, management needs, source stock, methods, monitoring needs and etc.

1242. FGC will establish a Florida panther sperm bank.

Sperm should be collected and preserved from both wild and captive panthers and from dead animals in which the sperm is still viable.

125. FGC and FWS will develop a panther population model.

To arrive at an estimate for the minimum viable population (MVP), it will be necessary to develop a population model. Needed for such a model are data on natality, mortality, recruitment, and compensatory mechanisms. The above data may have to come, in part,

from other non-endangered subspecies of *Felis concolor*.

126. DEP, FGC, FWS and NPS will develop or revise existing comprehensive land management plans to address the needs of the panther on their respective lands within the current known range of the panther, in addition to other agency land management objectives.

These comprehensive plans will implement specific agency tasks outlined in the implementation schedule and committed to in the agencies' participation schedule (see 173). The plans will outline specific tasks to enhance habitat conditions for panthers and will address all facets of each agency's responsibilities and capabilities for management of fire, water, recreation, vegetation, etc. They will be reviewed by the FPIC. A priority list for land acquisition efforts related to the panther will also be addressed, though it may be through a separate agency process. These plans and priorities will be developed or revised using existing agency processes.

127. FGC will initiate a system for marking and maintaining records on captive cougars in the state.

It has been estimated that there are over 1,000 captive cougars in Florida (Capt. Barry Cook, pers. comm. 1986). 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 (Belden 1982).

13. Protect, manage and enhance habitat for prey species.

The basic prey for panthers in Florida is white-tailed deer and hogs. Panthers are opportunistic feeders as evidenced by the variety of other animals found in their scats and stomachs. However, for panthers to reproduce successfully, it is highly desirable that large prey species be available.

131. Expand deer studies and monitoring and improve management techniques in all areas known to be occupied by panthers.

At present, limited deer studies have been conducted in the Corn Dance and Bear Island Units of the BCNP. Results indicate that differences do exist in physiological conditions and abundance between the two deer herds. It is essential to expand these studies and initiate new studies in other areas known to be occupied by panthers. These studies will help identify factors regulating deer populations in each of the areas. One of the first priorities for the FPNWR will be to expand this effort to include this new acquisition area.

1311. NPS will conduct deer studies in EVER to determine optimum carrying capacity and to provide data for developing management guidance.

The use of radio-telemetry will provide data on habitat use, energetics, etc. A representative sample of deer must be collected to analyze reproduction and general health status of the overall deer population.

1312. NPS, DEP, FGC, FWS, SFWMD, Collier and Dade Counties, and other local governments will evaluate habitat protection and management actions on their respective lands and initiate actions to enhance panther conditions as appropriate.

To perpetuate the natural distribution and abundance of the Florida panther and its primary prey, it will be necessary to evaluate current management actions such as fire management, exotic species eradication programs, and habitat restoration programs. These management actions and programs will be adjusted as appropriate to improve panther habitat consistent with other natural resource management guidelines. FWS and DEP should actively move forward with experimental programs designed to

increase the carrying capacities for deer on their respective lands. This effort should include, but not necessarily be limited to, manipulating present habitat conditions to encourage native vegetation preferred by deer. Consistent with overall natural resource management objectives, NPS will place management emphasis on the elimination of exotic species and restoration of disturbed lands to natural systems. The inherent diversity and productivity of natural habitats on restored lands may have a beneficial impact on deer populations and thus aid in panther recovery. Additionally, it may be determined through studies that the use of controlled fire may provide a means to better replicate natural conditions that are more suitable for the panther. FWS and DEP will carry out exotic plant control measures and burning programs as needed on their respective lands (FPNWR and FSSP) in order to improve and maintain optimum habitat conditions for panthers.

1313. FGC will continue ongoing deer studies and initiate new studies in BCNP and in FSSP similar to those studies identified in 1311.

Studies involving reproduction and general health status of deer in the Corn Dance and Bear Island Units of BCNP have involved the collection of does and information from deer taken by hunters. To complement the research identified in 1311, similar research should be conducted in FSSP and other units of BCNP. This will provide a broad data base for deer in two distinct habitats.

1314. FGC and FWS will conduct deer studies as identified in 1311 in north Fakahatchee Strand, FPNWR, and on private lands, with landowner approval.

Over one-half of all panthers may occur on private lands to the north of the public lands. There are no available data for the deer herds on

these lands. It has been reported that panthers are healthier in these areas and recruitment is occurring. It is essential to understand why, and to determine if management alternatives exist which might improve the deer situation on public lands. The panthers in FSSP are apparently underweight and their diet is comprised largely of raccoons. There appears to be little recruitment. To improve the situation, habitat modification or food plots should be initiated in the FSSP and FPNWR and the response of deer measured.

1315. FGC, in cooperation with NPS and DEP, will continue to evaluate the effect deer hunting has on deer herds in areas of importance to Florida panthers and recommend or implement any needed regulatory changes.

The issue of deer hunting on public lands has been debated for several years. Opinions are varied as to the effect hunting is having on suppressing deer. Studies will be undertaken to identify any impacts to panthers and recommendations developed to mitigate any identified impacts.

1316. FGC will refine the APC technique as an indicator of carrying capacity for deer in sub-tropical Florida.

The use of APCs has been widely accepted as one measure of the health of a deer herd. The Southeastern Wildlife Cooperative Disease Study, Athens, Georgia, has developed the standards for this technique. Specific application of the technique needs to be refined for proper use and interpretation in sub-tropical Florida.

1317. FGC will offer to work with the MSIT to evaluate the deer status on Indian lands and cooperatively initiate and evaluate a variety of management techniques and strategies to enhance deer populations.

Panthers have been documented on the two Indian Reservations in south Florida but no information is available on the status of the deer herds on either. As on private lands, this information is important for the development of suitable management programs for the panther. The same methodology developed to study deer in EVER and BCNP should be appropriate. Once the status of the deer herds is known, an active deer management program should be initiated on tribal lands to improve the habitat for deer. A prescribed burning program will set back succession and increase edge. Clearcutting, and selective thinning will also open up areas which will promote deer browse. To supplement the management programs, deer food plots may also be an effective tool to increase the number of deer.

1318. FGC and DEP will continue to test and evaluate on an interim basis the effectiveness of supplementing the prey base for panthers in the FSSP.

In March 1986, twelve radio-collared sterilized hogs were released in FSSP and the southern Golden Gate Estates to examine the feasibility of supplementing the diets of 2 adult female panthers. One hog was killed by an adult male panther on July 14, 1986. Other predators, including black bears and an alligator, killed 4 others. Three were taken by humans and 4 were lost due to radio failures or unknown causes. All hog collars failed or were collected by January 1, 1987 (Maehr, pers. comm 1987). Additional experimental releases should be attempted using deer to temporarily supplement the prey base for selected individuals that are in poor physical condition.

132. NPS, FWS, and FGC will establish a monitoring program for prey species at EVER, BCNP, FSSP, FPNWR, and selected private lands.

Following the development and implementation of management techniques identified in 131, long term monitoring must be carried out to determine their effectiveness.

133. FWS, FGC, NPS, MSIT, and DEP will evaluate the need for, and if necessary provide, increased law enforcement throughout the year.

The illegal taking of deer and hogs out of season, and taking more than the legal limit during the season, may be a serious problem. To curtail these activities, increased law enforcement may be necessary in certain areas in south Florida. This may require reassigning officers or hiring additional ones for these areas.

14. Maintain and expand clearinghouse operations for obtaining and compiling panther records throughout the entire historical range of the-subspecies.

Each year many panther sightings are reported from Florida and elsewhere within the former range of the species. A central clearinghouse has been established in Florida so that all in-state reports can be investigated and categorized. The clearinghouse concept will be expanded to include all states within the former range of panthers by the FWS with cooperation of respective states. It is necessary that all panther reports are evaluated so that no possibility of surviving populations is overlooked.

15. Monitor panther populations.

Once the extant populations of panthers are known, it will be necessary to periodically monitor the status of each population.

151. NPS will monitor the population in EVER and assist FGC in BCNP.

The NPS will monitor the population in EVER. This is probably the only population virtually free of human disturbance. NPS will assist FGC in a monitoring program at BCNP.

152. DEP will assist FGC in monitoring panthers at FSSP.

A few panthers remain at FSSP. DEP has the responsibility for management of this tract. DEP should assist FGC in the monitoring efforts.

153. FGC will offer to assist MSIT in monitoring panthers at the Reservations.

154. FGC will offer to monitor panthers on selected private lands in cooperation with landowners.

Over one-half the known panther population occurs on private lands. It is imperative that monitoring this segment of the population be initiated, especially in view of habitat loss due to the accelerated growth of citrus production and other agricultural operations in south Florida.

155. FWS will monitor panthers at FPNWR.

16. FWS will assess the potential benefits of designating critical habitat.

It should be ascertained whether a designation of critical habitat will aid in the conservation and recovery of the Florida panther.

17. Establish FPIC.

The FPIC was established in May 1936 to enhance the implementation of all necessary conservation efforts. The long term goal of this Committee is to restore the panther to non-endangered status in the wild by assuring coordinated implementation of the Florida panther recovery plan. The committee is comprised of the Agency persons having the authority to make decisions regarding primary actions necessary for the recovery of the panther. The agencies having this primary responsibility are FWS, NPS, FGC, and DEP. Other agencies will be requested to participate as needed.

171. Establish technical subcommittee.

The objectives of the Technical Subcommittee are to 1) insure technical coordination between agency actions to recover the Florida panther; 2) provide technical staff support and advice to the FPIC on any issue; 3) provide